Table of Contents

General Information 0-1
- General Information 0-2

Body Systems 1-1
- Fixed and Moveable Windows 1-2
- Horns and Pedestrian Alerts 1-13
- Lighting 1-16
- Mirrors 1-38
- Trailering Systems 1-47
- Vehicle Access 1-60
- Wipers and Washers 1-78

Brakes 2-1
- Antilock Brake System 2-2
- Disc Brakes 2-11
- Hydraulic Brakes 2-15
- Park Brake 2-24

Diagnostic Overview, Starting Point, and Programming 3-1
- Programming and Setup 3-4
- Vehicle Diagnostic Information 3-77

Driveline/Axle 4-1
- Rear Drive Axle 4-2

Driver Information and Entertainment 5-1
- Cellular, Entertainment, and Navigation 5-2
- Displays and Gauges 5-37
- Image Display Cameras 5-51
- Secondary and Configurable Customer Controls 5-57

Engine/Propulsion 6-1
- Cruise Control 6-3
- Engine Controls and Fuel - 3.0L Diesel 6-11
- Engine Controls and Fuel - 2.7L 6-33
- Engine Controls and Fuel - 5.3L, 6.2L 6-56
- Engine Heating and Cooling 6-75
- Engine Mechanical - 3.0L Diesel 6-136
- Engine Mechanical - 2.7L 6-138
- Engine Mechanical - 5.3L, 6.2L 6-140
- Starting, Charging, and Low Voltage Energy Storage 6-142

HVAC 7-1
- HVAC - Automatic 7-2
- HVAC - Manual 7-13

Power and Signal Distribution 8-1
- Data Communications 8-2
- Electrical Component and Inline Harness Connector End Views 8-30
- Electrical Component Locator and Harness Routing Views 8-769
- Power Outlets 8-914
- Wiring Systems and Power Management 8-929

Roof 9-1
- Sunroof 9-2

Safety and Security 10-1
- Driver Assistance Systems 10-3
- Driver Monitoring 10-29
- Immobilizer 10-33
- Parking Assistance Systems 10-35
- Remote Functions 10-48
- Seat Belts 10-57
- Supplemental Restraints 10-61
- Theft Deterrent 10-70

Seats 11-1
- Power Seats 11-2
- Seat Heating and Cooling 11-23

Steering **12-1**
Power Steering 12-2
Steering Wheel and Column 12-5

Transmission **13-1**
Electronic Transmission Range Select 13-2
Shift Lock Control 13-4
Transfer Case - MP 3015 13-7
Transfer Case - MP 3025 13-21

Section 0

General Information

General Information **0-2**
Introduction **0-2**
RPO Code List 0-2

General Information

General Information

Introduction

RPO Code List

The following table provides the description of the Regular Production Option (RPO) codes that are available on the vehicle. The vehicle's RPO list is printed on the Service Parts Identification Label.

RPO	Description
1SA	PACKAGE - OPTION 01
3SA	PACKAGE - SLE OPTION 1
3SB	PACKAGE - SLE OPTION 2
3VL	PACKAGE - VL OPTION 3
4AA	INTERIOR TRIM - JET BLACK
4B4	INTERIOR TRIM - JET BLACK/CERAMIC WHITE
4DK	INTERIOR TRIM - JET BLACK / VECCHIO BASE SAUVAGE PRINT
4DL	INTERIOR TRIM - ATMOSPHERE / BROWNSTONE
4F2	INTERIOR TRIM - JET BLACK / KALAHARI
4JJ	INTERIOR TRIM - GIDEON/VY DK ATMOSPHERE
4SA	PACKAGE - SLT OPTION 1
4SB	PACKAGE - SLT OPTION 2
4SG	PACKAGE - AT4 OPTION 2
57N	WHEEL - 18 X 8.5, J, ALUMINUM, DESIGN 13
57R	WHEEL - 18 X 8.5, J, ALUMINUM, DESIGN 14
5A7	WHEEL SPARE - NONE
5JL	ACCESSORY - BRAKE UPGRADE PKG 1 - COMPLETE
5JY	ACCESSORY - TONNEAU - RR COMPT - SOFT FOLDING
5LE	ACCESSORY - GARAGE DOOR OPENER
5SA	PACKAGE - DENALI OPTION 1
5SB	PACKAGE - DENALI OPTION 2
5VE	ACCESSORY - EXHAUST TIP - DESIGN 5
5VF	ACCESSORY - EXHAUST TIP - DESIGN 3
5VG	ACCESSORY - EXHAUST TIP - DESIGN 4
5VI	ACCESSORY - TIE DOWN RINGS - CARGO AREA
5W4	AIR CLEANER - HIGH CAPACITY
5W4	CALIBRATION - TAILLAMP FLASHER, RED/RED (SEO)
5W4	CALIBRATION - TAILLAMP FLASHER, RED/WHITE (SEO)
5W4	FLASHER - HEADLAMP (SEO)
5W4	GENERATOR - 220 AMP
5W4	HITCH ASSIST - GUIDELINES
5W4	RECEPTACLE I/P - ELECTRICAL, 110 VOLT
5W4	TRAILER PROVISIONS - SPECIAL EQUIPMENT, H.D.
5W4	SALES PACKAGE - SPECIAL SERVICE, MUNICIPAL
5WI	ACCESSORY - TIE DOWN RINGS - CARGO AREA, MOVEABLE
63G	ACCESSORY - TAILGATE ASSIST LIGHTING
65C	LABEL, WARNING - CALIFORNIA, PROP 65 COMPLIANT
6K5	BRK APL CTRL FEATURE - INTEGRATED TRAILER BRAKE
6K5	IMAGE ADJUSTMENT - HITCH VIEW
6K5	INDICATOR - SMART TRAILER INTEGRATION
6K5	OPENER - GARAGE DOOR, UNIVERSAL
6K5	SPEAKER SYSTEM - PREMIUM AUDIO, BRANDED AMPLIFIER
6K5	WINDOW RR - FULL WIDTH, SLIDING, POWER
6K5	SALES PACKAGE - CONVENIENCE II
6K9	ACCESSORY - HANGING BED DIVIDER BRACKET
9C1	AIR CLEANER - HIGH CAPACITY
9C1	AXLE POSITRACTION - LIMITED SLIP
9C1	BRAKE SYSTEM - HEAVY DUTY
9C1	BRK APL CTRL FEATURE - HILL DESCENT, GEAR HOLD
9C1	CALIBRATION - SPEEDOMETER A
9C1	CALIBRATION - TAILLAMP FLASHER, RED/RED (SEO)
9C1	CALIBRATION - TAILLAMP FLASHER, RED/WHITE (SEO)
9C1	ENGINE - GAS, 8 CYL, 5.3L, V8, DI, DFM, ALUM, GEN 5
9C1	FLASHER - HEADLAMP (SEO)
9C1	GENERATOR - 220 AMP
9C1	HITCH ASSIST - GUIDELINES
9C1	RECEPTACLE I/P - ELECTRICAL, 110 VOLT
9C1	RECEPTACLE PUBX - ELECTRICAL, 110 VOLT
9C1	SALES PACKAGE - SKID PLATE, "OFF ROAD" SPORT
9C1	TIRE ALL - 275/60R20 SL 115S BW AT
9C1	TIRE SPARE - 275/60R20 SL 115S BW AT
9C1	TRAILER PROVISIONS - SPECIAL EQUIPMENT, H.D.

RPO	Description
9C1	TRANSFER CASE - ACTIVE, TWO SPEED, SWITCH ACTIVATED, ALUM
9C1	WHEEL - 20 X 9.0, J, STEEL, DESIGN 1
9C1	WHEEL SPARE - 20 X 9.0, J, STEEL, DESIGN 1
9J4	BUMPER RR - (NONE)
9L3	TIRE SPARE - NONE
9L7	EQUIPMENT - ACSRY WRG JUNC BLK
A2S	ADJUSTER DRIVER SEAT - 4WAY, DISCONT MAN RECLINE, MAN FORE/AFT
A2X	ADJUSTER DRIVER SEAT - 8WAY, PWR RECLINE, PWR FORE/AFT, PWR HEIGHT, PWR TILT
A45	MEMORY - SEAT ADJUSTER, MIRROR, POWER, DRIVER, PERSONALIZATION
A48	WINDOW RR - FULL WIDTH, SLIDING, POWER
A50	SEAT - FRT BKT
A60	LOCK CONTROL RR CMPT - LID, TAILGATE, KEY ACTIVATED
A68	SEAT RR - SPLIT, FOLDING
A7E	ADJUSTER PASS ST - 4WAY, DISCONT MAN RECLINE, MAN FORE/AFT
A7K	ADJUSTER PASS ST - 8WAY, PWR RECLINE, PWR FORE/AFT, PWR HEIGHT, PWR TILT
AAK	ACCESSORY - FLOOR LINER - CONTOURED - ALT DESIGN 1
AAO	ACCESSORY - FLOOR LINER - CONTOURED - ALT DESIGN 2
AED	WINDOW REG PASS DR - POWER OPERATED,EXPRESS DOWN
AEF	WINDOW REG PASS DR - POWER OPERATED, EXPRESS UP/DOWN
AEQ	WINDOW REG REAR DR - POWER OPERATED, EXPRESS DOWN
AF6	CONTROL - SEAT, MASSAGE, DRIVER
AHE	BOLSTER DRVR - SEAT, POWER
AHH	BOLSTER PASS - SEAT, POWER
AKE	CONTROL - SEAT, MASSAGE, PASSENGER
AKO	WINDOW TYPE - PRIVACY
AKP	WINDOW TYPE - SOLAR ABSORBING
AL0	SENSOR INDICATOR - INFLATABLE RESTRAINT, FRT PASS/CHILD PRESENCE DETECTOR
AQN	CONTROL - SEAT, POWER SHOULDER ADJUST, DRIVER
AQQ	LOCK CONTROL, ENTRY - REMOTE ENTRY, EXTENDED RANGE (MY 09 AND FUTURE)
AQS	CONTROL - SEAT, POWER SHOULDER ADJUST, PASS

RPO	Description
ASV	EQUIPMENT - SENSOR AIR MOISTURE & W/S TEMP
AU3	LOCK CONTROL - SIDE DR, ELEC
AU7	KEY - COMMON, FLEET
AVI	RESTRAINT PROVISIONS - ADJUSTABLE GUIDE LOOP
AVJ	LOCK CONTROL, ENTRY - REMOTE ENTRY, EXTENDED RANGE, PASSIVE ENTRY, FRONT DOORS
AVK	LUMBAR DRIVER - SEAT, POWER, 4 WAY
AVU	LUMBAR PASSENGER - SEAT, POWER, 4-WAY
AXG	WINDOW REG DRVR DR - POWER OPERATED, EXPRESS UP/DOWN
AXK	VEHICLE TYPE - TRUCK
AY0	RESTRAINT SYSTEM - SEAT, INFLATABLE, DRIVER & PASS FRT, SEAT SIDE, ROOF SIDE
AZ3	SEAT - FRT SPLIT, DRIVER, PASS, FULL FEATURE CENTER
B1J	LINER - RR WHEELHOUSE
B26	ALERT - SAFETY HAPTIC SEAT
B26	PARK ASSIST - FRONT AND REAR
B26	REAR CROSS TRAFFIC - ALERT, BRAKING
B26	SENSOR INDICATOR - PEDESTRIAN DETECTION - REAR
B26	SIDE ACTIVE SAFETY - OBSTACLE DETECTION ENHANCED
B26	SIDE ACTIVE SAFETY - OBSTACLE DETECTION ENHANCED, EXTENDED TRAILER VIEW
B26	VISION - 360 VIEW, MONO, HD DIGITAL
B26	VISION TRAILER - INSIDE VIEW, REAR VIEW
B26	SALES PACKAGE - SAFETY PACKAGE VAR. 1
B30	COVERING FLOOR - CARPET
B32	COVERING FRT - FLOOR MATS, AUX
B33	COVERING REAR - FLOOR MATS, AUX
B34	COVERING FRT - FLOOR MATS, CARPETED INSERT
B35	COVERING REAR - FLOOR MATS, CARPETED INSERT
B59	DEFOGGER - RR WINDOW, ELECTRIC
B59	REMOTE START - VEHICLE
B59	THEFT DETERENT - ELECTRICAL, UNAUTHORIZED ENTRY
B59	SALES PACKAGE - FUNCTIONAL PACKAGE
BAQ	AIR CLEANER - HIGH CAPACITY
BAQ	SALES PACKAGE - SKID PLATE, "OFF ROAD" SPORT

RPO	Description
BAQ	SALES PACKAGE - STYLE VAR 1
BCN	LOCK CONTROL - RETAIL LOCKING FEATURE (SEO)
BG9	COVERING FLOOR - RUBBER
BKE	COVERING REAR - FLOOR MATS, FLOOR LINER CARPET INSERT
BKF	COVERING FRT - FLOOR MATS, FLOOR LINER CARPET INSERT
BPH	AIR CLEANER - HIGH CAPACITY
BPH	AXLE POSITRACTION - LIMITED SLIP
BPH	BRK APL CTRL FEATURE - HILL DESCENT, GEAR HOLD
BPH	CHASSIS PACKAGE - "OFF ROAD"
BPH	CHASSIS PACKAGE - "OFF ROAD" 2 INCH LIFT
BPH	EXHAUST SYSTEM - DUAL
BPH	EXHAUST SYSTEM - PERFORMANCE
BPH	SALES PACKAGE - SKID PLATE, "OFF ROAD" SPORT
BPH	TRANSFER CASE - ACTIVE, TWO SPEED, SWITCH ACTIVATED, ALUM
BRS	STEPS, RUNNINGBOARD - SIDE, RETRACTABLE, POWER, BRIGHT
BTM	SWITCH - START, KEYLESS
BTV	REMOTE START - VEHICLE
BVT	STEPS, RUNNINGBOARD - SIDE, CHROME
BWN	STEPS - CORNER ASSIST, BUMPER
C32	HEATER AIR SYSTEM - HEATING/ DEFROSTER SYSTEM, REINFORCED, ELECTRIC
C49	DEFOGGER - RR WINDOW, ELECTRIC
C59	VENT - AIR, CONSOLE, RR
C67	HVAC SYSTEM - AIR CONDITIONER FRT, ELECTRONIC CONTROLS
CE1	WIPER SYS WINDSHIELD - PULSE, MOISTURE SENSITIVE
CF5	ROOF - SUN, GLASS, SLIDING, ELEC
CGN	LINER - PUBX, SPRAY ON
CJ2	HVAC SYSTEM - AIR CONDITIONER FRT, AUTO TEMP CONT, AUX TEMP CONT
CTT	HITCH ASSIST - GUIDELINES
CW6	COUNTRY - GUAM
CWK	ACCESSORY - EXHAUST TIP - DESIGN 2
CWK	EXHAUST SYSTEM - DUAL
CWK	EXHAUST SYSTEM - PERFORMANCE
CWK	HOOK - TOW
CWK	LINER - PUBX, SPRAY ON
CWK	WHEEL - 18 X 8.5, J, ALUMINUM, DESIGN 11

RPO	Description
CWK	WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 5
CWM	CRUISE CONTROL - AUTOMATIC, ADAPTIVE, WITH STOP/GO
CWM	HEAD UP DISPLAY - WINDSHIELD
CWM	MIRROR I/S R/V - LT SENSITIVE, FULL VIDEO DISPLAY
CWM	STEERING COLUMN - TILT, TELESCOPING, POWER
CWM	VISION AUXILIARY - CARGO BED
CWM	SALES PACKAGE - TECHNOLOGY
CXH	INTERIOR TRIM CONFIG - LEATHER, LEVEL 1, GIDEON/VY DK ATMOSPHERE
CXH	INTERIOR TRIM CONFIG - LEATHER, LEVEL 1, JET BLACK
CXH	SEAT RR - SPLIT, FOLDING, DELUXE STORAGE
CXH	SALES PACKAGE - INTERIOR LEATHER PACKAGE
D07	CONSOLE - FRT COMPT, FLOOR, CUSTOM
D31	MIRROR I/S R/V - TILT
D4J	COUNTRY - US VIRGIN ISLAND
D72	HANDLE O/S DOOR - BLACK
D75	HANDLE O/S DOOR - BODY COLOR
DD8	MIRROR I/S R/V - LT SENSITIVE
DEN	MIRROR O/S - LH & RH, MANUAL, MANUAL FOLD, FLAT/DRVR, CNVX/PASS
DEZ	MIRROR O/S - LH & RH, ELEC REMOTE, POWER FOLD, HEAT, PERM LIGHT, LT SENSITIVE DRVR, FLAT/DRVR, CNVX/ PASS
DH6	MIRROR I/S FRT VAN - LH & RH, SUNSHADE, ILLUM
DLF	MIRROR O/S - LH & RH, RC, ELEC, HEAT, MAN FOLD, FLAT/DRVR, CNVXPASS
DNS	EQUIPMENT - SUPPLIER INSTALLED
DP6	MIRROR PROVISIONS - HOUSING, PAINTED
DP9	MIRROR PROVISIONS - HOUSING, CHROME
DPO	MIRROR O/S - LH & RH, WIDE FIELD OF VIEW, MAN EXTEND, MAN FOLD, HEATED, REMOTE CONT, AUX CARGO LMP, AUX CLEAR LMP
DQS	MIRROR O/S - LH & RH, WIDE LOAD, VERT GLS,MAN EXT,PWR FLD,HTD,TURN SIG IND,R/CON,MEMORY,AUX CLEAR LP,AUX CARGO LP
DRZ	MIRROR I/S R/V - LT SENSITIVE, FULL VIDEO DISPLAY
E20	HANDLE O/S DOOR - CHROME
E35	PICKUP BOX INNER - STEEL
E3Z	PICKUP BOX INNER - ALT MTL

RPO	Description
E63	BODY EQUIPMENT - FLEETSIDE PICK-UP BOX
E6J	COUNTRY - PUERTO RICO
EF7	COUNTRY - UNITED STATES OF AMERICA (USA)
ENL	ENG CONTROL DISABLE - STOP/START, NON-LATCHING
EPH	TRANS RANGE SEL SYS - ELECTRONIC
EU2	ACCESSORY - WHEEL - 18" X 8.0 - J - ALUMINUM - DESIGN 2
F48	CHASSIS DRIVE LINE - ALL WHEEL DRIVE (AWD)/FOUR WHEEL DRIVE(4WD), DRIVER SELECT
FE9	CERTIFICATION - EMISSION, FEDERAL
FHS	VEHICLE FUEL - GASOLINE E85
FHX	VEHICLE FUEL - DIESEL B20
FJW	VEHICLE FUEL - GASOLINE E15
FWI	PLANT CODE - FT WAYNE, IN, USA
G42	PRIMARY COLOR - EXTERIOR, WHITE SANDS SOLID (234L)
G4J	PRIMARY COLOR - EXTERIOR, POLAR WHITE TRI MET-1 (241L)
G6M	PRIMARY COLOR - EXTERIOR, RUSH MET-1 (618G)
G7C	PRIMARY COLOR - EXTERIOR, PULL ME OVER RED SOLID (130X)
G80	AXLE POSITRACTION - LIMITED SLIP
G93	AXLE - FRT ELECTRONIC LOCKING DIFFERENTIAL, DRIVER SELECT
G94	AXLE - RR ELECTRONIC LOCKING DIFFERENTIAL, DRIVER SELECT
GA4	TRIM PACKAGE - AT4 X
GAZ	PRIMARY COLOR - EXTERIOR, SUMMIT WHITE (G) 8624
GBA	PRIMARY COLOR - EXTERIOR, BLACK (G) 8555
GEY	HANDLING CHARGE - FROM FT WAYNE ASM, TO GROUND EFFECTS LTD., FT WAYNE, IN, BACK TO FT WAYNE ASM.
GFF	TRIM PACKAGE - BASE
GFG	TRIM PACKAGE - AT4
GFI	TRIM PACKAGE - SLE
GFJ	TRIM PACKAGE - ELEVATION
GFS	TRIM PACKAGE - ELEVATION-L
GFU	TRIM PACKAGE - SLT
GFW	TRIM PACKAGE - DENALI
GFY	TRIM PACKAGE - DENALI ULTIMATE
GNT	PRIMARY COLOR - EXTERIOR, RADIANT RED TINT MET-1 (170H)
GT4	AXLE REAR - 3.73 RATIO
GU5	AXLE REAR - 3.23 RATIO

RPO	Description
GU6	AXLE REAR - 3.42 RATIO
GXD	PRIMARY COLOR - EXTERIOR, SHARKSKIN MET-1 (130H)
GXP	PRIMARY COLOR - EXTERIOR, COSMONAUT MET-1 (136H)
H0U	INTERIOR TRIM CONFIG - CLOTH, LEVEL 2, JET BLACK
H0Y	INTERIOR TRIM CONFIG - LEATHER, LEVEL 1, JET BLACK
H1T	INTERIOR TRIM CONFIG - CLOTH, LEVEL 1, JET BLACK
H1Y	INTERIOR TRIM CONFIG - LEATHER, LEVEL 2, JET BLACK
H24	INTERIOR TRIM CONFIG - LEATHER, LEVEL 4, ATMOSPHERE/BROWNSTONE
H2G	INTERIOR TRIM CONFIG - VINYL, LEVEL 1, JET BLACK
H2X	INTERIOR TRIM CONFIG - LEATHER, LEVEL 4, JET BLACK
H40	INTERIOR TRIM CONFIG - LEATHER, LEVEL 10, JET BLACK/VECCHIO BASE SAUVAGE PRINT
H9J	INTERIOR TRIM CONFIG - LEATHER, LEVEL 9, JET BLACK/CERAMIC WHITE
HS1	ALERT - SAFETY HAPTIC SEAT
HV5	INTERIOR TRIM CONFIG - CLOTH, LEVEL 2, GIDEON/VY DK ATMOSPHERE
HVC	INTERIOR TRIM CONFIG - LEATHER, LEVEL 1, GIDEON/VY DK ATMOSPHERE
HVD	INTERIOR TRIM CONFIG - LEATHER, LEVEL 2, JET BLACK/KALAHARI
HVE	INTERIOR TRIM CONFIG - LEATHER, LEVEL 2, GIDEON/VY DK ATMOSPHERE
IOK	RADIO - INFOTAINMENT SYSTEM - 3.X MID/HIGH HMI,ENHANCED CONNECTIVITY 2.0, VOICE RECOGNITION
IOR	RADIO - INFOTAINMENT SYSTEM - 3.X LOW HMI, MIDLEVEL CONNECTIVITY 3.X
J26	ENGINEERING YEAR - 2026
J61	BRAKE SYSTEM - POWER, FRT & RR DISC, ABS, 17"
JBP	BRAKE LINING WEAR SY - LIFE SPAN PROGNOSTIC INDICATOR
JHD	BRK APL CTRL FEATURE - HILL DESCENT, GEAR HOLD
JL1	BRK APL CTRL FEATURE - INTEGRATED TRAILER BRAKE
K05	HEATER ENG - BLOCK
K34	CRUISE CONTROL - AUTOMATIC, ELECTRONIC
K47	AIR CLEANER - HIGH CAPACITY
K4C	CHARGER - INDUCTIVE PORTABLE WIRELESS DEVICE
K53	AIR CLEANER - PERFORMANCE

RPO	Description
KA1	HEATER SEAT FRT - DRVR & PASS
KA6	HEATER SEAT - REAR
KC4	COOLING SYSTEM - ENG OIL
KC5	RECEPTACLE - ELECTRICAL, ACCESSORY
KC9	RECEPTACLE PUBX - ELECTRICAL, 110 VOLT
KGU	MODULE - UPFITTER, SERIAL DATA GATEWAY
KI3	STEERING WHEEL HEAT - AUTOMATIC
KI4	RECEPTACLE I/P - ELECTRICAL, 110 VOLT
KL9	ENG CONTROL - STOP/START SYS, CONVENTIONAL AT, CONVENTIONAL MT OR BRAKE RELEASE LATE RESTART
KLF	ENG CONTROL - STOP/START SYS, DISABLE FUNCTION
KNP	COOLING SYSTEM - TRANS, HD
KQV	HEATER - SEAT, VENTED, FRT
KSG	CRUISE CONTROL - AUTOMATIC, ADAPTIVE, WITH STOP/GO
KW5	GENERATOR - 220 AMP
KW7	GENERATOR - 170 AMP
L3B	ENGINE - GAS, 4 CYL, L4, 2.7L, SIDI, VVT, TURBO, DOHC, ALUM
L84	ENGINE - GAS, 8 CYL, 5.3L, V8, DI, DFM, ALUM, GEN 5
L87	ENGINE - GAS, 8 CYL, V8, 6.2L, DI, DFM, ALUM, GEN 5
LZ0	ENGINE - DIESEL, 6 CYL, 3.0L, CRI, L6, DOHC, TURBO, VGT, ALUM, CSS50V, VAR. 2
MAH	MARKETING AREA - US, PUERTO RICO/ USVI
MFC	TRANSMISSION - AUTO 8 SPD, 8L80, GEN 2, ATSS, CPA
MHS	TRANSMISSION - AUTO 10 SPD, 10L80, GRX, GEN 1, ATSS, ETRS, VAR 1
MHT	TRANSMISSION - AUTO 10 SPD, 10L80, GRX, GEN 1, ATSS, VAR 1
MI2	TRANSMISSION - AUTO 10 SPD, 10L80, GRX, VAR 1, GEN 1
MQB	TRANSMISSION - AUTO 10 SPD, 10L80, ATSS, CPA, GEN 2
MQC	TRANSMISSION - AUTO 10 SPD, 10L80, ATSS, ETRS, CPA, GEN 2
MSL	PLANT CODE - SILAO, MEXICO
N06	STEERING COLUMN LOCK - ELECTRICAL
N10	EXHAUST SYSTEM - DUAL
N33	STEERING COLUMN - TILT TYPE
N37	STEERING COLUMN - TILT, TELESCOPING
N38	STEERING COLUMN - TILT, TELESCOPING, POWER

RPO	Description
N57	STEERING WHEEL - SYNTHETIC, 4 SPOKE, THIN, ROUND
N5G	STEERING WHEEL - SYNTHETIC, 4 SPOKE, SPORT, ROUND
NAA	ACCESSORY - ROCKER GUARD - TUBULAR
NB5	EXHAUST SYSTEM - SINGLE
NE1	CERTIFICATION - EMISSION, GEOGRAPHICALLY RESTRICTED REGISTRATION
NHT	AXLE POSITRACTION - LIMITED SLIP
NHT	AXLE REAR - 3.42 RATIO
NHT	AXLE REAR - 3.73 RATIO
NHT	BRK APL CTRL FEATURE - INTEGRATED TRAILER BRAKE
NHT	PERFORMANCE PACKAGE - ENHANCED TOWING
NK5	STEERING WHEEL - STANDARD
NKD	NOISE CONTROL - SOUND ENHANCEMENT
NL2	EMISSION SYSTEM - LEV125/BIN125: CA LEV4/FED TIER3, 0K-8.5K GVW LDV, 8.5K-10K GVW MDPV
NL3	EMISSION SYSTEM - ULEV70/BIN70: CA LEV4/FED TIER3, 0K-8.5K GVW LDV, 8.5K-10K GVW MDPV
NL8	EMISSION SYSTEM - ULEV50/BIN50: CA LEV4/FED TIER3, 0K-8.5K GVW LDV, 8.5K-10K GVW MDPV
NLB	EMISSION SYSTEM - SULEV30/BIN30: CA LEV4/FED TIER3, 0K-8.5K GVW LDV, 8.5K-10K GVW MDPV
NP0	TRANSFER CASE - ACTIVE, SINGLE SPEED,SWITCH ACTIVATED,ALUM
NP5	STEERING WHEEL - LEATHER WRAPPED
NPP	EXHAUST SYSTEM - PERFORMANCE
NQH	TRANSFER CASE - ACTIVE, TWO SPEED, SWITCH ACTIVATED, ALUM
NZD	WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 6
NZH	WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 8
NZZ	SALES PACKAGE - SKID PLATE, "OFF ROAD" SPORT
PPW	PHONE PROJECTION - PHONE PROJECTION WIRELESS
PTT	TRAILER TIRE PRESSUR - MANUAL LEARN
PZ8	IMAGE ADJUSTMENT - HITCH VIEW
PZ9	PLATE - SKID, FUEL TANK
PZG	PLATE - SKID FRT
PZL	PLATE - SKID RR DIFFERENTIAL
PZN	PLATE - SKID TRANSFER CASE

RPO	Description
Q5U	WHEEL - 17 X 8.0, J, ALUMINUM, DESIGN 2
Q89	WHEEL - 18 X 8.5, J, ALUMINUM, DESIGN 19
QAB	TIRE ALL - 275/60R20 SL 115S BW AL2
QAE	TIRE ALL - 275/60R20 SL 115S BW AT
QAQ	TIRE SPARE - 255/80R17 SL 115S BW SPR
QBN	TIRE ALL - 255/70R17 SL 112S BW ALS VAR 1
QBR	TIRE SPARE - 255/70R17 SL 112S BW ALS VAR1
QDF	TIRE ALL - 265/65R18 SL 114T BW ALS VAR 1
QDS	TIRE ALL - 265/65R18 SL 114T WOL AT VAR 1
QDV	TIRE ALL - 265/70R17 SL 115S BW AT VAR 1
QFL	TIRE ALL - LT275/70R18 C 115/112Q BW OOR, VAR1
QFV	TIRE ALL - LT265/60R20 C 110/107S BW OOR, VAR 1
QK1	GATE TYPE - PUBX END STANDARD
QK2	GATE TYPE - PUBX END ENHANCED
QT2	GATE FUNCTION - MANUAL
QT5	GATE FUNCTION - MANUAL ASSIST POWER RELEASE
QT6	GATE FUNCTION - POWER
R3O	TIRE ALL - LT275/65R18 C 113/110Q BW OOR, VAR1
R7O	SEAT RR - SPLIT, FOLDING, BASE STORAGE
R88	ACCESSORY - ILLUMINATED EMBLEM - EXTERIOR - DESIGN 2
RBR	WHEEL - 22 X 9.0, J, STEEL, DESIGN 1
RC5	TIRE ALL - LT265/70R17 C 112Q BW AT
RCP	ACCESSORY TIRE - TIRE ALL - LT275/65R18 C 113/110Q BW OOR VAR1
RD3	WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 3
RD6	WHEEL - 17 X 8.0, J, STEEL, DESIGN 2
RDI	ACCESSORY - KEYLESS ENTRY
RHF	TIRE SPARE - LT275/70R18 C 115/112Q BW OOR
RHM	TIRE SPARE - LT265/70R17 C 112Q BW AT
RIA	ACCESSORY - FLOOR LINER - CONTOURED
RIK	ACCESSORY - BADGE - EXTERIOR, PACKAGE, DESIGN 1
RM7	WHEEL SPARE - 17 X 8.0, J, STEEL, DESIGN 1
RN2	ACCESSORY - ILLUMINATED EMBLEM - EXTERIOR - DESIGN 1

RPO	Description
RO2	ACCESSORY - GRILLES/GRILLE INSERT - ALTERNATE DESIGN 4
RSI	ACCESSORY - CARGO AREA ORGANIZER - RECONFIGURABLE
RSR	OCCUPANT DETECT SYS - REAR SEAT, DOOR ACTIVATED
RTL	WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 1
RVG	ACCESSORY - ADAPTER - TRAILER HARNESS
RVP	ACCESSORY - ASSIST STEPS - REMOVABLE
RVQ	ACCESSORY - ASSIST STEPS - TUBULAR - OVAL - BLACK
RVS	ACCESSORY - ASSIST STEPS - TUBULAR - ROUND - BLACK
RVY	ACCESSORY - PUBX CARGO DIVIDER
RW9	ACCESSORY - BED STORAGE BOX - SIDE FULL LENGTH - COMPOSITE
RWA	ACCESSORY - BED STORAGE BOX - FOAM
RWL	CHASSIS DRIVE LINE - REAR WHEEL DRIVE (RWD)
RWQ	ACCESSORY - CALIBRATIONS - POWERTRAIN
RWS	ACCESSORY - FLOOR MATS - CARPET
RXH	ACCESSORY - CENTER CAP - WHEEL - DESIGN 1
RXJ	ACCESSORY - CENTER CAP - WHEEL - DESIGN 2
RXQ	ACCESSORY - CONVENIENCE NET - BED MOUNTED
RYT	ACCESSORY - FIRST AID KIT
S08	ACCESSORY - HIGHWAY SAFETY KIT
S0M	ACCESSORY - ILLUMINATED DOOR SILLS
S0T	ACCESSORY - INTERIOR TRIM KIT - ALTERNATE FINISH 1
S0Y	ACCESSORY - LAMPS - CARGO AREA
S1H	ACCESSORY - OFF-ROAD RECOVERY KIT
S1O	ACCESSORY - CONTAINER - LOCKABLE STORAGE - INTERIOR
S1U	WHEEL SPARE - 18 X 8.5, J, ALUMINUM, DESIGN 2
S3I	ACCESSORY - LAMPS - PERIMETER ILLUMINATION
S41	ACCESSORY - LINER - WHEEL HOUSE
S47	ACCESSORY - LUG NUTS
S4D	WHEEL SPARE - 18 X 8.5, J, ALUMINUM, DESIGN 5
S4K	ACCESSORY - CARGO STRAP - FLEXIBLE ORGANIZER - RR COMPT
S4W	ACCESSORY - LUG NUT AND WHEEL LOCK KIT DESIGN 2

RPO	Description
S4X	ACCESSORY - MIRROR COVERS/SKULL CAPS - ALTERNATE FINISH - PAINTED
S6L	ACCESSORY - PROTECTOR - ROCKER PANEL
S6N	ACCESSORY - RECEIVER COVER - TRAILER HITCH
S6Z	ACCESSORY - SEAT COVER - TAILORED - ALTERNATE MATERIAL
SAF	LOCK - SPARE TIRE, HOIST SHAFT
SAM	ACCESSORY - SKID PLATES
SAX	ACCESSORY - SPEAKER KIT - LEVEL 1
SBY	ACCESSORY - SPORT BAR - BED MOUNTED - DESIGN 1
SBZ	ACCESSORY - SPORT PEDAL KIT
SC1	ACCESSORY - STABILIZER BAR KIT
SD5	ACCESSORY - TIRE PRESSURE MONITOR
SDA	ACCESSORY - TOW HOOKS
SDE	ACCESSORY - TRAILER HITCH - REMOVABLE
SDT	ACCESSORY - TRAILOR HITCH - HOLDER
SE5	ACCESSORY - WHEEL - 18" - ALUMINUM - DESIGN 2
SEH	ACCESSORY - WHEEL - 20" - ALUMINUM - DESIGN 1
SEM	ACCESSORY - WHEEL - 20" - ALUMINUM - DESIGN 5
SEU	ACCESSORY - WHEEL - 22 X 9.0 - J - ALUMINUM - DESIGN 2
SEV	ACCESSORY - WHEEL - 22 X 9.0 - J - ALUMINUM - DESIGN 3
SEZ	ACCESSORY - WHEEL - 22 X 9.0 - J - ALUMINUM - DESIGN 6
SF6	ACCESSORY - WHEEL FLARES - ALTERNATE DESIGN - PAINTED
SFE	ACCESSORY - WHEEL LOCKS
SFJ	ACCESSORY - WINDOW SHADES - REFLECTIVE
SFU	ACCESSORY - WHEEL - 22" - ALUMINUM - DESIGN 12
SFZ	ACCESSORY - EMBLEM - EXTERIOR - DESIGN 1
SG3	ACCESSORY - SPRINGS - SPORT SUSPENSION
SGM	ACCESSORY - WHEEL - 22 X 9.0 - J - ALUMINUM - DESIGN 9
SH0	WHEEL - 22 X 9.0, J, ALUMINUM, DESIGN 7
SIE	ACCESSORY - PUBX TIERED STORAGE
SJS	ACCESSORY - UTILITY WALL - FRONT
SL7	ACCESSORY - PUBX LADDER / UTILITY RACK STANCHIONS

RPO	Description
SMR	WHEEL - 22 X 9.0, J, ALUMINUM, DESIGN 16
SMZ	ACCESSORY - OFF ROAD DRIVE SHAFT
SNR	SEAT RR - SPLIT, FOLDING, DELUXE STORAGE
SPY	ACCESSORY - LUG NUTS - ALT FINISH
SPZ	ACCESSORY - WHEEL LOCKS - ALT FINISH
SRL	ACCESSORY - WHEEL - 22 X 9.0 - J - ALUMINUM - DESIGN 13
SRV	ACCESSORY - WHEEL - 22 X 9.0 - J - ALUMINUM - DESIGN 14
SSI	ACCESSORY - WHEEL - 22 X 9.0 - J - ALUMINUM - DESIGN 15
SSW	ACCESSORY - WHEEL - 22 X 9.0 - J - ALUMINUM - DESIGN 17
SUR	ACCESSORY - TRAILER TIRE PRESSURE MONITOR
T3U	LAMP FRT FOG - FRT FOG
T4Z	SEAT BELT SAFETY SYS - SHIFTER INTERLOCK, GEN 1, NON-CUSTOMIZABLE
T8Z	SEAT BELT SAFETY SYS - SHIFTER INTERLOCK, GEN 3, INFOTAINMENT CUSTOMIZABLE
TDM	MODE DRIVER SETTINGS - TEEN DRIVER, INFOTAINMENT
TQ5	HEADLAMP HIGH BEAM - AUTO CONTROL
TRG	VISION TRAILER - INSIDE VIEW, REAR VIEW
TRO	ACCESSORY - CAMERA PKG - TRAILERING AUX MOUNTED
TT0	ACCESSORY - TRAILERING HOOKUP ASSIST
TUF	ORNAMENTATION - EMBLEM, "TEXAS EDITION"
U12	LAMP - EXTR, OSRV MIRROR, TASK
U2J	DIGITAL AUDIO SYSTEM - S-BAND - NONE
U2K	DIGITAL AUDIO SYSTEM - S-BAND
U73	ANTENNA - FIXED, RADIO
U95	SPEAKER SYSTEM - 2, BASE
UBC	RECPT USB ARMREST - DUAL, CHARGE, DATA
UBD	RECPT USB FLR CNSL F - DUAL, CHARGE, DATA
UBI	RECPT USB FLR CNSL R - DUAL, CHARGE
UBJ	RECPT USB IP LWR - DUAL, CHARGE, DATA
UD5	PARK ASSIST - FRONT AND REAR
UDC	DISPLAY INSTRUMENT - DRIVER INFO ENHANCED (ONE COLOR GRAPHIC)

RPO	Description
UDU	PROVISIONS - REAR CAMERA PREP
UDV	DISPLAY INSTRUMENT - DRIVER INFO ENHANCED, FULL CLUSTER (MULTI COLOR GRAPHIC)
UE1	COMMUNICATION SYSTEM - VEHICLE, ONSTAR
UE4	SENSOR INDICATOR - FOLLOWING DISTANCE
UET	INDICATOR - SMART TRAILER INTEGRATION
UEU	SENSOR INDICATOR - FORWARD COLLISION ALERT
UF2	LAMP - CARGO
UFB	REAR CROSS TRAFFIC - ALERT, BRAKING
UG1	OPENER - GARAGE DOOR, UNIVERSAL
UGA	HOOK - TOW, RED
UGN	COLL IMMINENT BRK - ALL SPEED, VEH FWD MOVEMENT, BRAKE PREFILL, INTEGRATED BRAKE ASSIST
UH5	INDICATOR - SEAT BELT WARNING, REAR SEAT
UHL	VEHICLE - U-HAUL
UHN	WHEEL - 18 X 8.5, J, ALUMINUM, DESIGN 3
UHX	LANE ACTIVE SAFETY - KEEP ASSIST
UHY	COLL IMMINENT BRK - LOW SPEED, VEH FWD MOVEMENT, BRAKE PREFILL, INTEGRATED BRAKE ASSIST
UIR	INFOTAINMENT DISPLAY - NORMALLY BLACK COLOR (TFT), 7", WVGA 800X480P
UJN	TIRE PRESS INDICATOR - AUTO LEARN
UK3	CONTROL - STEERING WHEEL, ACCESSORY
UKC	SIDE ACTIVE SAFETY - OBSTACLE DETECTION ENHANCED
UKJ	PED DETECTION FRT - BASIC, PEDESTRIANS
UKK	SENSOR INDICATOR - PEDESTRIAN DETECTION - REAR
UKL	LANE ACTIVE SAFETY - KEEP ASSIST, HANDS FREE LANE FOLLOWING(ENTIRE SPEED RANGE)
UKV	SIDE ACTIVE SAFETY - OBSTACLE DETECTION ENHANCED, EXTENDED TRAILER VIEW
ULK	ACCESSORY - TOW HOOKS - RED
ULV	BUMPER FRT - SPORT
ULV	BUMPER RR - SPORT
ULV	GATE TYPE - PUBX END ENHANCED
ULV	PLATE - SKID FRT
ULV	PLATE - SKID RR DIFFERENTIAL
ULV	PLATE - SKID TRANSFER CASE

RPO	Description
ULV	PLATE - SKID, FUEL TANK
ULV	WHEEL - 18 X 8.5, J, ALUMINUM, DESIGN 17
ULV	WHEEL - 18 X 8.5, J, ALUMINUM, DESIGN 19
ULV	SALES PACKAGE - CHEVROLET BISON
UMN	SPEEDOMETER - INST, MILES & KILO, MILES ODOMETER
UNW	ACCESSORY - UTILITY WALL U-NUT
UQA	SPEAKER SYSTEM - PREMIUM AUDIO, BRANDED AMPLIFIER
UQF	SPEAKER SYSTEM - STANDARD AUDIO
UQS	SPEAKER SYSTEM - PREMIUM AUDIO, BRANDED SURROUND AMPLIFIER
URC	SWITCH - FLEXRIDE MODE SYSTEM
URD	INFOTAINMENT DISPLAY - NORMALLY BLACK COLOR (TFT) ,13.4", 2400X960
UTJ	THEFT DETERENT - ELECTRICAL, UNAUTHORIZED ENTRY
UV2	VISION - 360 VIEW, MONO, HD DIGITAL
UV6	HEAD UP DISPLAY - WINDSHIELD
UVB	VISION - REAR VIEW, MONO, HD DIGITAL
UVN	VISION AUXILIARY - CARGO BED
V46	BUMPER FRT - CHROME
V76	HOOK - TOW
V8D	VEHICLE STATEMENT - VEHICLE LABEL CONTENT - U.S. FMVSS
VAV	ACCESSORY - FLOOR MATS - ALL WEATHER
VB5	BUMPER FRT - COLOR
VBJ	ACCESSORY - UNDERSEAT STORAGE
VBN	ACCESSORY - PUBX CARPET
VBR	ACCESSORY - PUBX RUBBER MAT
VGC	PROTECTOR - FILM, PAINT ETCH PREVENTIVE
VH6	BUMPER FRT - BLACK
VHU	BUMPER FRT - SPORT
VJG	BUMPER RR - BLACK
VJH	BUMPER RR - CHROME
VK3	LICENSE PLATE FRONT - FRT MOUNTING PKG
VKU	ACCESSORY - MIRROR CAPS - CHROME
VLQ	HOOK - TOW, CHROME
VMK	ACCESSORY - CARGO MANAGEMENT SYSTEM RAILS
VNI	ACCESSORY - REAR FASCIA APPLIQUE - ALTERNATIVE FINISH 1
VOZ	ACCESSORY - TONNEAU - RR COMPT - HARD FOLDING - ALT DESIGN

RPO	Description
VPB	ACCESSORY - TONNEAU - RR COMPT - VINYL W/ INTEGRAL CROSSBOW SUPPORTS
VPS	BUMPER RR - SPORT
VQK	ACCESSORY - SPLASH GUARDS - CUSTOM MOLDED
VQM	ACCESSORY - ASSIST STEPS - CHROME
VQO	ACCESSORY - ASSIST STEPS - BLACK
VQY	ACCESSORY - TOW HOOKS - CHROME
VQZ	ACCESSORY - EXHAUST TIP - DESIGN 1
VST	ACCESSORY - SILL PLATES - ALTERNATE DESIGN 1
VSX	LABEL - TOWING
VT2	ACCESSORY - ASSIST STEPS - ALTERNATE FINISH
VT5	BUMPER RR - COLOR KEYED
VT7	OWNERS MANUAL - ENGLISH LANGUAGE
VTA	ACCESSORY - EXHAUST TIP - DESIGN 2
VTI	SHUTTERS - FRONT GRILLE, ACTIVE, UPR
VUK	ACCESSORY - TAILGATE LINER - PUBX
VV4	COMMUNICATION EQUIP - MOBILE INTERNET CONNECTIVITY
VW9	ACCESSORY - CENTER CAP - WHEEL - DESIGN 3
VWD	ACCESSORY - CENTER CAP - WHEEL - DESIGN 4
VXH	ACCESSORY - ASSIST STEPS - TUBULAR - CHROME - OVAL
VXJ	ACCESSORY - ASSIST STEPS - TUBULAR - CHROME - ROUND
VXT	VEHICLE TYPE - INCOMPLETE
VXW	ACCESSORY - ASSIST STEPS - MOLDED
VYN	ACCESSORY - WHEEL TRIM RING DESIGN 1
VYP	ACCESSORY - WHEEL TRIM RING DESIGN 2
VYU	PROVISIONS - SNOW PLOW PREP
VZX	ACCESSORY - PUBX BEDLINER
W09	ACCESSORY - TAILGATE GAP COVER
W2D	ACCESSORY - CARGO NET
WBC	ACCESSORY - EXHAUST UPGRADE
WBP	BUMPER FRT - COLOR
WBP	BUMPER RR - COLOR KEYED
WBP	CHASSIS PACKAGE - "OFF ROAD" 2 INCH LIFT
WBP	COVERING FLOOR - CARPET
WBP	DIGITAL AUDIO SYSTEM - S-BAND
WBP	REMOTE START - VEHICLE

RPO	Description
WBP	THEFT DETERENT - ELECTRICAL, UNAUTHORIZED ENTRY
WBP	WHEEL - 18 X 8.5, J, ALUMINUM, DESIGN 3
WBP	WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 3
WBP	SALES PACKAGE - APPEARANCE
WGQ	ACCESSORY - ASSIST STEPS - TUBULAR - ROUND - BLACK
WGQ	EXHAUST SYSTEM - DUAL
WGQ	EXHAUST SYSTEM - PERFORMANCE
WGQ	WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 13
WJP	ACCESSORY - WHEEL - 22 X 9.0 - J - ALUMINUM - DESIGN 14
WJP	BUMPER FRT - COLOR
WJP	BUMPER RR - COLOR KEYED
WJP	HANDLE O/S DOOR - BODY COLOR
WJP	HOOK - TOW
WJP	INTERIOR TRIM CONFIG - LEATHER, LEVEL 8, JET BLACK
WJP	MIRROR PROVISIONS - HOUSING, PAINTED
WJP	STEPS, RUNNINGBOARD - SIDE, RETRACTABLE, POWER, BLACK
WJP	TIRE ALL - 275/50R22 SL 111T BW AL2 VAR 1
WJP	TIRE ALL - 275/60R20 SL 115S BW AT
WJP	WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 5
WJP	WHEEL - 22 X 9.0, J, STEEL, DESIGN 1
WLD	WINDOW CONTROL - REMOTE EXPRESS DOWN, ALL WINDOWS
WMI	SHUTTERS - FRONT GRILLE, ACTIVE, UPR AND LWR
WNO	VIN MODEL YEAR - 2026
WPC	CRUISE CONTROL - AUTOMATIC, ADAPTIVE, WITH STOP/GO
WPC	HEATER SEAT - REAR
WPC	OPENER - GARAGE DOOR, UNIVERSAL
WPC	WINDOW RR - FULL WIDTH, SLIDING, POWER
WPC	SALES PACKAGE - COMFORT AND CONVENIENCE
WPQ	LINER - PUBX, SPRAY ON
WPQ	LINER - RR WHEELHOUSE
X31	AIR CLEANER - HIGH CAPACITY
X31	AXLE POSITRACTION - LIMITED SLIP
X31	BRK APL CTRL FEATURE - HILL DESCENT, GEAR HOLD
X31	CHASSIS PACKAGE - "OFF ROAD"

RPO	Description
X31	EXHAUST SYSTEM - DUAL
X31	EXHAUST SYSTEM - PERFORMANCE
X31	SALES PACKAGE - SKID PLATE, "OFF ROAD" SPORT
X31	TRANSFER CASE - ACTIVE, TWO SPEED, SWITCH ACTIVATED, ALUM
X31	APPEARANCE PACKAGE - GMC "X31 OFF ROAD"
XCE	TIRE ALL - 275/50R22 SL 111T BW AL2 VAR 1
XCK	TIRE ALL - 265/65R18 SL 114T BW AT VAR1
XCQ	TIRE SPARE - 265/70R17 SL 115S BW SPR VAR1
XD5	ACCESSORY TIRE - TIRE ALL-275/50R22 SL 111T BW AL2
XDF	ACCESSORY TIRE - TIRE ALL - 275/60R20 SL 115S BW AT
YD9	LEAF SPRING - COMPOSITE MONO LEAF
YF5	CERTIFICATION - EMISSION, CALIFORNIA
Z45	CHASSIS PACKAGE - CONTINUOUS DAMPING CONTROL
Z60	CHASSIS PACKAGE - HIGH PERFORMANCE
Z71	CHASSIS PACKAGE - "OFF ROAD"
Z7X	CHASSIS PACKAGE - "OFF ROAD" 2 INCH LIFT
Z82	TRAILER PROVISIONS - SPECIAL EQUIPMENT, H.D.
Z85	CHASSIS PACKAGE - INCREASED CAPACITY
Z88	MARKET BRAND - GMC
ZL3	ADJUSTER DRIVER SEAT - 8WAY, PWR RECLINE, PWR FORE/AFT, PWR HEIGHT, PWR TILT
ZL3	CHARGER - INDUCTIVE PORTABLE WIRELESS DEVICE
ZL3	CONSOLE - FRT COMPT, FLOOR, CUSTOM
ZL3	DEFOGGER - RR WINDOW, ELECTRIC
ZL3	HEATER - SEAT, VENTED, FRT
ZL3	HVAC SYSTEM - AIR CONDITIONER FRT, AUTO TEMP CONT, AUX TEMP CONT
ZL3	LAMP - CARGO
ZL3	MIRROR O/S - LH & RH, RC, ELEC, HEAT, MAN FOLD, FLAT/DRVR, CNVXPASS
ZL3	MIRROR O/S - LH & RH, WIDE FIELD OF VIEW, MAN EXTEND, MAN FOLD, HEATED, REMOTE CONT, AUX CARGO LMP, AUX CLEAR LMP
ZL3	RECEPTACLE I/P - ELECTRICAL, 110 VOLT
ZL3	RECEPTACLE PUBX - ELECTRICAL, 110 VOLT

RPO	Description
ZL3	RECPT USB FLR CNSL R - DUAL, CHARGE
ZL3	SEAT - FRT BKT
ZL3	SPEAKER SYSTEM - PREMIUM AUDIO, BRANDED AMPLIFIER
ZL3	STEERING COLUMN - TILT, TELESCOPING
ZL3	STEERING COLUMN - TILT, TELESCOPING, POWER
ZL3	WINDOW TYPE - PRIVACY
ZL3	SALES PACKAGE - CONVENIENCE
ZL6	BRK APL CTRL FEATURE - INTEGRATED TRAILER BRAKE
ZL6	IMAGE ADJUSTMENT - HITCH VIEW
ZL6	INDICATOR - SMART TRAILER INTEGRATION
ZL6	SALES PACKAGE - TRAILER INTEGRATION
ZLQ	MIRROR O/S - LH & RH, RC, ELEC, HEAT, MAN FOLD, FLAT/DRVR, CNVXPASS
ZLQ	MIRROR O/S - LH & RH, WIDE FIELD OF VIEW, MAN EXTEND, MAN FOLD, HEATED, REMOTE CONT, AUX CARGO LMP, AUX CLEAR LMP
ZLQ	SALES PACKAGE - LS FLEET
ZM9	HEATER SEAT FRT - DRVR & PASS
ZM9	STEERING WHEEL HEAT - AUTOMATIC
ZM9	SALES PACKAGE - COMFORT & CONVENIENCE
ZRX	CHASSIS PACKAGE - HIGH PERFORMANCE LIFTED
ZW9	BODY EQUIPMENT - BASE BODY OR CHASSIS

Section 1

Body Systems

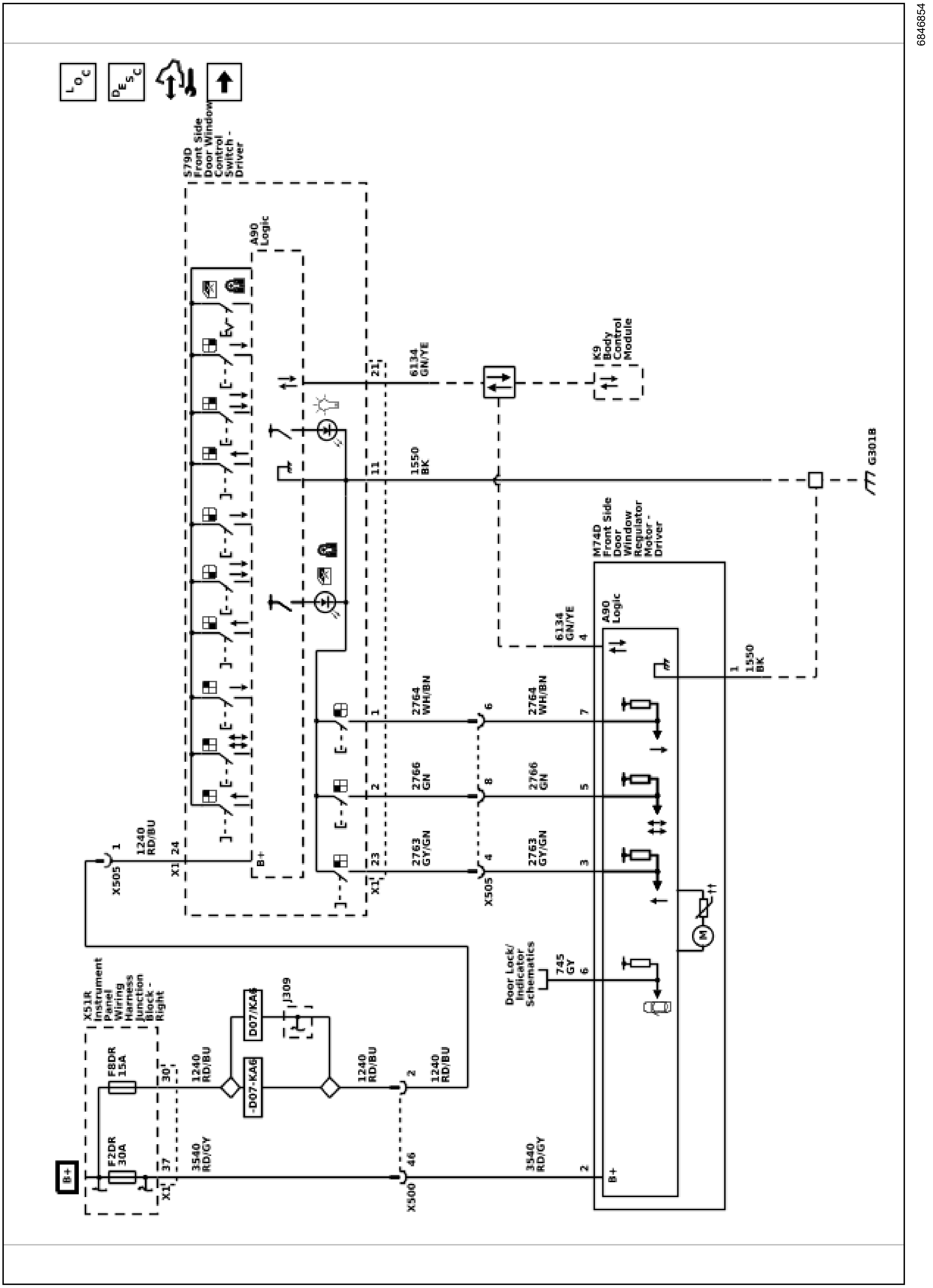
Fixed and Moveable Windows **1-2**
  Schematic and Routing Diagrams **1-2**
    Moveable Window Schematics 1-3
    Defogger Schematics 1-9
  Description and Operation **1-11**
    Power Windows Description and Operation 1-11
    Rear Window Defogger Description and Operation 1-11
Horns and Pedestrian Alerts **1-13**
  Schematic and Routing Diagrams **1-13**
    Horn Schematics 1-14
  Description and Operation **1-15**
    Horns System Description and Operation 1-15
Lighting **1-16**
  Schematic and Routing Diagrams **1-16**
    Headlights/Daytime Running Lights (DRL) Schematics 1-17
    Fog Lights Schematics 1-20
    Exterior Lights Schematics 1-21
    Interior Lights Schematics 1-32
    Interior Lights Dimming Schematics 1-34
Mirrors **1-38**
  Schematic and Routing Diagrams **1-38**
    Inside Rearview Mirror Schematics 1-39
    Outside Rearview Mirror Schematics 1-40
  Description and Operation **1-43**
    Automatic Day-Night Mirror Description and Operation 1-43
    Outside Mirror Description and Operation 1-44
Trailering Systems **1-47**
  Schematic and Routing Diagrams **1-47**
    Trailering Systems Schematics 1-48
  Description and Operation **1-53**
    Trailering Description and Operation 1-53
Vehicle Access **1-60**
  Schematic and Routing Diagrams **1-60**
    Door Lock/Indicator Schematics 1-61
    Release Systems Schematics 1-67
    Endgate Schematics 1-68
    Hood Latch Schematics 1-72
  Description and Operation **1-73**
    Door Ajar Indicator Description and Operation 1-73
    Endgate Description and Operation (QT6) 1-73
    Endgate Description and Operation (QT5 Without MultiPro Tailgate) 1-75
    Endgate Description and Operation (QT5 With MultiPro Tailgate) 1-75
    Hood Ajar Indicator Description and Operation 1-76
    Power Door Locks Description and Operation 1-76
Wipers and Washers **1-78**
  Schematic and Routing Diagrams **1-78**
    Wiper/Washer Schematics 1-79
  Description and Operation **1-81**
    Wiper/Washer System Description and Operation 1-81

Body Systems

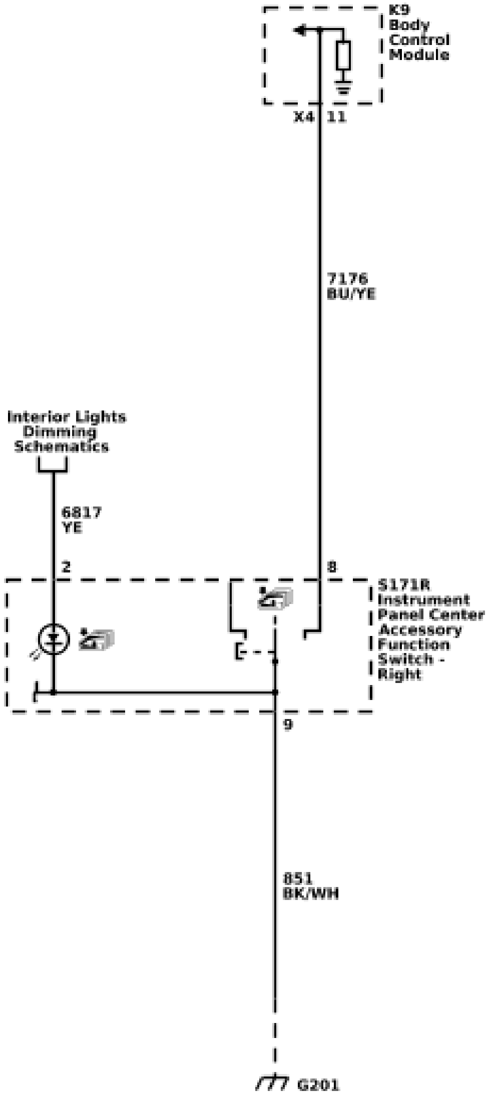
Fixed and Moveable Windows

Schematic and Routing Diagrams

Moveable Window Schematics (Driver Window (AXG))

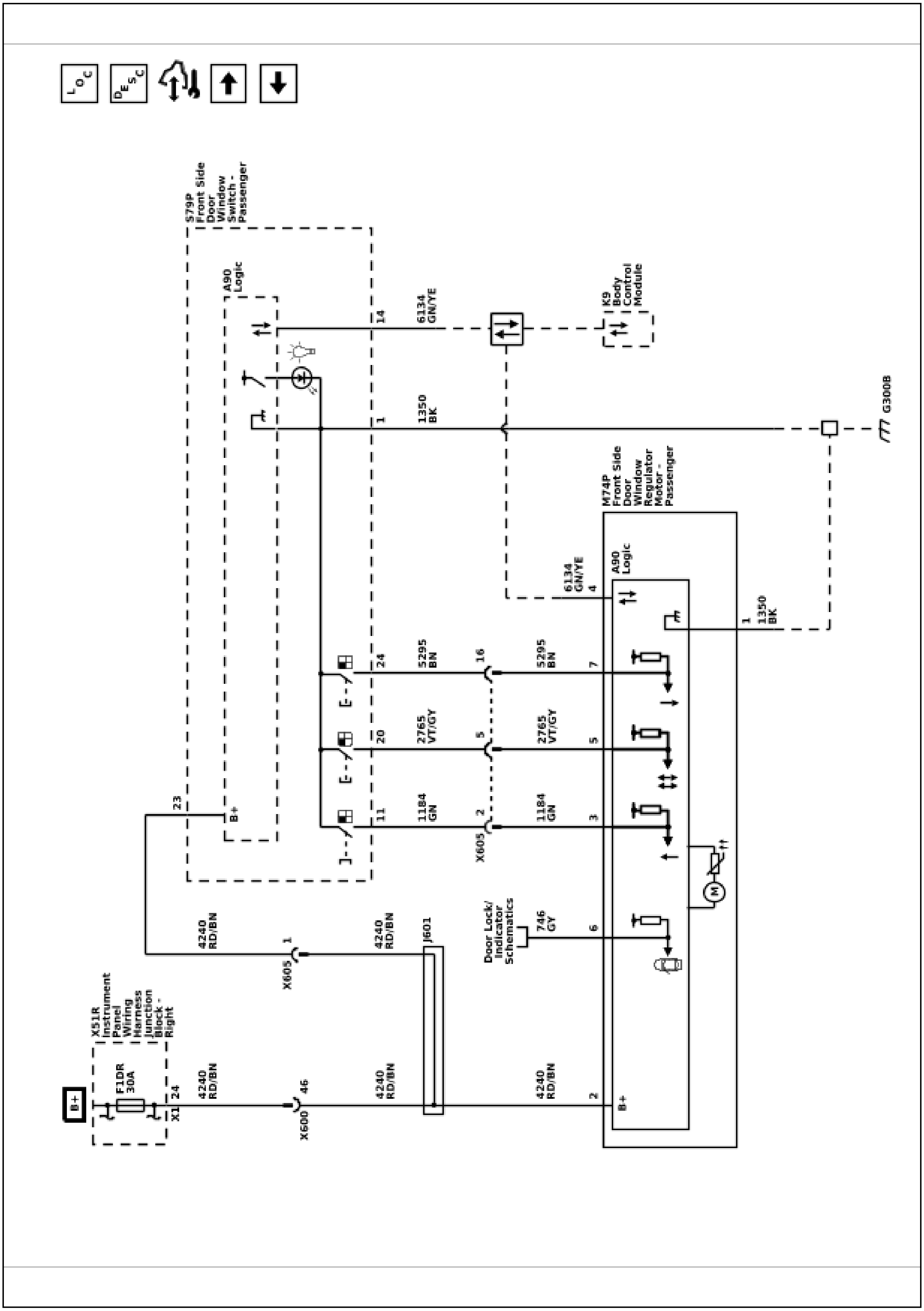

6846854
LOC
DESC
S79D Front Side Door Window Control Switch - Driver
A90 Logic
K9 Body Control Module
6134 GN/YE
21
1550 BK
11
G301B
M74D Front Side Door Window Regulator Motor - Driver
A90 Logic
6134 GN/YE
4
1550 BK
1
2764 WH/BN
1
6
7
2766 GN
2
8
5
2763 GY/GN
23
4
3
X1
X505
1240 RD/BU
24
B+
X505
1
Door Lock/ Indicator Schematics
745 GY
6
M
X51R Instrument Panel Wiring Harness Junction Block - Right
F8DR 15A
30
F2DR 30A
37
X1
B+
1240 RD/BU
D07/KA6
J309
-D07-KA6
1240 RD/BU
2
1240 RD/BU
3540 RD/GY
46
X500
3540 RD/GY
2
B+

Moveable Window Schematics (Global Window Express Down Switch (WLD))

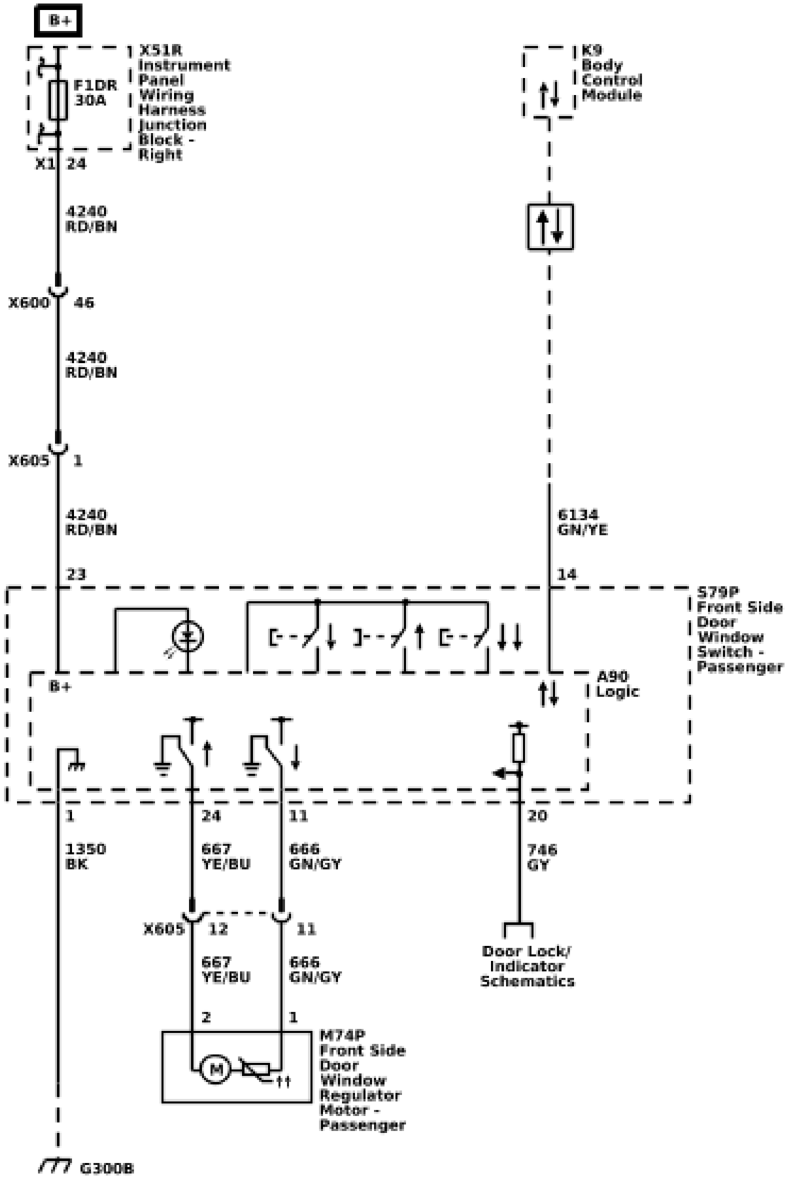

K9
Body
Control
Module
X4 11
7176
BU/YE
Interior Lights
Dimming
Schematics
6817
YE
2
8
S171R
Instrument
Panel Center
Accessory
Function
Switch -
Right
9
851
BK/WH
G201

6846855

Moveable Window Schematics (Passenger Window (AEF))

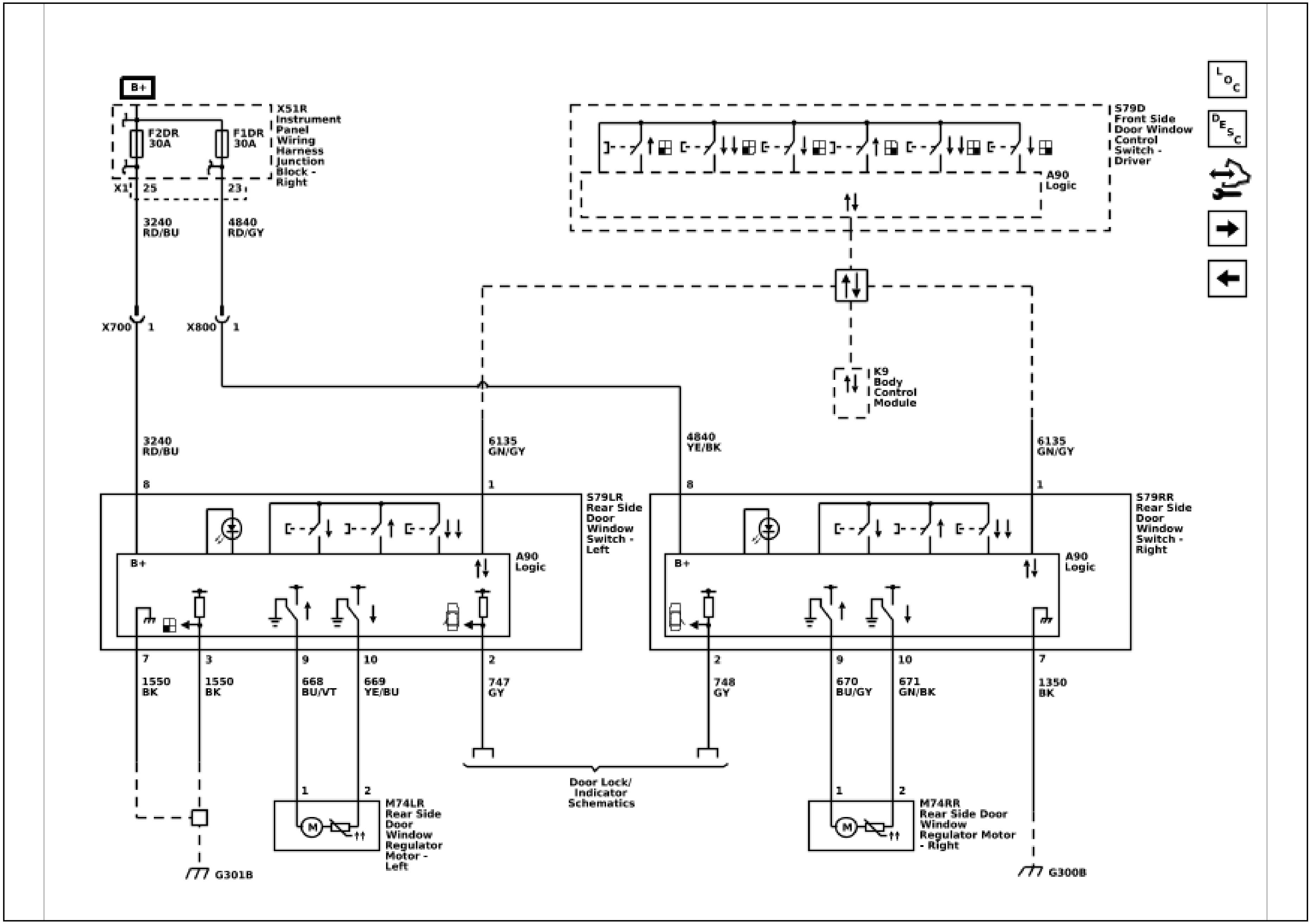

6846856
LOC
DESC
S79P Front Side Door Window Switch - Passenger
A90 Logic
14
6134 GN/YE
K9 Body Control Module
1
1350 BK
G300B
M74P Front Side Door Window Regulator Motor - Passenger
A90 Logic
6134 GN/YE
4
1
1350 BK
24
5295 BN
16
5295 BN
7
20
2765 VT/GY
5
2765 VT/GY
5
11
1184 GN
2
1184 GN
3
X605
23
B+
4240 RD/BN
1
X605
4240 RD/BN
J601
Door Lock/ Indicator Schematics
746 GY
6
M
X51R Instrument Panel Wiring Harness Junction Block - Right
B+
F1DR 30A
X1 24
4240 RD/BN
46
X600
4240 RD/BN
4240 RD/BN
2
B+

Moveable Window Schematics (Passenger Window (AED))


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F1DR 30A
X1 24
4240 RD/BN
X600 46
4240 RD/BN
X605 1
4240 RD/BN
23
K9 Body Control Module
6134 GN/YE
14
S79P Front Side Door Window Switch - Passenger
A90 Logic
B+
1
1350 BK
24
667 YE/BU
11
666 GN/GY
20
746 GY
X605 12
11
667 YE/BU
666 GN/GY
2
1
M74P Front Side Door Window Regulator Motor - Passenger
M
Door Lock/ Indicator Schematics
G300B

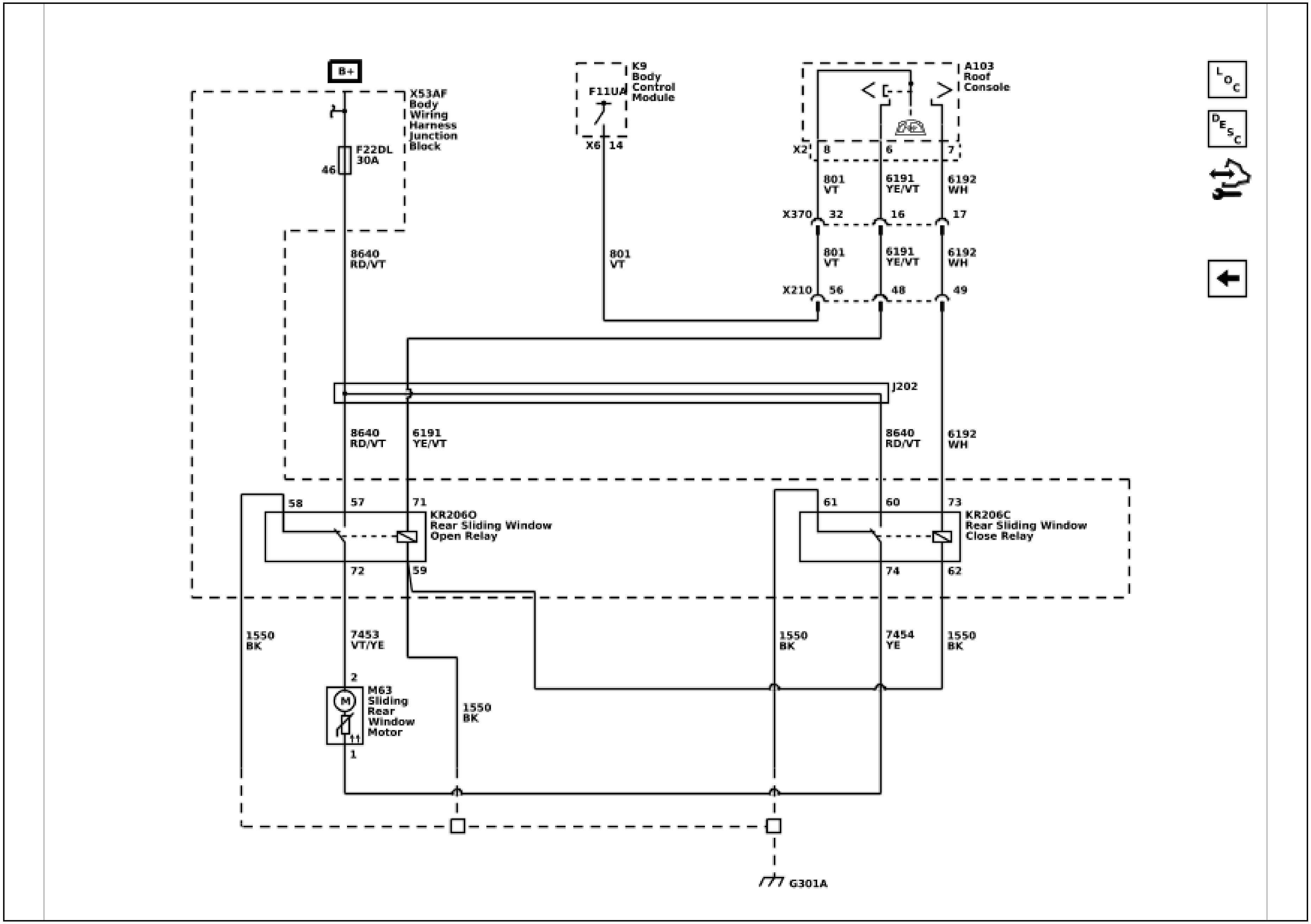
6846857

Moveable Window Schematics (Rear Windows (AEQ))


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F2DR 30A
F1DR 30A
X1
25
23
3240 RD/BU
4840 RD/GY
X700 1
X800 1
S79D Front Side Door Window Control Switch - Driver
A90 Logic
K9 Body Control Module
3240 RD/BU
6135 GN/GY
4840 YE/BK
6135 GN/GY
8
1
8
1
S79LR Rear Side Door Window Switch - Left
S79RR Rear Side Door Window Switch - Right
A90 Logic
A90 Logic
B+
B+
7
3
9
10
2
2
9
10
7
1550 BK
1550 BK
668 BU/VT
669 YE/BU
747 GY
748 GY
670 BU/GY
671 GN/BK
1350 BK
1
2
1
2
M74LR Rear Side Door Window Regulator Motor - Left
M74RR Rear Side Door Window Regulator Motor - Right
M
M
Door Lock/ Indicator Schematics
G301B
G300B
LOC
DESC

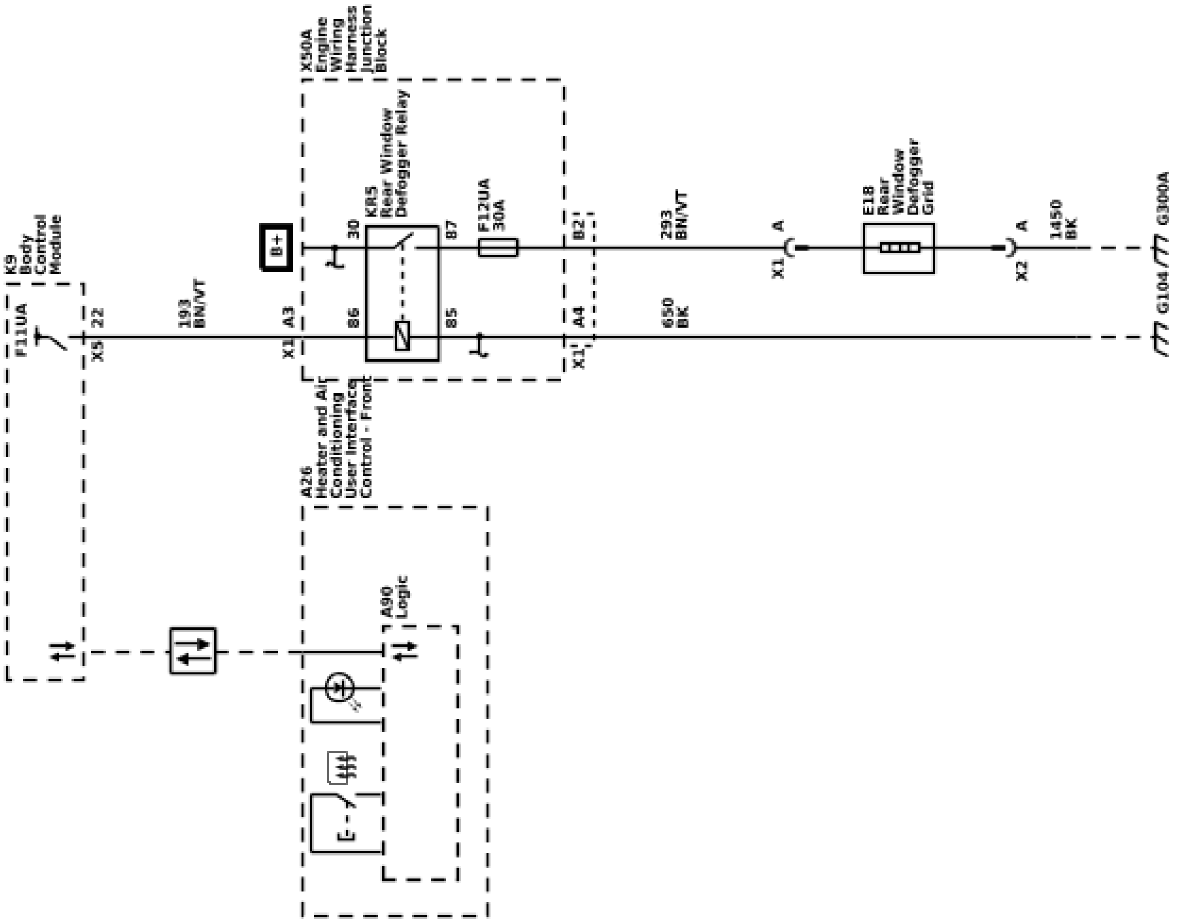
6846858

Moveable Window Schematics (Rear Sliding Window (A48))

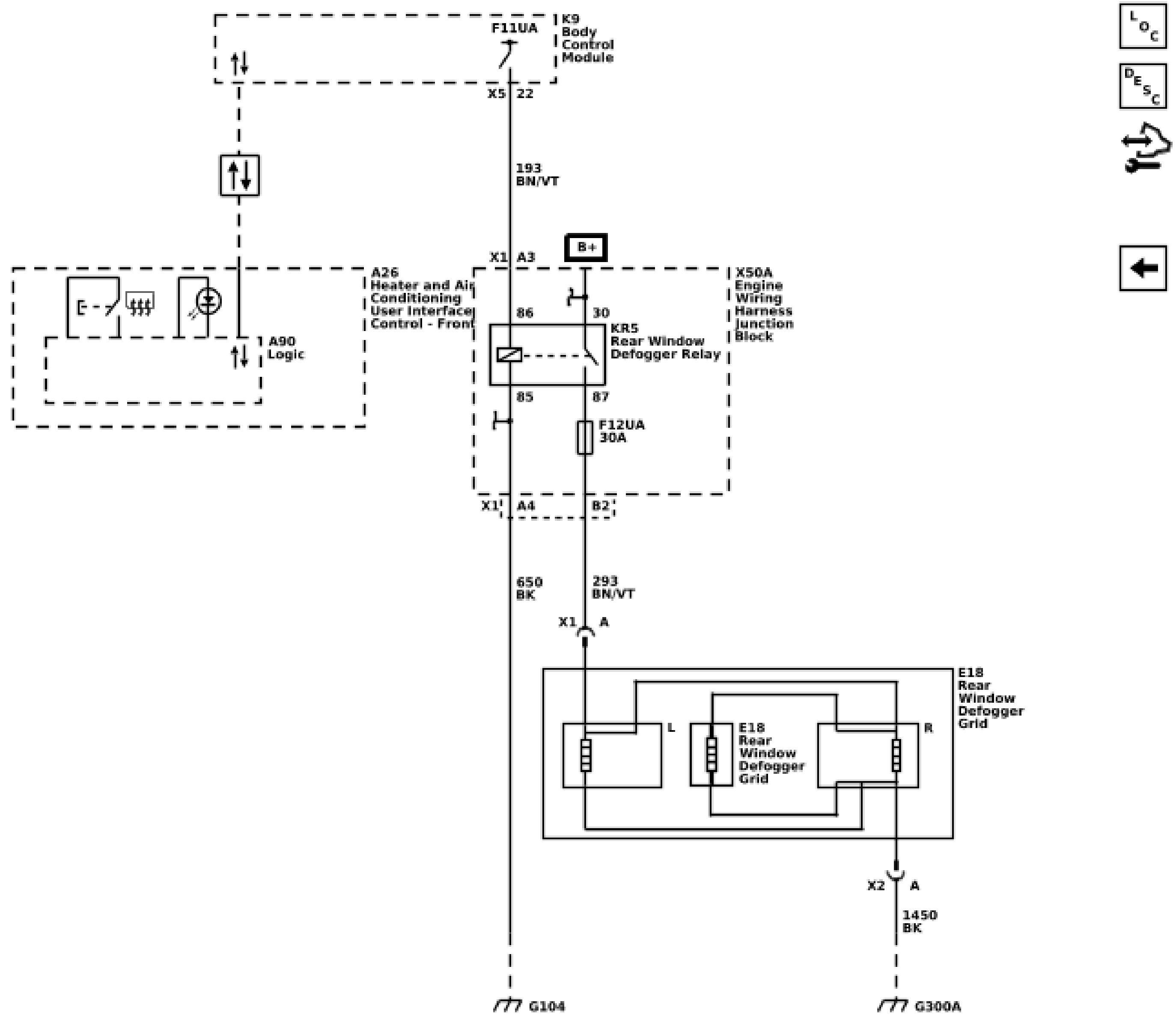

B+
X53AF
Body
Wiring
Harness
Junction
Block
F22DL
30A
46
8640
RD/VT
K9
Body
Control
Module
F11UA
X6 14
801
VT
A103
Roof
Console
X2 8 6 7
801
VT
6191
YE/VT
6192
WH
X370 32 16 17
X210 56 48 49
J202
6191
YE/VT
58 57 71
KR206O
Rear Sliding Window
Open Relay
72 59
61 60 73
KR206C
Rear Sliding Window
Close Relay
74 62
1550
BK
7453
VT/YE
7454
YE
2
M63
Sliding
Rear
Window
Motor
1
G301A
6846859

6846860

Defogger Schematics (Defogger (- A48))


K9 Body Control Module
F11UA
X5 22
193 BN/VT
X1 A3
B+
X50A Engine Wiring Harness Junction Block
30
KR5 Rear Window Defogger Relay
86
85
87
F12UA 30A
B2
A4
X1
293 BN/VT
650 BK
X1 A
E18 Rear Window Defogger Grid
X2 A
1450 BK
G300A
G104
A26 Heater and Air Conditioning User Interface Control - Front
A90 Logic

Defogger Schematics (Defogger (A48))


K9
Body
Control
Module
F11UA
X5 22
193
BN/VT
B+
X1 A3
X50A
Engine
Wiring
Harness
Junction
Block
86
30
KR5
Rear Window
Defogger Relay
85
87
F12UA
30A
X1 A4
B2
650
BK
293
BN/VT
X1 A
A26
Heater and Air
Conditioning
User Interface
Control - Front
A90
Logic
E18
Rear
Window
Defogger
Grid
L
R
E18
Rear
Window
Defogger
Grid
X2 A
1450
BK
G104
G300A
L O C
D E S C

6851729

Description and Operation

Power Windows Description and Operation

Power Windows System Components

The power window system consists of the following components:

- Driver front side door window control switch
- Passenger front side door window control switch
- Left rear side door window switch
- Right rear side door window switch
- Window motors in each of the doors
- Body control module (BCM)

Driver and Passenger Express Up and Express Down Power Window Motors

The driver and passenger doors contain a smart window motor that will detect excessive resistance while performing the express up function and automatically reverse direction to prevent injury to any occupants that may become trapped between the closing window and the door frame. The automatic reverse safety feature can be overridden by pulling and holding the window switch.

The logic circuits within the window motor monitor the up, down and express signal circuits which are normally equal to B+ voltage. When a switch is used on the front side door window control switch, the contacts close causing a voltage drop within the appropriate signal circuit. The window motor will detect the voltage drop and will command the window to move in the direction requested.

The driver front side door window control switch communicates to the BCM by a serial data circuit. When the driver wishes to control the passenger window, the driver will use the appropriate switch on the driver front side door window control switch. When this switch is used, a serial data message is sent to the BCM requesting the passenger window motor command, the BCM will then send a serial data message to the passenger window motor which will then move in the direction requested.

Left Rear, Right Rear Express Down Window Motors

For the left rear and right rear doors, when their window switch is pressed in the down position, battery positive voltage is applied to their respective window motor control circuit and ground to the other window motor control circuit causing that window to open. When the individual window switch is pulled in the up position, voltage and ground is applied to the window motor in the opposite direction causing that window to close. The return path to ground is supplied through the inactive control circuit being normally grounded through the window switch.

Each rear side door window switch communicates to the BCM by a serial data circuit. When the driver wishes to control the left rear or right rear window, the driver will use the appropriate switch on the driver front side door window control switch. When this switch is used, a serial data message is sent to the BCM requesting a window motor command, the BCM will then send a serial data message to the appropriate rear side door window switch which will then command that window to move in the direction requested.

Lockout Switch Feature

The driver front side door window control switch contains a window lockout switch, when the driver presses the window lockout switch, a serial data message is sent to the BCM which will send a disable command to the rear side door window switches, deactivating them. The rear windows will still function normally from the switches on the driver front side door window control switch.

Rear Window Defogger Description and Operation

Rear Window Defogger System Components

The rear window defogger system consists of the following components:

- Body Control Module
- Front Heater and Air Conditioning User Interface Control
- Rear Body Wiring Harness Junction Block (Contains PCB Rear Defogger Relay
- Rear Defogger Grid
- 40A Fuse

Rear Window Defogger Operation

The rear defog control system utilizes a single zone backlight design, driven with a single relay configuration. A switch for the customer to control the system is provided within the front heater and air conditioning user interface control. Also included in the front heater and air conditioning user interface control is an indicator to inform the customer with the current state of the system. The system is only operational when engine is running or during remote start.

Pressing the heated rear window switch causes the front heater and air conditioning user interface control to send a serial data message to the body control module requesting rear window defog operation. The body control module upon receipt of the serial data message will provide voltage to the coil side of the rear defogger relay, this will energize the relay causing the relay switch contacts to close allowing B+ voltage to flow through the rear defogger grid control circuit to the rear defogger grid.

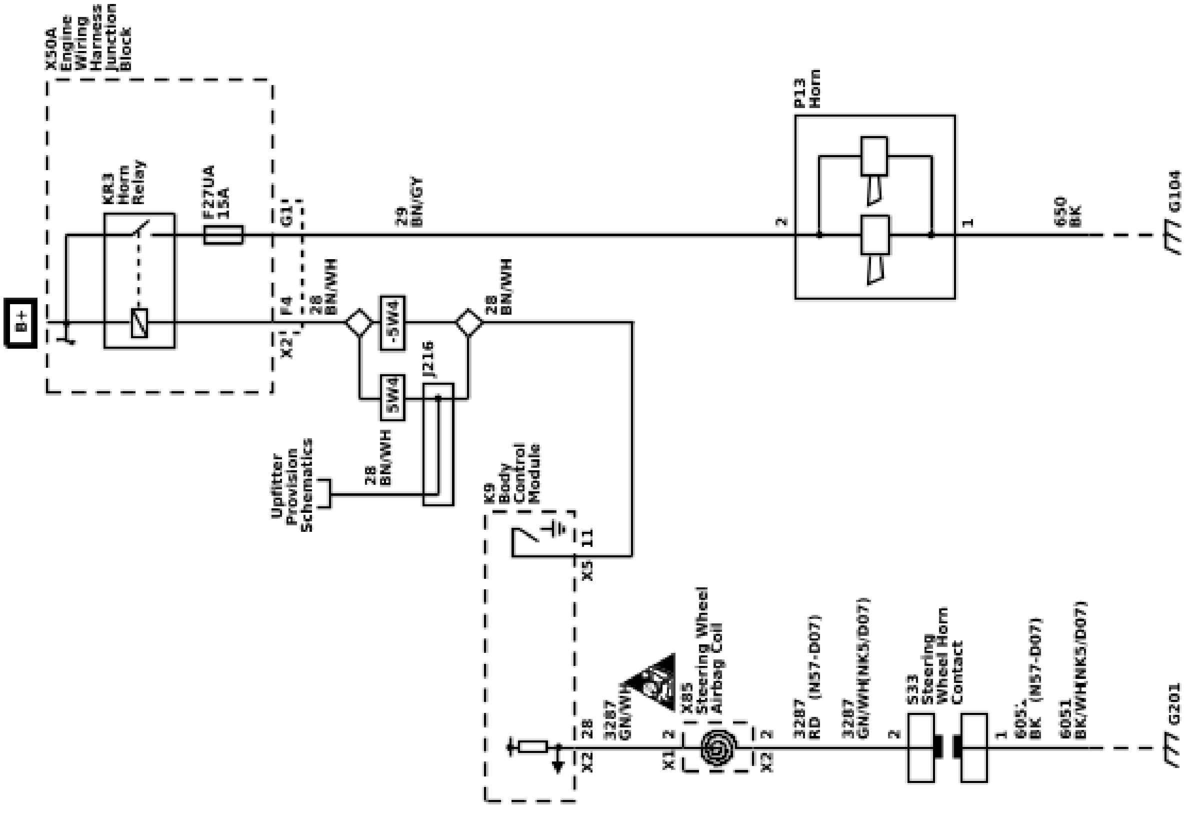
When the rear heated rear window switch is pressed and the engine is running, the rear window defogger grid will activate and will turn off automatically depending upon the vehicle speed (refer to owner’s manual for rear window defogger operation cycles)

Horns and Pedestrian Alerts

Schematic and Routing Diagrams

Horn Schematics (Horn)

6846861



X50A Engine Wiring Harness Junction Block
B+
KR3 Horn Relay
F27UA 15A
G1
X2
F4
28 BN/WH
29 BN/GY
-5W4
5W4
J216
28 BN/WH
Upfitter Provision Schematics
28 BN/WH
K9 Body Control Module
X5 11
X2 28
3287 GN/WH
X85 Steering Wheel Airbag Coil
X1 2
X2 2
3287 RD (N57-D07)
3287 GN/WH(NK5/D07)
S33 Steering Wheel Horn Contact
2
1
6051 BK (N57-D07)
6051 BK/WH(NK5/D07)
G201
P13 Horn
2
1
650 BK
G104

Description and Operation

Horns System Description and Operation

System Description

The horn system consists of the following components:

- HORN fuse
- Engine wiring harness junction block (contains horn PCB relay)
- Steering wheel horn contact
- Steering wheel airbag coil
- Horn
- Body control module (BCM)

System Operation

The vehicle horn system is activated under the following conditions:

- When the horn switch is depressed
- The BCM commands the horns ON under any of the following conditions:
  - When the content theft deterrent system detects a vehicle intrusion.
  - When the panic button is depressed on the remote control door lock transmitter—For further information refer to *Keyless Entry System Description and Operation 10-53*.
  - When the keyless entry system is used to lock the vehicle, a horn chirp may sound to notify the driver that the vehicle has been locked. The notification feature may be enabled or disabled through personalization. For further information refer to *Keyless Entry System Description and Operation 10-53*.
  - When the OnStar® system is used to sound the horns if equipped—For further information, refer to *OnStar Description and Operation 5-21*.

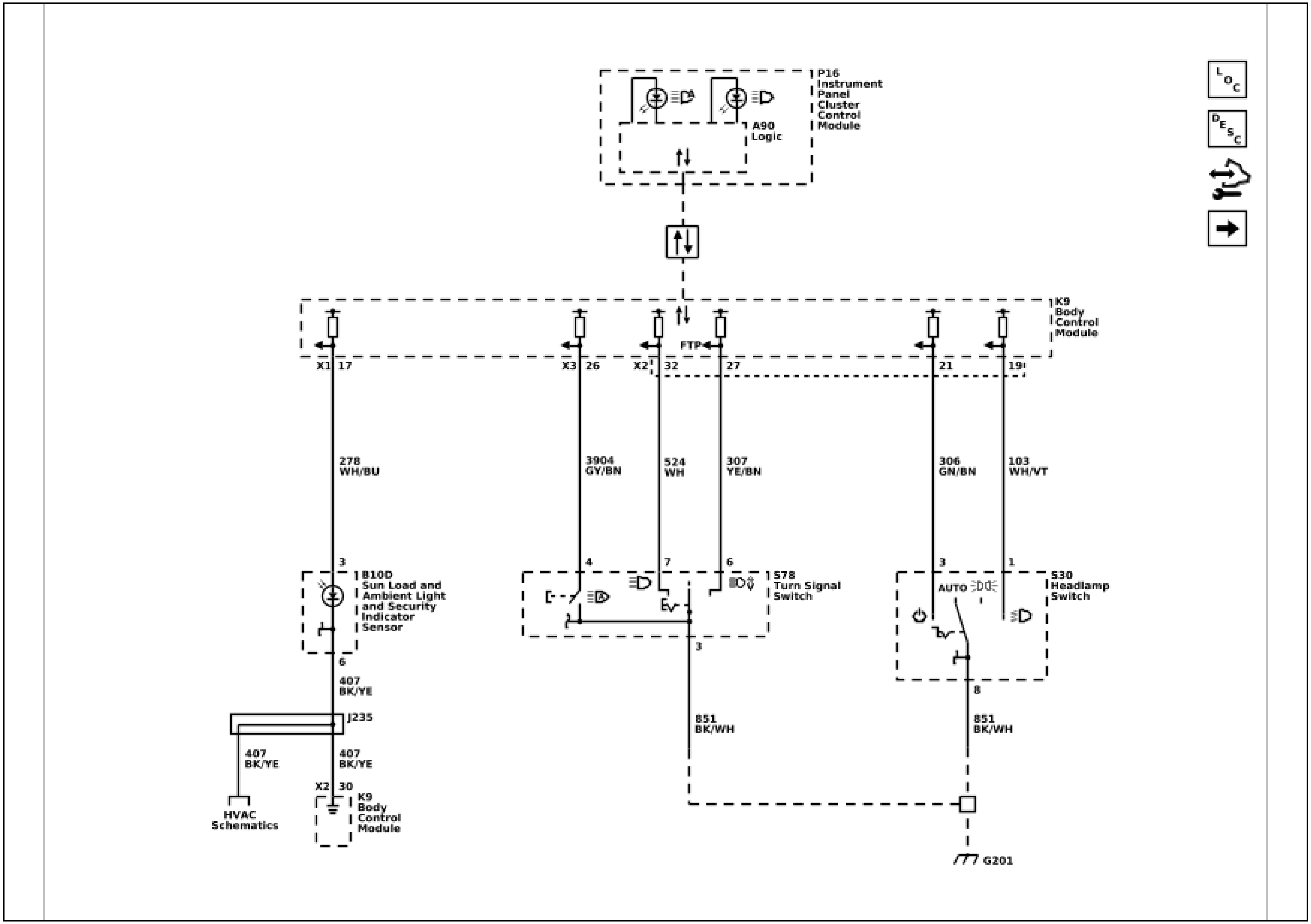
Circuit Operation

Battery positive voltage is applied at all times to the horn relay coil and the horn relay switch. Pressing either of the horn switches applies ground to the horn relay control circuit. The BCM may also apply ground to the horn relay control circuit as described above. When the horn relay control circuit is grounded, the horn relay is energized and battery positive voltage is applied to the horns through the horn control circuit. The horns sound as long as ground is applied to the horn relay control circuit.

Lighting

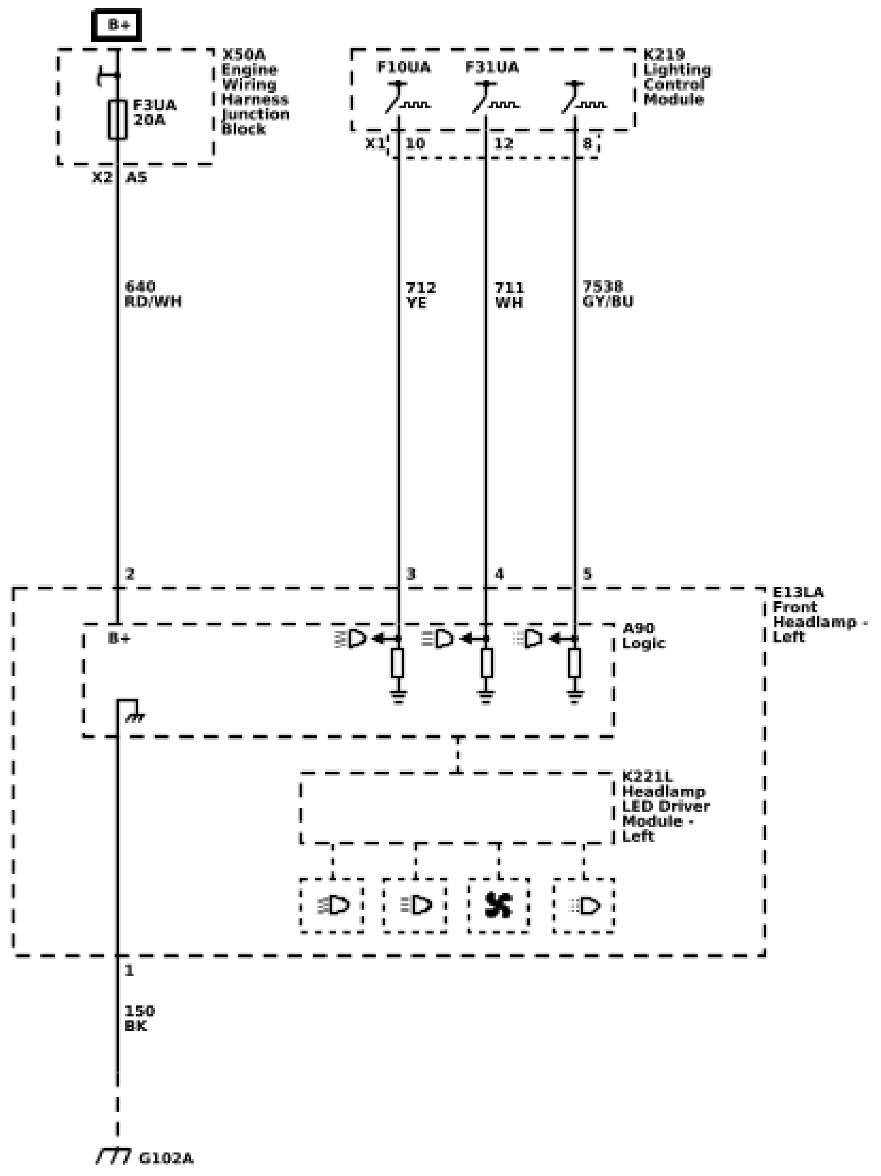
Schematic and Routing Diagrams

Headlights/Daytime Running Lights (DRL) Schematics (Controls and Indicators)


P16 Instrument Panel Cluster Control Module
A90 Logic
K9 Body Control Module
FTP
X1 17
X3 26
X2 32
27
21
19
278 WH/BU
3904 GY/BN
524 WH
307 YE/BN
306 GN/BN
103 WH/VT
3
B10D Sun Load and Ambient Light and Security Indicator Sensor
6
407 BK/YE
J235
407 BK/YE
407 BK/YE
HVAC Schematics
X2 30
K9 Body Control Module
4
7
6
S78 Turn Signal Switch
3
851 BK/WH
3
1
AUTO
S30 Headlamp Switch
8
851 BK/WH
G201

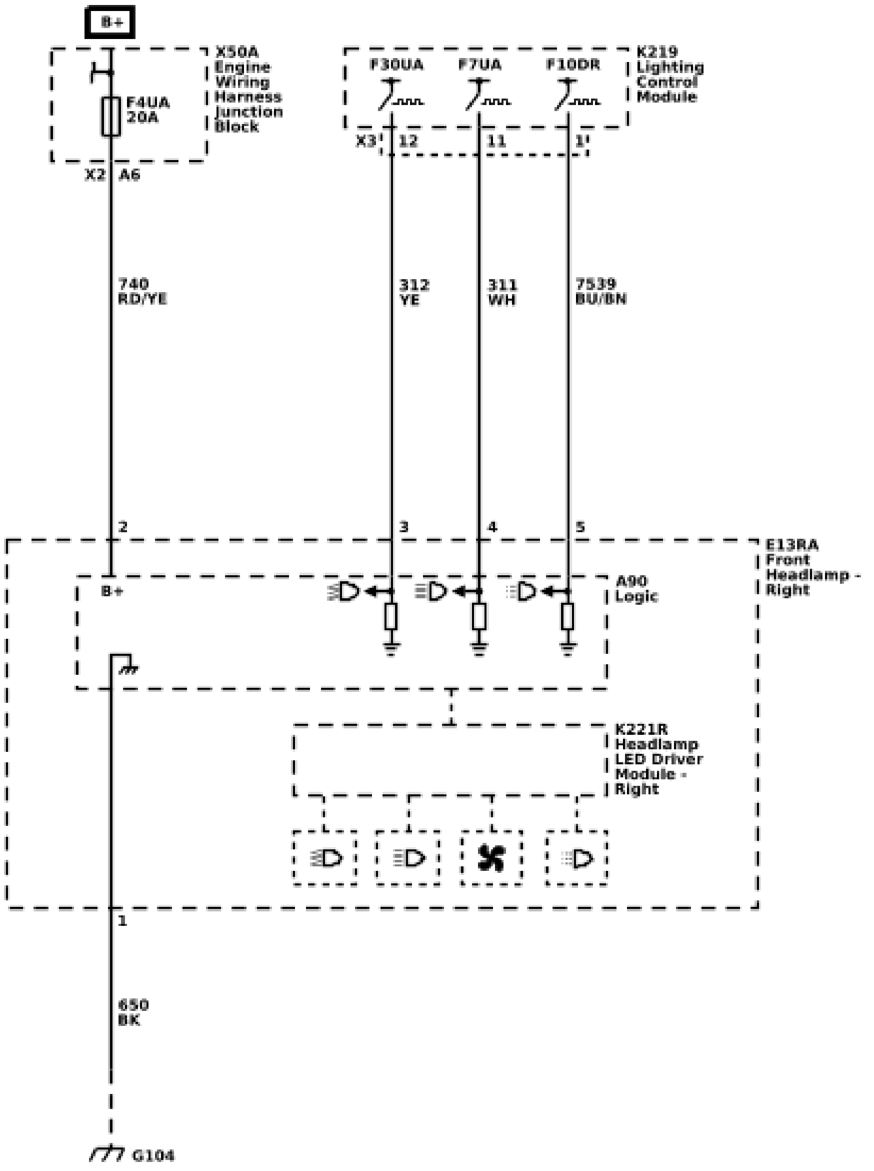
6846862

Headlights/Daytime Running Lights (DRL) Schematics (Headlamps and Daytime Running Lamps - Left)


B+
X50A Engine Wiring Harness Junction Block
F3UA 20A
X2 A5
640 RD/WH
F10UA
F31UA
K219 Lighting Control Module
X1 10
12
8
712 YE
711 WH
7538 GY/BU
2
3
4
5
E13LA Front Headlamp - Left
B+
A90 Logic
K221L Headlamp LED Driver Module - Left
1
150 BK
G102A

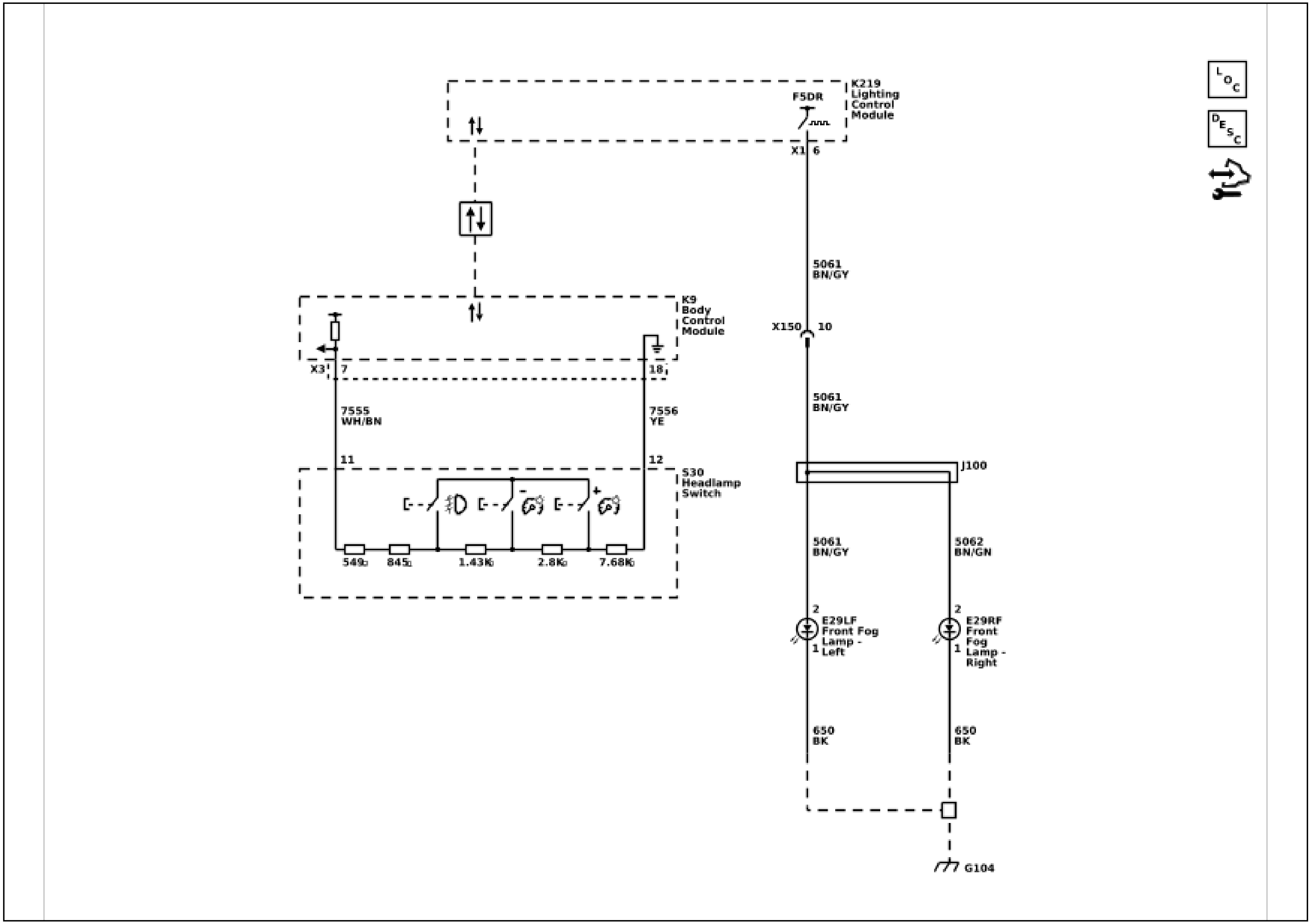
6846863

Headlights/Daytime Running Lights (DRL) Schematics (Headlamps and Daytime Running Lamps - Right)

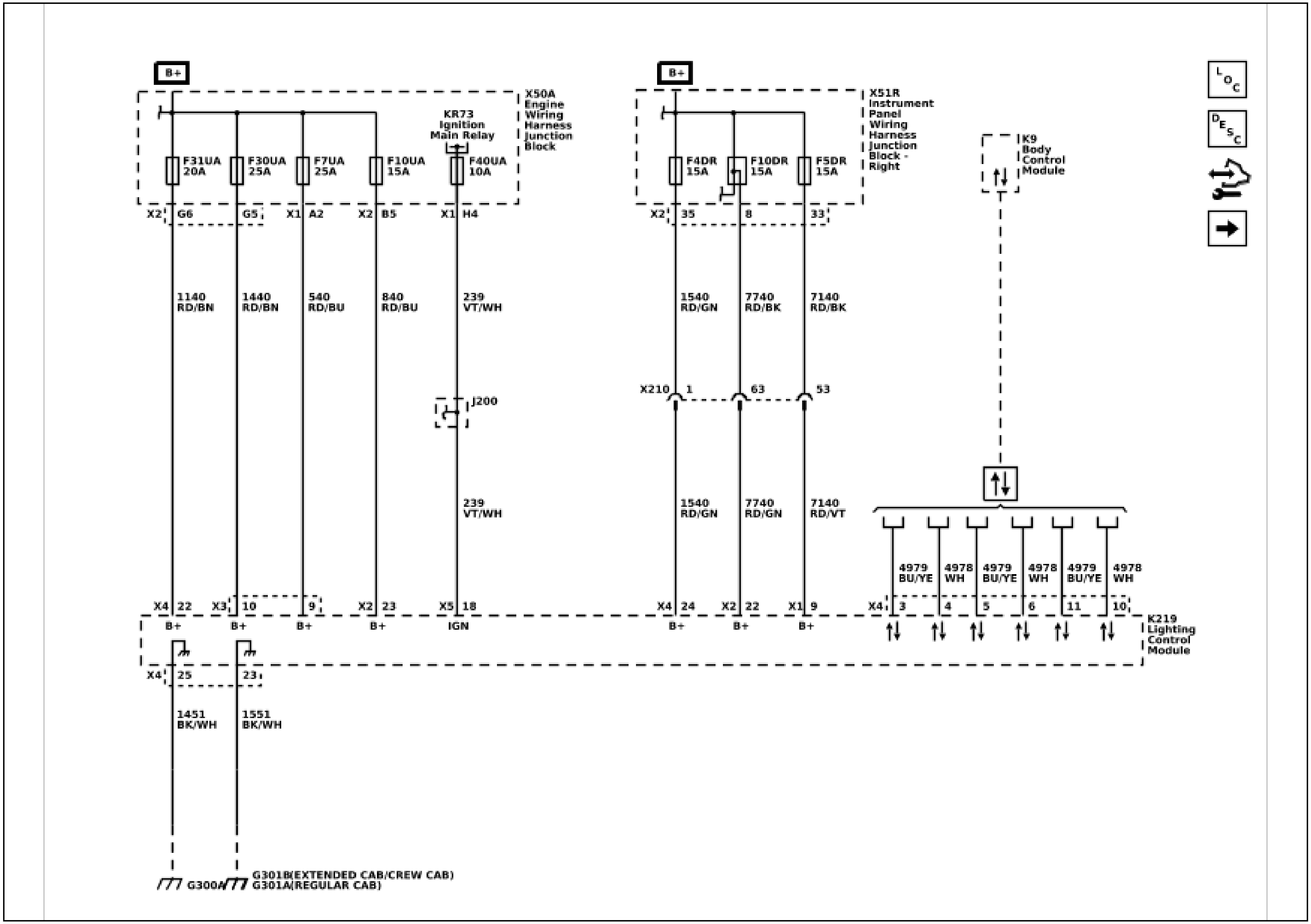

B+
X50A Engine Wiring Harness Junction Block
F4UA 20A
X2 A6
740 RD/YE
F30UA
F7UA
F10DR
K219 Lighting Control Module
X3 12
11
1
312 YE
311 WH
7539 BU/BN
2
3
4
5
E13RA Front Headlamp - Right
B+
A90 Logic
K221R Headlamp LED Driver Module - Right
1
650 BK
G104

6846864

Fog Lights Schematics (Fog Lamps (T3U))

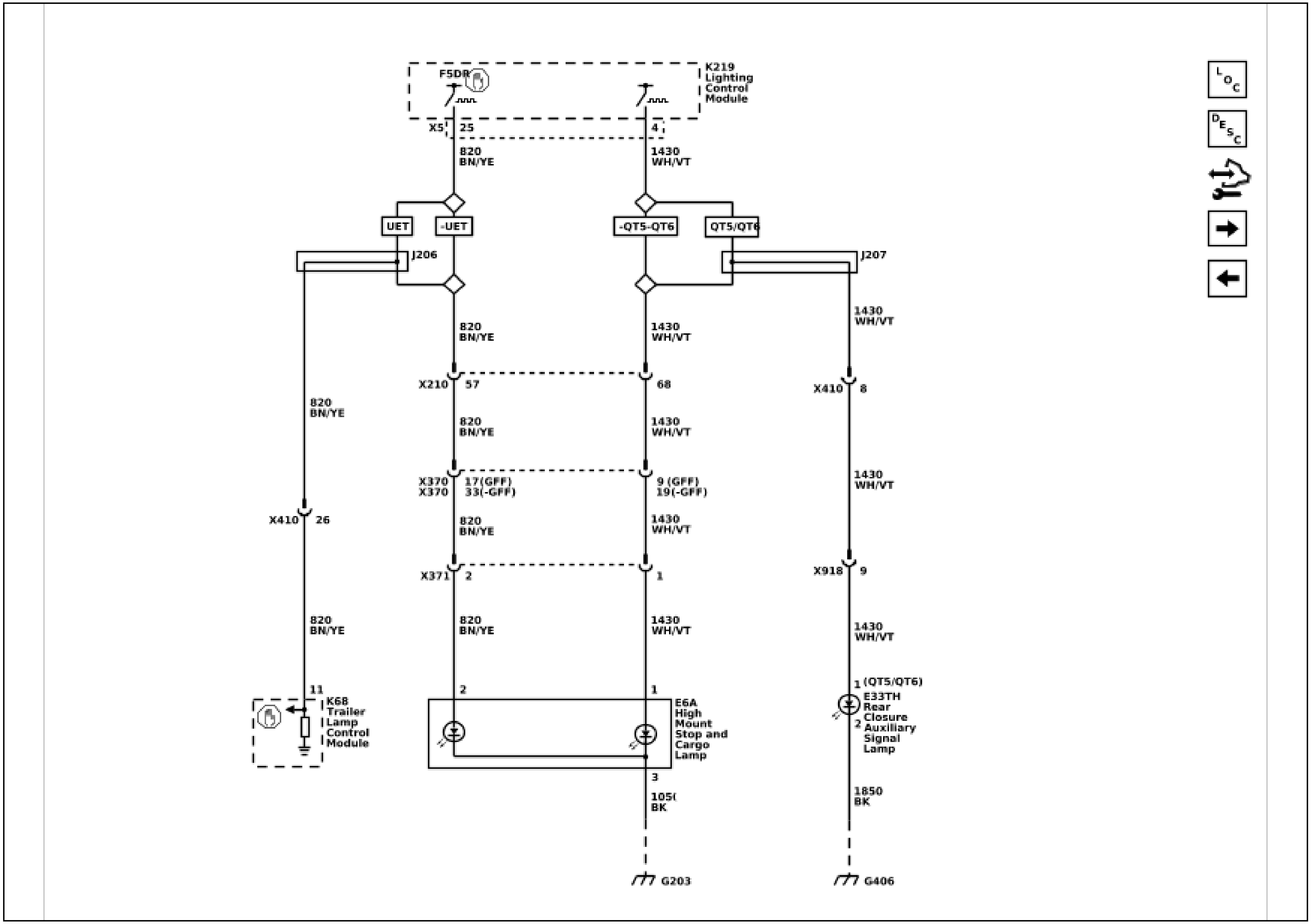

LOC
DESC
K219 Lighting Control Module
F5DR
X1 6
5061 BN/GY
X150 10
5061 BN/GY
J100
5061 BN/GY
5062 BN/GN
2
E29LF Front Fog Lamp - Left
1
2
E29RF Front Fog Lamp - Right
1
650 BK
650 BK
G104
K9 Body Control Module
X3 7
18
7555 WH/BN
7556 YE
11
12
S30 Headlamp Switch
-
+
549Ω
845Ω
1.43KΩ
2.8KΩ
7.68KΩ
6846865

Exterior Lights Schematics (Lighting Control Module Power, Ground, and Serial Data)

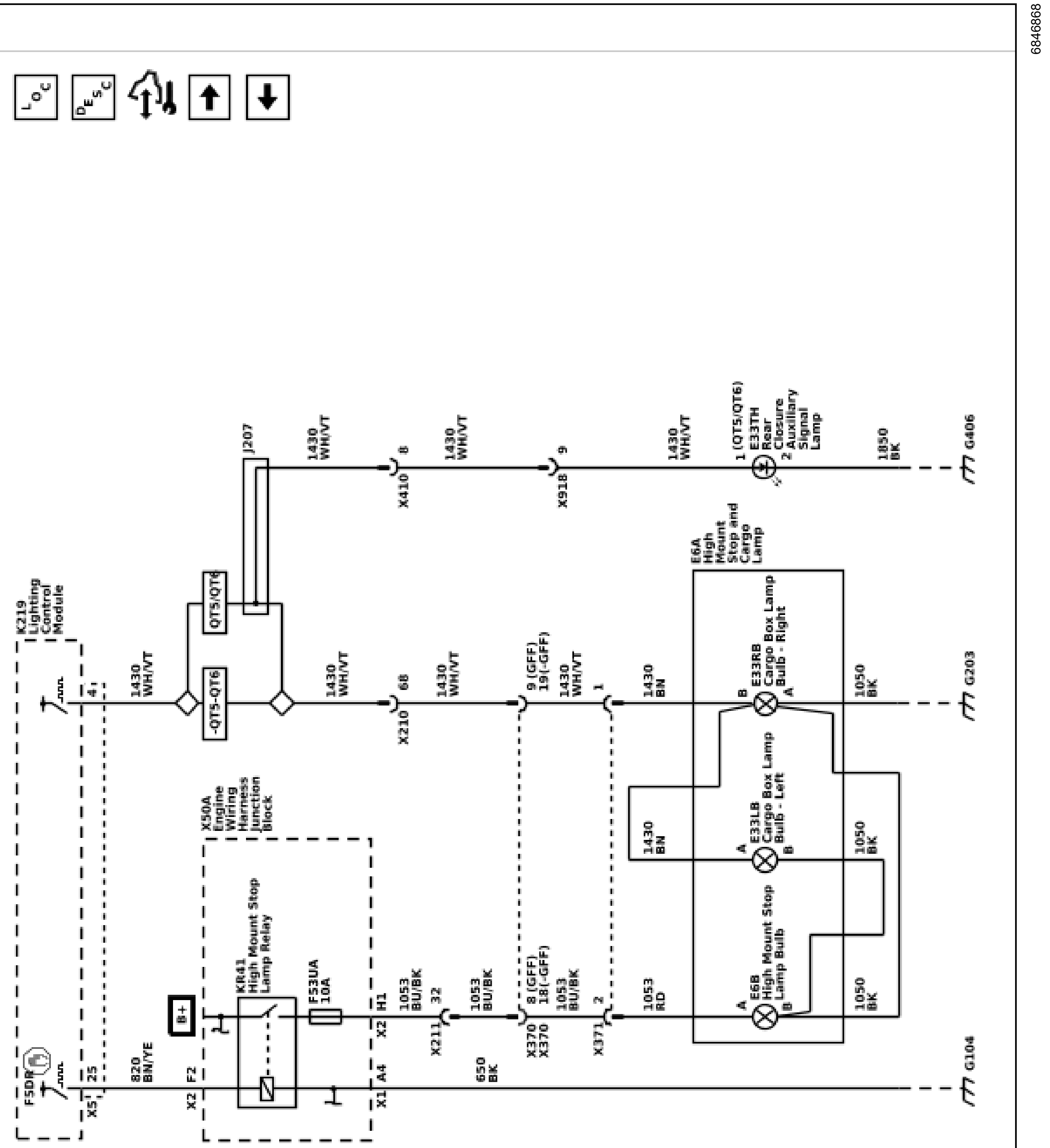

B+
X50A
Engine
Wiring
Harness
Junction
Block
KR73
Ignition
Main Relay
F31UA
20A
F30UA
25A
F7UA
25A
F10UA
15A
F40UA
10A
X2 G6
G5
X1 A2
X2 B5
X1 H4
1140
RD/BN
1440
RD/BN
540
RD/BU
840
RD/BU
239
VT/WH
J200
B+
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
F4DR
15A
F10DR
15A
F5DR
15A
X2 35
8
33
1540
RD/GN
7740
RD/BK
7140
RD/BK
X210 1
63
53
1540
RD/GN
7740
RD/GN
7140
RD/VT
K9
Body
Control
Module
4979
BU/YE
4978
WH
4979
BU/YE
4978
WH
4979
BU/YE
4978
WH
X4 22
X3 10
9
X2 23
X5 18
X4 24
X2 22
X1 9
X4 3
4
5
6
11
10
B+
B+
B+
B+
IGN
B+
B+
B+
K219
Lighting
Control
Module
X4 25
23
1451
BK/WH
1551
BK/WH
G300A
G301B(EXTENDED CAB/CREW CAB)
G301A(REGULAR CAB)

6846866

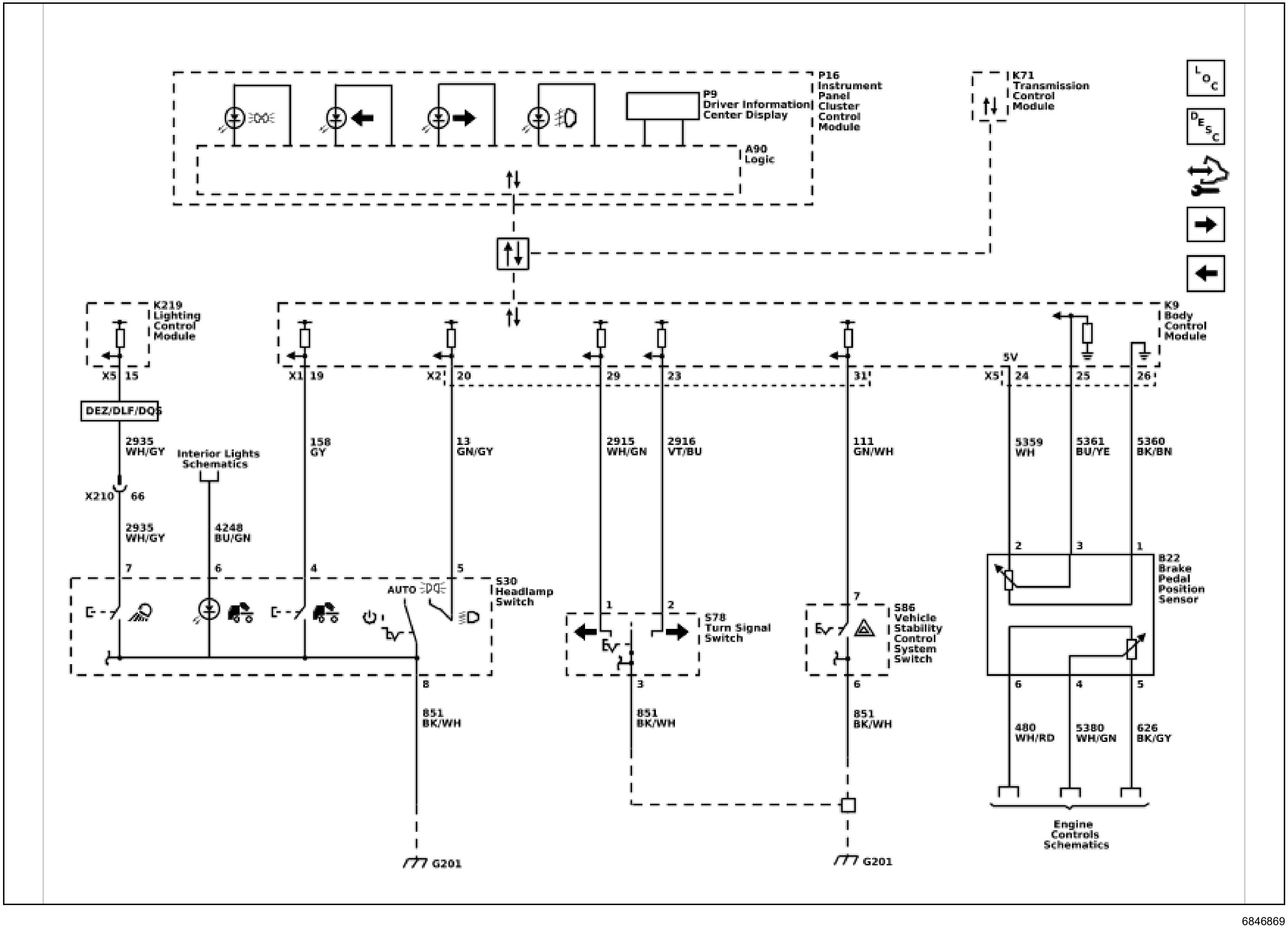
Exterior Lights Schematics (Center High Mount Stop and Exterior Courtesy Lights - Double Cab/Crew Cab)


F5DR
K219
Lighting
Control
Module
X5
25
4
820
BN/YE
1430
WH/VT
UET
-UET
-QT5-QT6
QT5/QT6
J206
J207
820
BN/YE
1430
WH/VT
1430
WH/VT
X210
57
68
X410
8
820
BN/YE
820
BN/YE
1430
WH/VT
1430
WH/VT
X370
X370
17(GFF)
33(-GFF)
9 (GFF)
19(-GFF)
X410
26
820
BN/YE
1430
WH/VT
X371
2
1
X918
9
820
BN/YE
820
BN/YE
1430
WH/VT
1430
WH/VT
11
K68
Trailer
Lamp
Control
Module
2
1
E6A
High
Mount
Stop and
Cargo
Lamp
1 (QT5/QT6)
E33TH
Rear
Closure
2 Auxiliary
Signal
Lamp
3
105(
BK
1850
BK
G203
G406
6846867

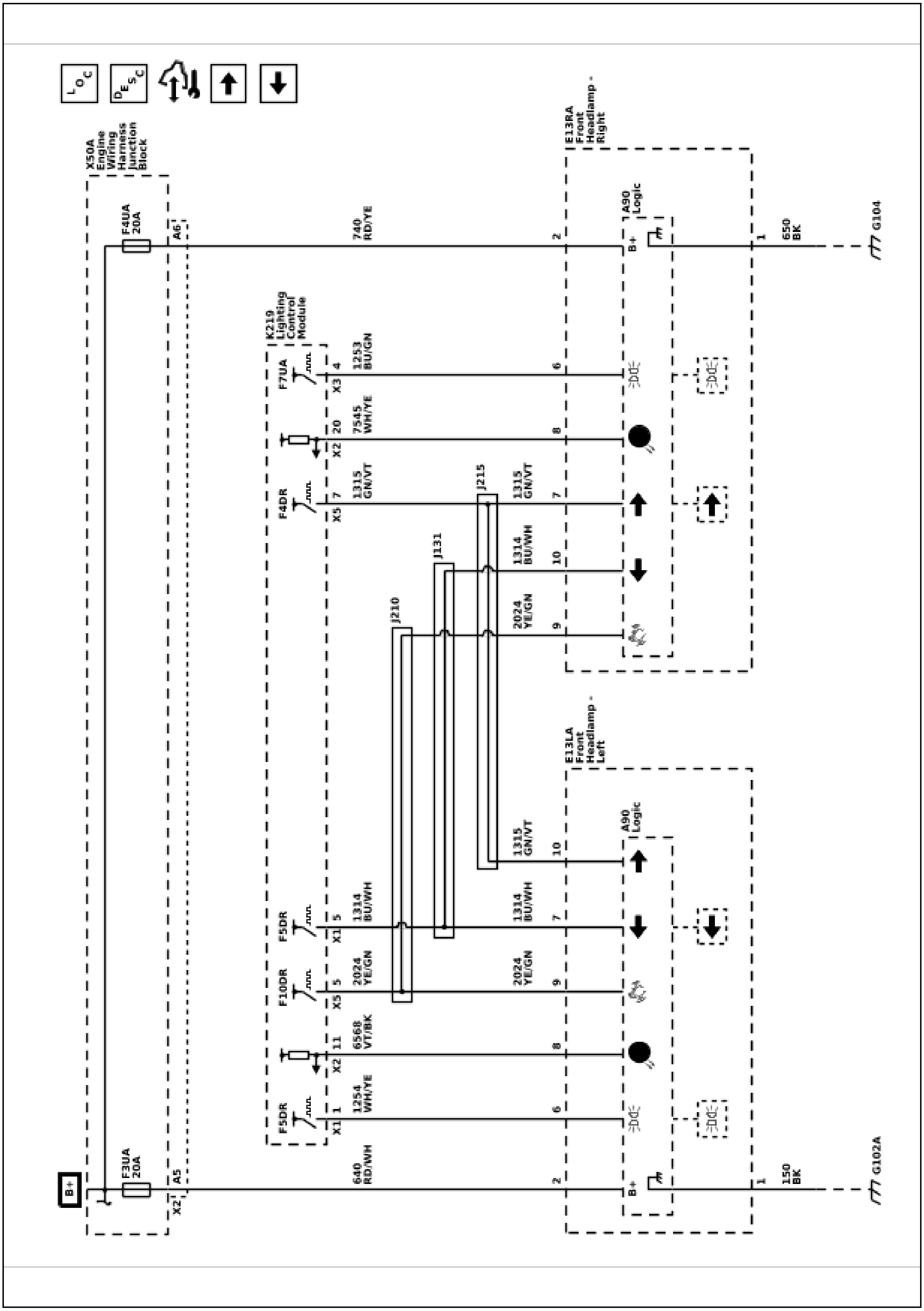
Exterior Lights Schematics (Center High Mount Stop and Exterior Courtesy Lights - Regular Cab)


6846868
K219 Lighting Control Module
F5DR
X5 25
X5 4
820 BN/YE
1430 WH/VT
-QT5-QT6
QT5/QT6
J207
X210 68
X410 8
X918 9
1 (QT5/QT6) E33TH Rear Closure Auxiliary Signal Lamp 2
1850 BK
G406
X50A Engine Wiring Harness Junction Block
KR41 High Mount Stop Lamp Relay
B+
F53UA 10A
X2 F2
X1 A4
X2 H1
1053 BU/BK
X211 32
X370 8 (GFF) 18(-GFF)
X370 9 (GFF) 19(-GFF)
X371 2
X371 1
1053 RD
1430 BN
650 BK
G104
E6A High Mount Stop and Cargo Lamp
E6B High Mount Stop Lamp Bulb
E33LB Cargo Box Lamp Bulb - Left
E33RB Cargo Box Lamp Bulb - Right
A
B
1050 BK
G203

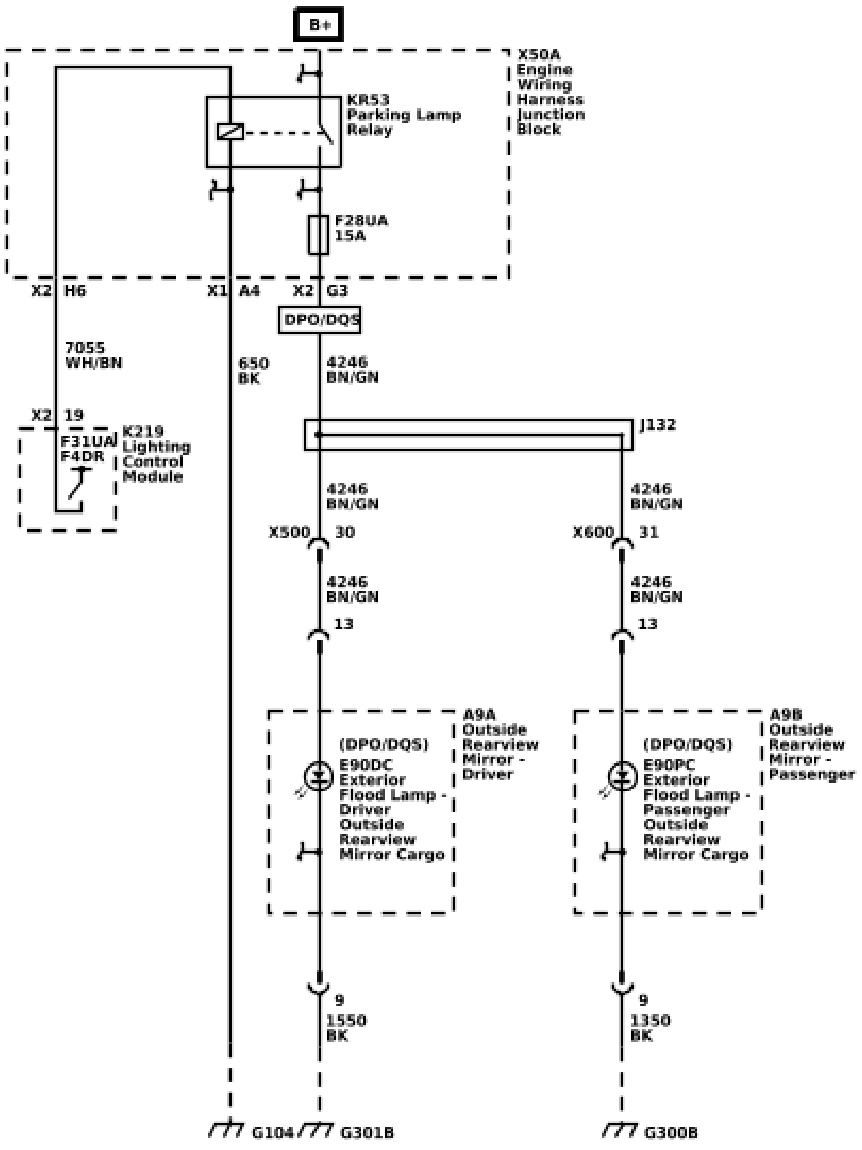
Exterior Lights Schematics (Controls and Indicators)


P16 Instrument Panel Cluster Control Module
P9 Driver Information Center Display
A90 Logic
K71 Transmission Control Module
K219 Lighting Control Module
K9 Body Control Module
X5 15
DEZ/DLF/DQS
2935 WH/GY
X210 66
2935 WH/GY
Interior Lights Schematics
4248 BU/GN
X1 19
158 GY
X2 20
13 GN/GY
29
2915 WH/GN
23
2916 VT/BU
31
111 GN/WH
5V
X5 24
5359 WH
25
5361 BU/YE
26
5360 BK/BN
7
6
4
5
AUTO
S30 Headlamp Switch
8
851 BK/WH
G201
1
2
S78 Turn Signal Switch
3
851 BK/WH
7
S86 Vehicle Stability Control System Switch
6
851 BK/WH
G201
2
3
1
B22 Brake Pedal Position Sensor
6
4
5
480 WH/RD
5380 WH/GN
626 BK/GY
Engine Controls Schematics
6846869

Exterior Lights Schematics (Front Lights)

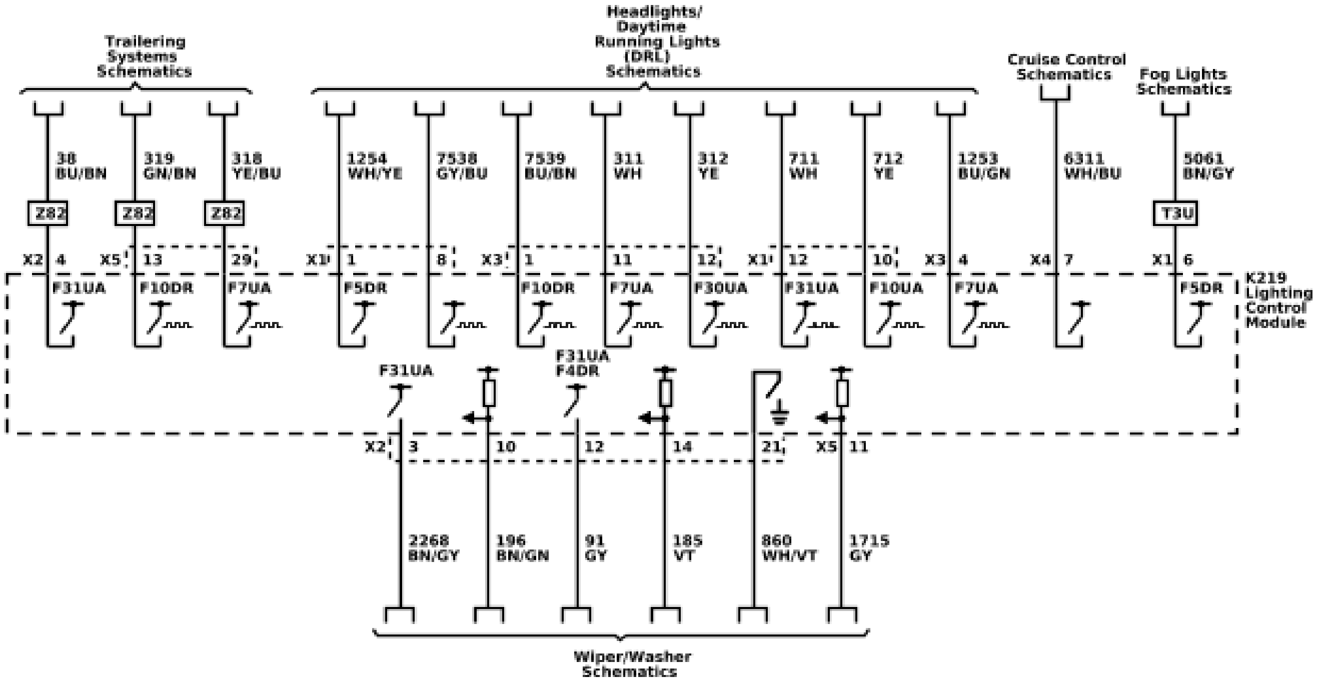

6846870
LOC
DESC
X50A Engine Wiring Harness Junction Block
F4UA 20A
A6
740 RD/YE
2
B+
A90 Logic
E13RA Front Headlamp - Right
1
650 BK
G104
K219 Lighting Control Module
F7UA
X3
4
1253 BU/GN
6
X2
20
7545 WH/YE
8
F4DR
X5
7
1315 GN/VT
J215
1315 GN/VT
7
J131
1314 BU/WH
10
J210
2024 YE/GN
9
E13LA Front Headlamp - Left
A90 Logic
1315 GN/VT
10
F5DR
X1
5
1314 BU/WH
1314 BU/WH
7
F10DR
X5
5
2024 YE/GN
2024 YE/GN
9
X2
11
6568 VT/BK
8
F5DR
X1
1
1254 WH/YE
6
B+
F3UA 20A
A5
X2
640 RD/WH
2
B+
1
150 BK
G102A

Exterior Lights Schematics (Identification Lights (DPO / DQS))


B+
X50A
Engine
Wiring
Harness
Junction
Block
KR53
Parking Lamp
Relay
F28UA
15A
X2 H6
X1 A4
X2 G3
DPO/DQS
7055
WH/BN
650
BK
4246
BN/GN
X2 19
F31UA
F4DR
K219
Lighting
Control
Module
J132
4246
BN/GN
X500 30
X600 31
4246
BN/GN
13
13
A9A
Outside
Rearview
Mirror -
Driver
(DPO/DQS)
E90DC
Exterior
Flood Lamp -
Driver
Outside
Rearview
Mirror Cargo
A9B
Outside
Rearview
Mirror -
Passenger
(DPO/DQS)
E90PC
Exterior
Flood Lamp -
Passenger
Outside
Rearview
Mirror Cargo
9
1550
BK
9
1350
BK
G104
G301B
G300B

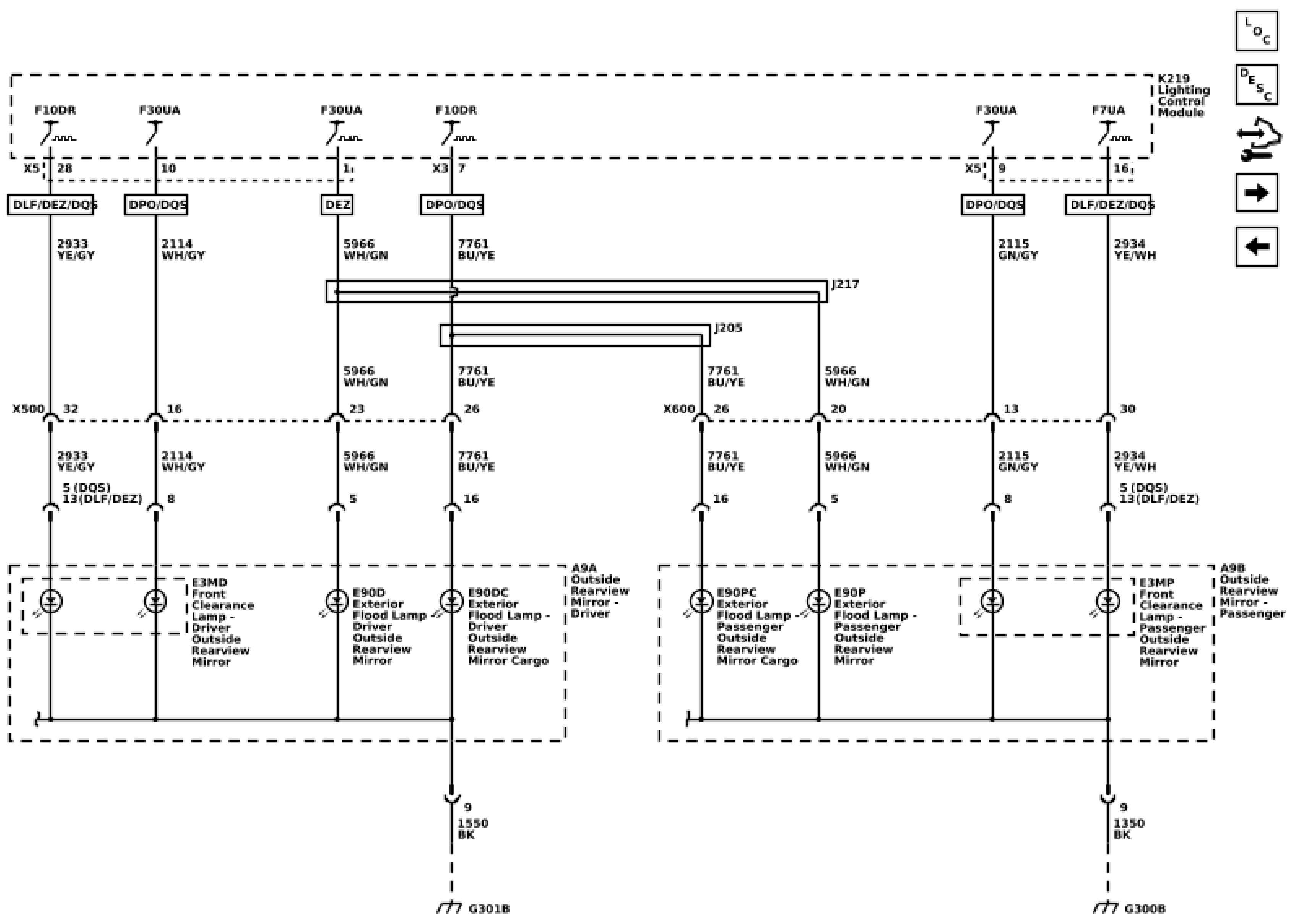
6846871

Exterior Lights Schematics (Lighting Control Module Subsystem References)


Trailering Systems Schematics
Headlights/ Daytime Running Lights (DRL) Schematics
Cruise Control Schematics
Fog Lights Schematics
38 BU/BN
319 GN/BN
318 YE/BU
1254 WH/YE
7538 GY/BU
7539 BU/BN
311 WH
312 YE
711 WH
712 YE
1253 BU/GN
6311 WH/BU
5061 BN/GY
Z82
Z82
Z82
T3U
X2 4
X5 13
29
X1 1
8
X3 1
11
12
X1 12
10
X3 4
X4 7
X1 6
F31UA
F10DR
F7UA
F5DR
F10DR
F7UA
F30UA
F31UA
F10UA
F7UA
F5DR
K219 Lighting Control Module
F31UA
F31UA F4DR
X2 3
10
12
14
21
X5 11
2268 BN/GY
196 BN/GN
91 GY
185 VT
860 WH/VT
1715 GY
Wiper/Washer Schematics

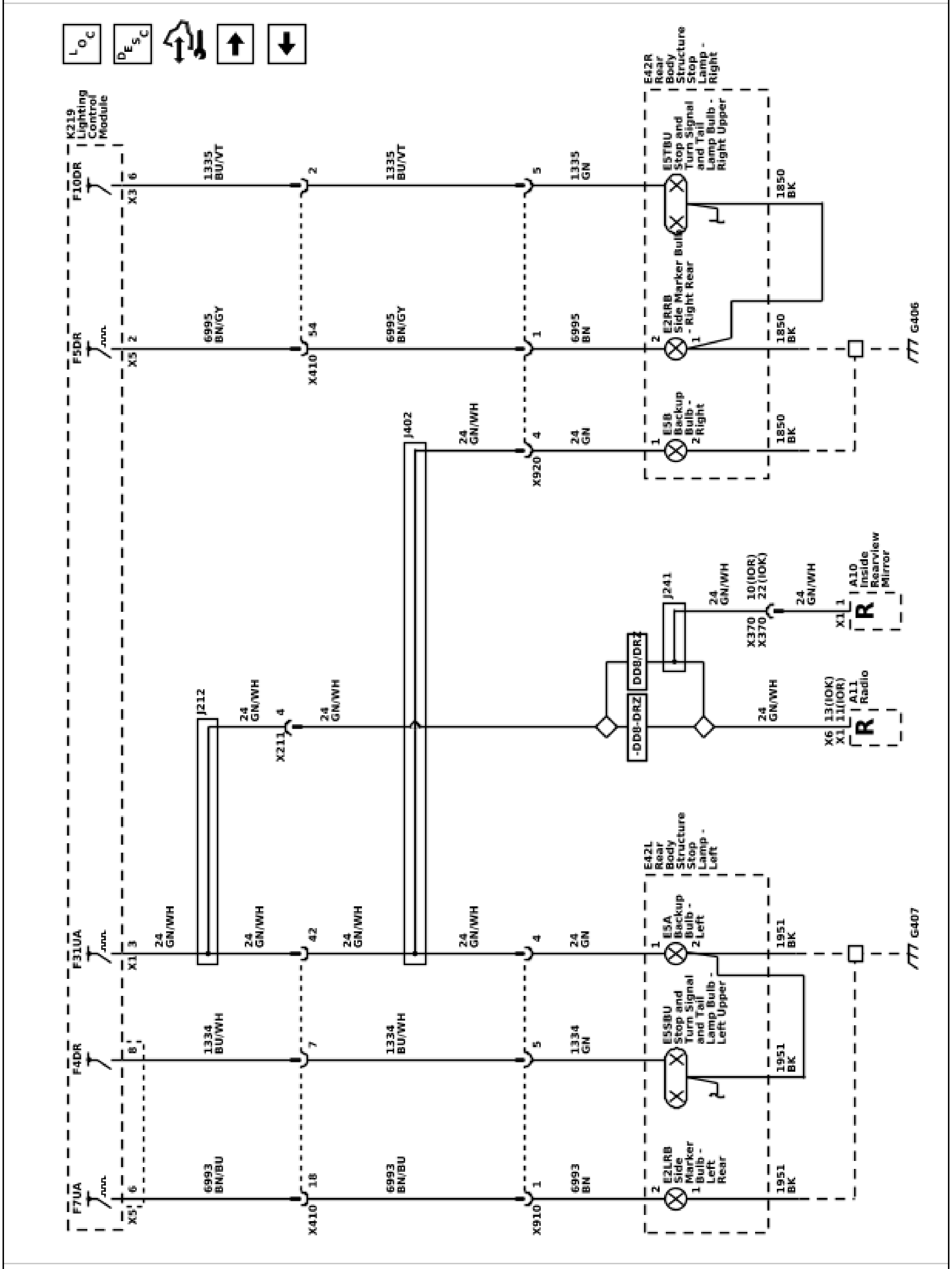
6846872

Exterior Lights Schematics (Outside Rearview Mirror Task, Turn, Approach, and Flood Lights (DEZ / DLF / DPO / DQS))


K219 Lighting Control Module
F10DR
F30UA
F30UA
F10DR
F30UA
F7UA
X5 28
10
1
X3 7
X5 9
16
DLF/DEZ/DQS
DPO/DQS
DEZ
DPO/DQS
DPO/DQS
DLF/DEZ/DQS
2933 YE/GY
2114 WH/GY
5966 WH/GN
7761 BU/YE
2115 GN/GY
2934 YE/WH
J217
J205
5966 WH/GN
7761 BU/YE
7761 BU/YE
5966 WH/GN
X500 32
16
23
26
X600 26
20
13
30
2933 YE/GY
2114 WH/GY
5966 WH/GN
7761 BU/YE
7761 BU/YE
5966 WH/GN
2115 GN/GY
2934 YE/WH
5 (DQS) 13(DLF/DEZ)
8
5
16
16
5
8
5 (DQS) 13(DLF/DEZ)
E3MD Front Clearance Lamp - Driver Outside Rearview Mirror
E90D Exterior Flood Lamp Driver Outside Rearview Mirror
E90DC Exterior Flood Lamp - Driver Outside Rearview Mirror Cargo
A9A Outside Rearview Mirror - Driver
E90PC Exterior Flood Lamp - Passenger Outside Rearview Mirror Cargo
E90P Exterior Flood Lamp - Passenger Outside Rearview Mirror
E3MP Front Clearance Lamp - Passenger Outside Rearview Mirror
A9B Outside Rearview Mirror - Passenger
9
1550 BK
G301B
9
1350 BK
G300B

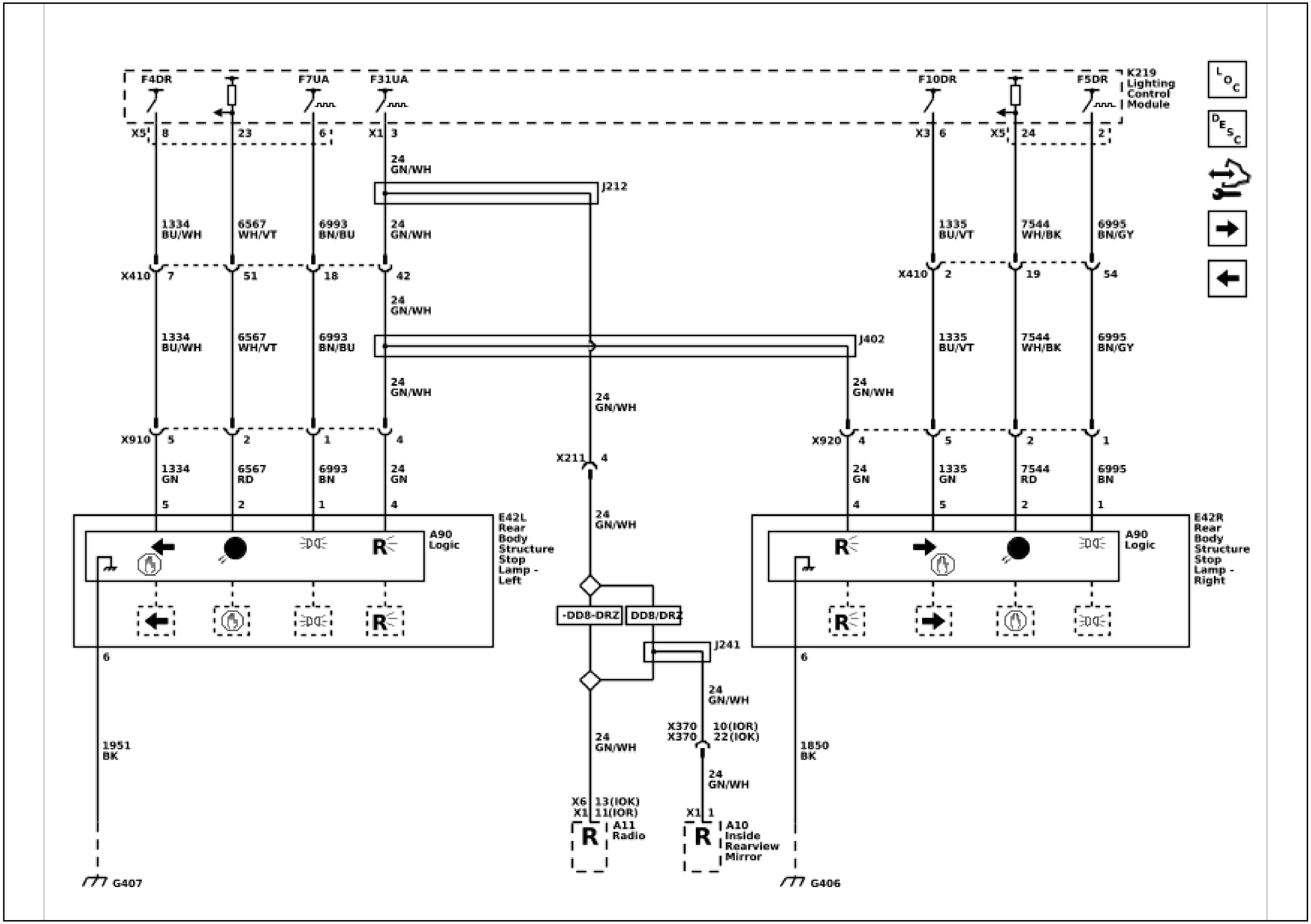
6846873

Exterior Lights Schematics (Stop, Rear Turn, Tail, Backup, and Rear Side Marker Lamps (GFF / GFI / GFJ / GFS))


K219 Lighting Control Module
F10DR
X3 6
1335 BU/VT
2
1335 BU/VT
5
1335 GN
E5TBU Stop and Turn Signal and Tail Lamp Bulb - Right Upper
E42R Rear Body Structure Stop Lamp - Right
1850 BK
F5DR
X5 2
6995 BN/GY
X410 54
6995 BN/GY
1
6995 BN
2
E2RRB Side Marker Bulb - Right Rear
1
1850 BK
G406
J402
24 GN/WH
X920 4
24 GN
1
E5B Backup Bulb - Right
2
1850 BK
J241
24 GN/WH
X370 10(IOR)
X370 22(IOK)
24 GN/WH
X1 1
A10 Inside Rearview Mirror
R
DD8/DRZ
-DD8-DRZ
J212
24 GN/WH
X211 4
24 GN/WH
24 GN/WH
X6 13(IOK)
X1 11(IOR)
A11 Radio
R
E42L Rear Body Structure Stop Lamp - Left
F31UA
X1 3
24 GN/WH
24 GN/WH
42
24 GN/WH
24 GN/WH
4
24 GN
1
E5A Backup Bulb - Left
2
1951 BK
G407
F4DR
8
1334 BU/WH
7
1334 BU/WH
5
1334 GN
E5SBU Stop and Turn Signal and Tail Lamp Bulb - Left Upper
1951 BK
F7UA
X5 6
6993 BN/BU
X410 18
6993 BN/BU
X910 1
6993 BN
2
E2LRB Side Marker Bulb - Left Rear
1
1951 BK

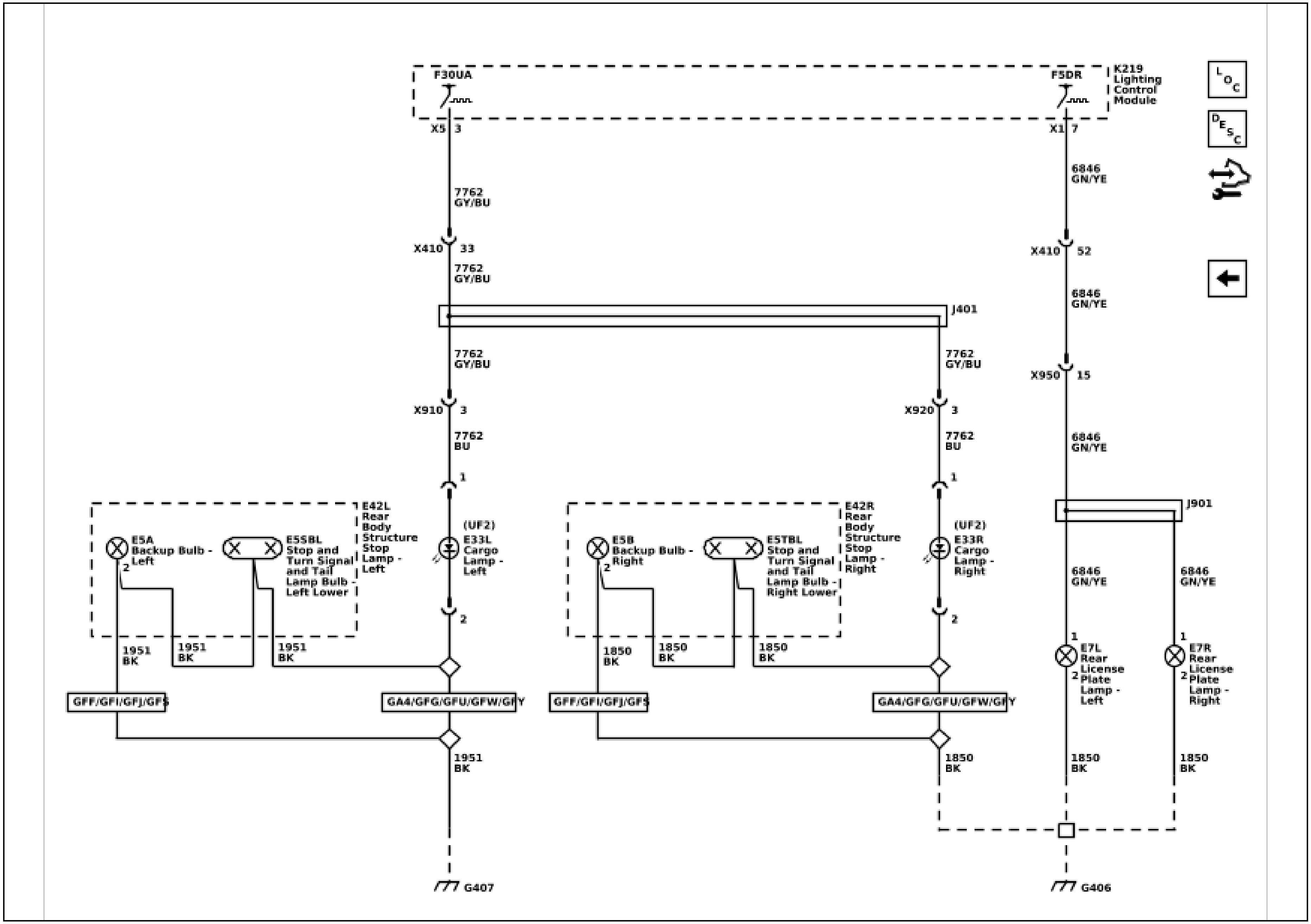
6846874

Exterior Lights Schematics (Stop, Rear Turn, Tail, Backup, and Rear Side Marker Lamps (GA4 / GFG / GFU / GFW / GFY))


K219 Lighting Control Module
F4DR
F7UA
F31UA
F10DR
F5DR
X5 8
23
6
X1 3
X3 6
X5 24
2
24 GN/WH
J212
1334 BU/WH
6567 WH/VT
6993 BN/BU
24 GN/WH
1335 BU/VT
7544 WH/BK
6995 BN/GY
X410 7
51
18
42
X410 2
19
54
24 GN/WH
1334 BU/WH
6567 WH/VT
6993 BN/BU
J402
1335 BU/VT
7544 WH/BK
6995 BN/GY
24 GN/WH
24 GN/WH
24 GN/WH
X910 5
2
1
4
X211 4
X920 4
5
2
1
1334 GN
6567 RD
6993 BN
24 GN
24 GN
1335 GN
7544 RD
6995 BN
5
2
1
4
24 GN/WH
4
5
2
1
A90 Logic
E42L Rear Body Structure Stop Lamp - Left
A90 Logic
E42R Rear Body Structure Stop Lamp - Right
R
R
R
R
-DD8-DRZ
DD8/DRZ
J241
6
6
24 GN/WH
X370 10(IOR)
X370 22(IOK)
24 GN/WH
1951 BK
24 GN/WH
1850 BK
24 GN/WH
X6 13(IOK)
X1 11(IOR)
A11 Radio
X1 1
A10 Inside Rearview Mirror
R
R
G407
G406
L O C
D E S C

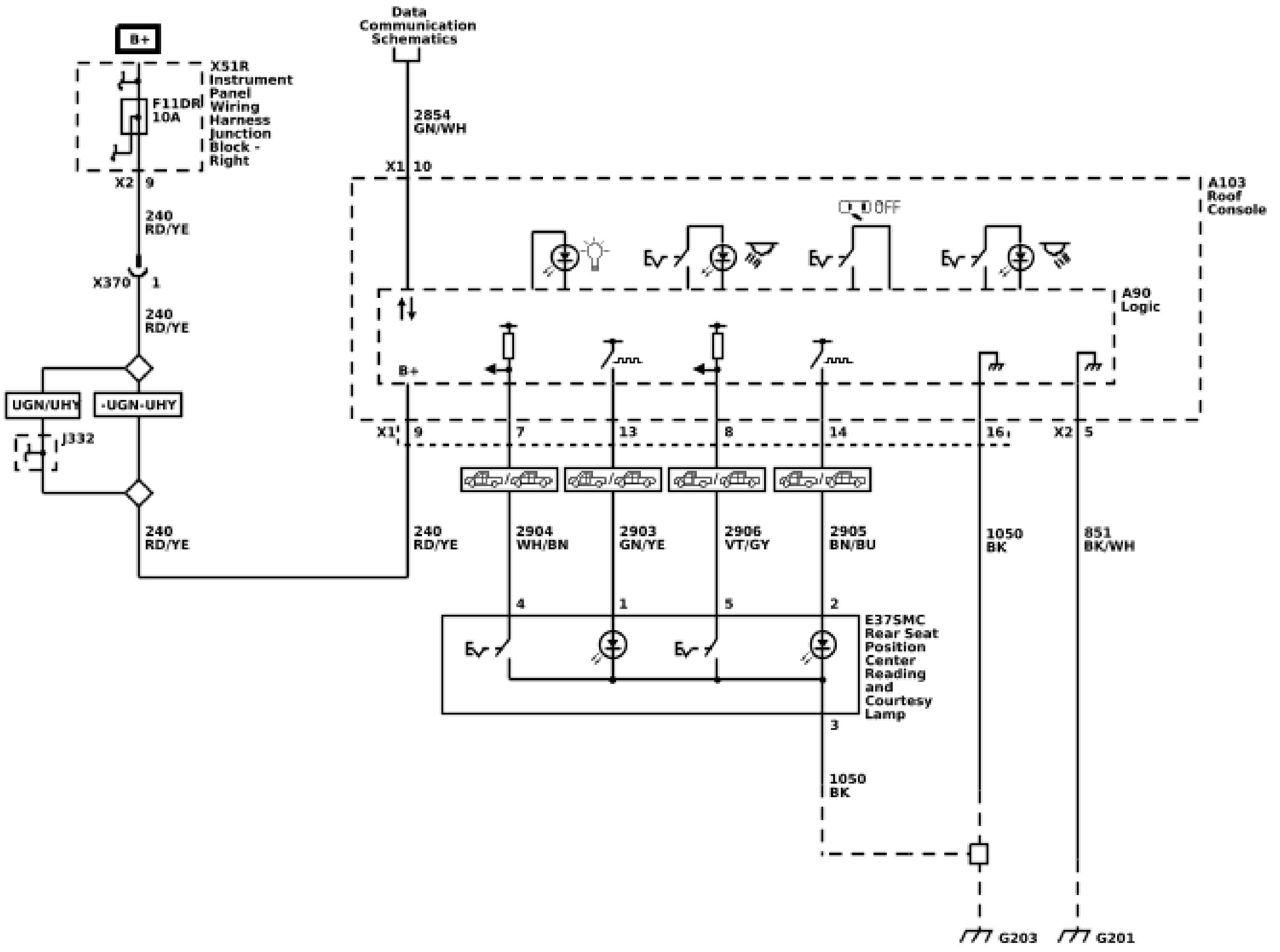
6846875

Exterior Lights Schematics (Cargo Box and License Plate Lamps (UF2))


F30UA
F5DR
K219 Lighting Control Module
X5 3
X1 7
7762 GY/BU
6846 GN/YE
X410 33
X410 52
7762 GY/BU
6846 GN/YE
J401
7762 GY/BU
7762 GY/BU
X950 15
X910 3
X920 3
7762 BU
7762 BU
6846 GN/YE
1
1
J901
E42L Rear Body Structure Stop Lamp - Left
E5A Backup Bulb - Left
2
E55BL Stop and Turn Signal and Tail Lamp Bulb - Left Lower
(UF2) E33L Cargo Lamp - Left
E42R Rear Body Structure Stop Lamp - Right
E5B Backup Bulb - Right
2
E5TBL Stop and Turn Signal and Tail Lamp Bulb - Right Lower
(UF2) E33R Cargo Lamp - Right
6846 GN/YE
6846 GN/YE
2
2
1
1
E7L Rear License Plate Lamp - Left
2
E7R Rear License Plate Lamp - Right
2
1951 BK
1951 BK
1951 BK
1850 BK
1850 BK
1850 BK
GFF/GFI/GFJ/GFS
GA4/GFG/GFU/GFW/GFY
GFF/GFI/GFJ/GFS
GA4/GFG/GFU/GFW/GFY
1951 BK
1850 BK
1850 BK
1850 BK
G407
G406

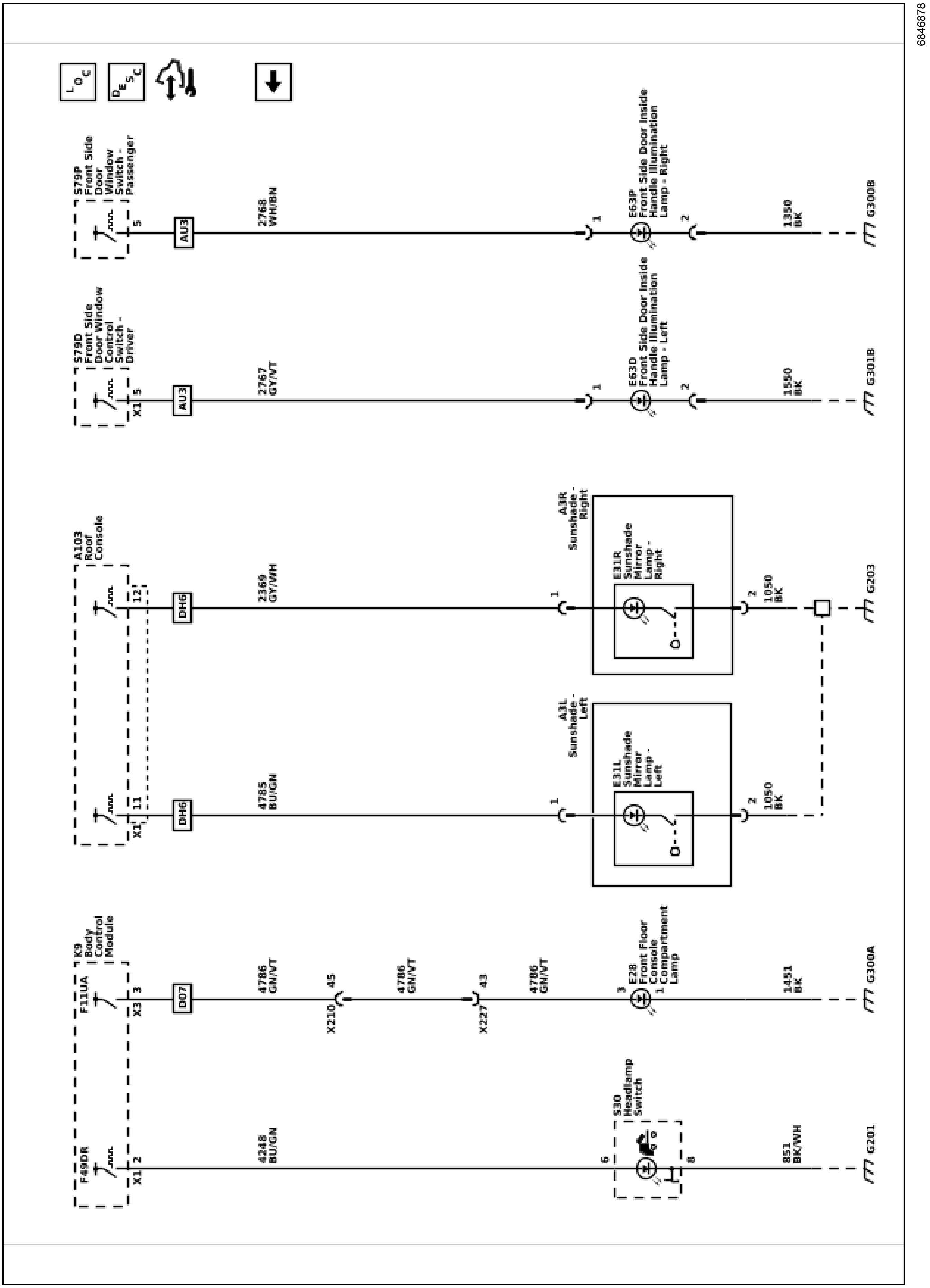
6846876

Interior Lights Schematics (Roof Console and Rear Seat Reading and Courtesy Lamps - Double Cab/Crew Cab)

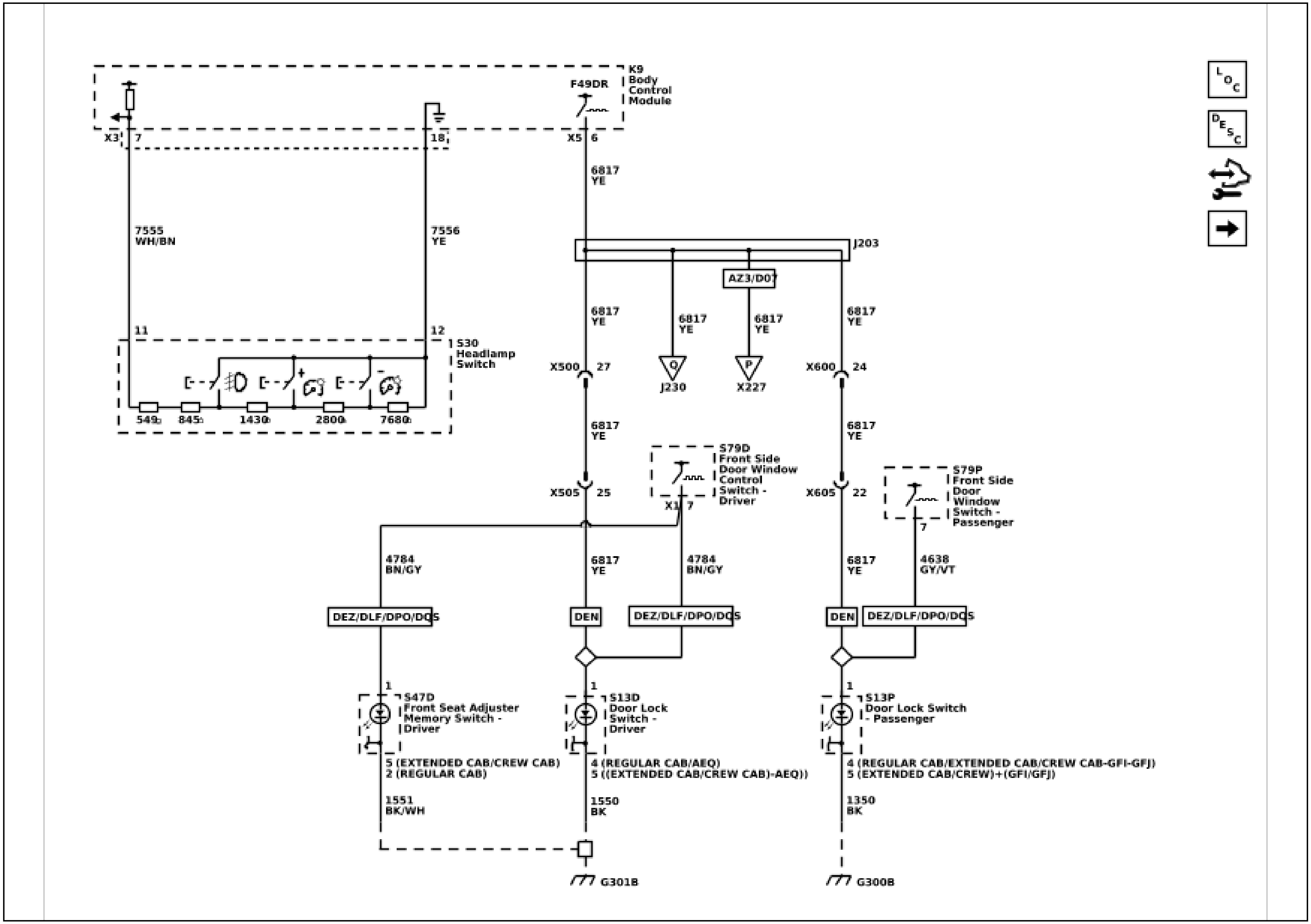

B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F11DR 10A
X2 9
240 RD/YE
X370 1
240 RD/YE
UGN/UHY
-UGN-UHY
J332
240 RD/YE
Data Communication Schematics
2854 GN/WH
X1 10
A103 Roof Console
OFF
A90 Logic
B+
X1 9
7
13
8
14
16
X2 5
240 RD/YE
2904 WH/BN
2903 GN/YE
2906 VT/GY
2905 BN/BU
1050 BK
851 BK/WH
4
1
5
2
E37SMC Rear Seat Position Center Reading and Courtesy Lamp
3
1050 BK
G203
G201

6846877

Interior Lights Schematics (Cargo Lamp Indicator, Sunshade, Center Console, and Door Lamps)

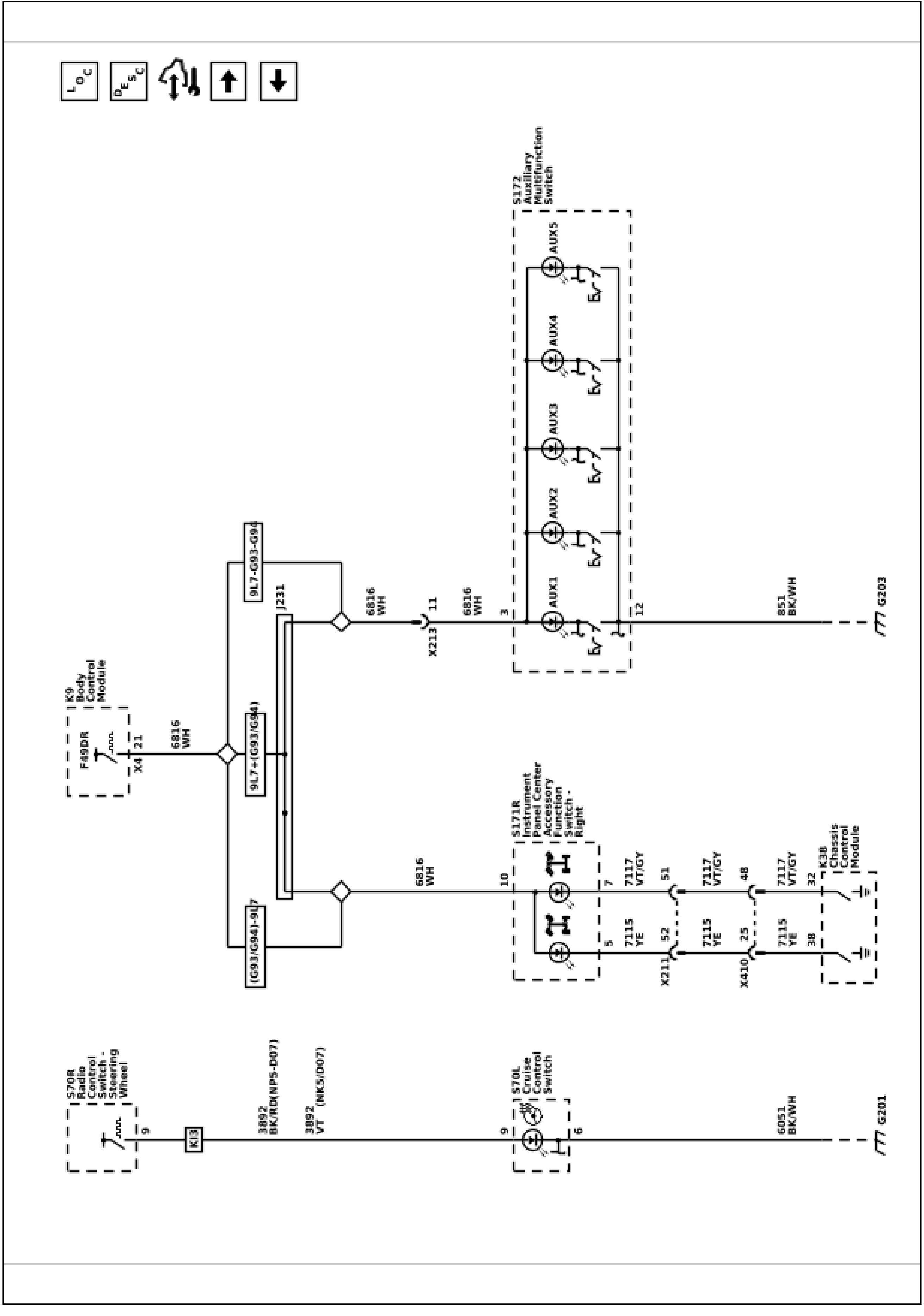

6846878
L O C
D E S C
S79P Front Side Door Window Switch - Passenger
5
AU3
2768 WH/BN
1
E63P Front Side Door Inside Handle Illumination Lamp - Right
2
1350 BK
G300B
S79D Front Side Door Window Control Switch - Driver
X1 5
AU3
2767 GY/VT
1
E63D Front Side Door Inside Handle Illumination Lamp - Left
2
1550 BK
G301B
A103 Roof Console
12
DH6
2369 GY/WH
1
A3R Sunshade - Right
E31R Sunshade Mirror Lamp - Right
2
1050 BK
G203
X1 11
DH6
4785 BU/GN
1
A3L Sunshade - Left
E31L Sunshade Mirror Lamp - Left
2
1050 BK
K9 Body Control Module
F11UA
X3 3
D07
4786 GN/VT
45
X210
4786 GN/VT
43
X227
4786 GN/VT
3
E28 Front Floor Console Compartment Lamp
1
1451 BK
G300A
F49DR
X1 2
4248 BU/GN
S30 Headlamp Switch
6
8
851 BK/WH
G201

Interior Lights Dimming Schematics (Controls and Front Door Backlights)

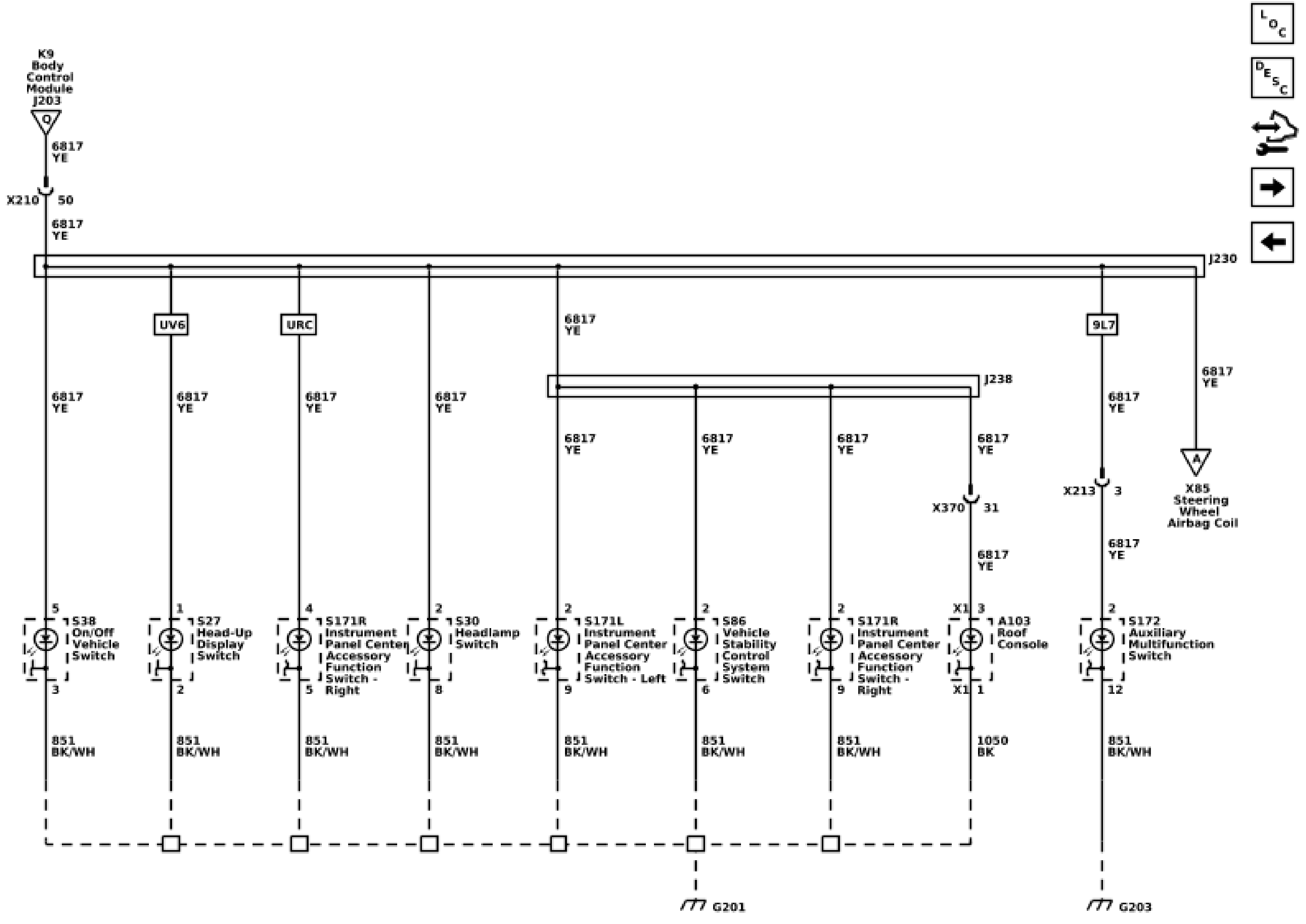

K9 Body Control Module
F49DR
X3 7
18
X5 6
7555 WH/BN
7556 YE
6817 YE
J203
AZ3/D07
Q J230
P X227
11
12
S30 Headlamp Switch
549Ω
845Ω
1430Ω
2800Ω
7680Ω
X500 27
X600 24
X505 25
X605 22
S79D Front Side Door Window Control Switch - Driver
X1 7
S79P Front Side Door Window Switch - Passenger
7
4784 BN/GY
4638 GY/VT
DEZ/DLF/DPO/DQS
DEN
1
S47D Front Seat Adjuster Memory Switch - Driver
S13D Door Lock Switch - Driver
S13P Door Lock Switch - Passenger
5 (EXTENDED CAB/CREW CAB)
2 (REGULAR CAB)
4 (REGULAR CAB/AEQ)
5 ((EXTENDED CAB/CREW CAB)-AEQ))
4 (REGULAR CAB/EXTENDED CAB/CREW CAB-GFI-GFJ)
5 (EXTENDED CAB/CREW)+(GFI/GFJ)
1551 BK/WH
1550 BK
1350 BK
G301B
G300B

6846879

Interior Lights Dimming Schematics (Indicators)

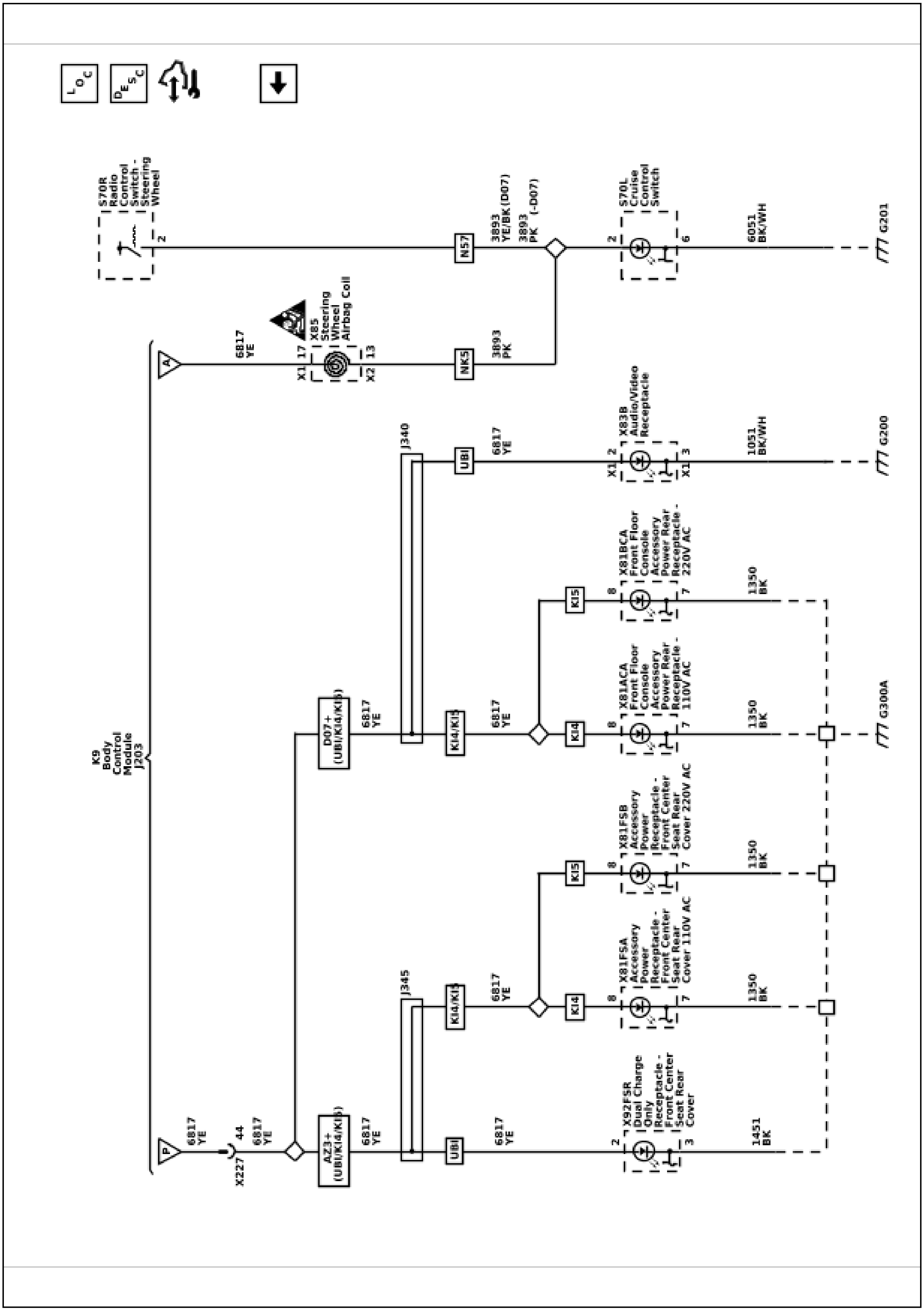

6846880
K9 Body Control Module
F49DR
X4
21
6816 WH
9L7+(G93/G94)
9L7-G93-G94
J231
(G93/G94)-9L7
6816 WH
X213
11
6816 WH
3
S172 Auxiliary Multifunction Switch
AUX1
AUX2
AUX3
AUX4
AUX5
12
851 BK/WH
G203
S171R Instrument Panel Center Accessory Function Switch - Right
10
7
5
7117 VT/GY
7115 YE
51
52
X211
7117 VT/GY
7115 YE
48
25
X410
7117 VT/GY
7115 YE
32
38
K38 Chassis Control Module
S70R Radio Control Switch - Steering Wheel
9
KI3
3892 BK/RD(NP5-D07)
3892 VT (NK5/D07)
S70L Cruise Control Switch
9
6
6051 BK/WH
G201

Interior Lights Dimming Schematics (Instrument Panel Backlights)


K9 Body Control Module J203
Q
6817 YE
X210 50
6817 YE
J230
UV6
URC
9L7
J238
6817 YE
X370 31
X213 3
A
X85 Steering Wheel Airbag Coil
5 S38 On/Off Vehicle Switch 3
1 S27 Head-Up Display Switch 2
4 S171R Instrument Panel Center Accessory Function Switch - Right 5
2 S30 Headlamp Switch 8
2 S171L Instrument Panel Center Accessory Function Switch - Left 9
2 S86 Vehicle Stability Control System Switch 6
2 S171R Instrument Panel Center Accessory Function Switch - Right 9
X1 3 A103 Roof Console X1 1
2 S172 Auxiliary Multifunction Switch 12
851 BK/WH
1050 BK
G201
G203

6846881

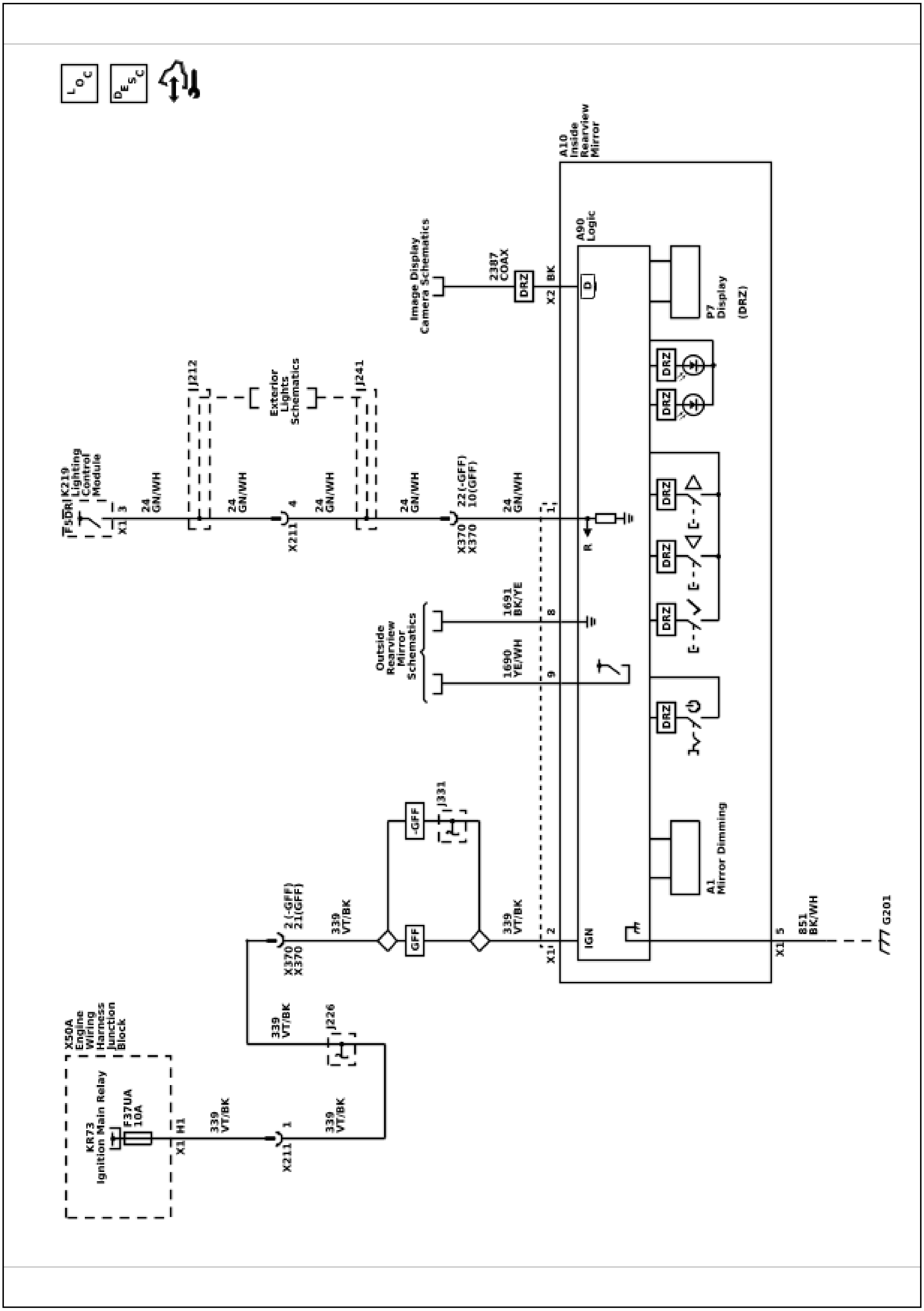
Interior Lights Dimming Schematics (Steering Wheel, Floor Console, and Center Seat Backlights (D07 / AZ3))


6846882
K9 Body Control Module J203
P
A
6817 YE
X227 44
6817 YE
AZ3+ (UBI/KI4/KI5)
D07+ (UBI/KI4/KI5)
J345
J340
UBI
KI4/KI5
NK5
N57
KI4
KI5
S70R Radio Control Switch - Steering Wheel
2
3893 YE/BK (D07)
3893 PK (-D07)
3893 PK
X85 Steering Wheel Airbag Coil
X1 17
X2 13
S70L Cruise Control Switch
2
6
6051 BK/WH
G201
X83B Audio/Video Receptacle
X1 2
X1 3
1051 BK/WH
G200
X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC
X81ACA Front Floor Console Accessory Power Rear Receptacle - 110V AC
8
7
1350 BK
G300A
X81FSB Accessory Power Receptacle - Front Center Seat Rear Cover 220V AC
X81FSA Accessory Power Receptacle - Front Center Seat Rear Cover 110V AC
X92FSR Dual Charge Only Receptacle - Front Center Seat Rear Cover
2
3
1451 BK

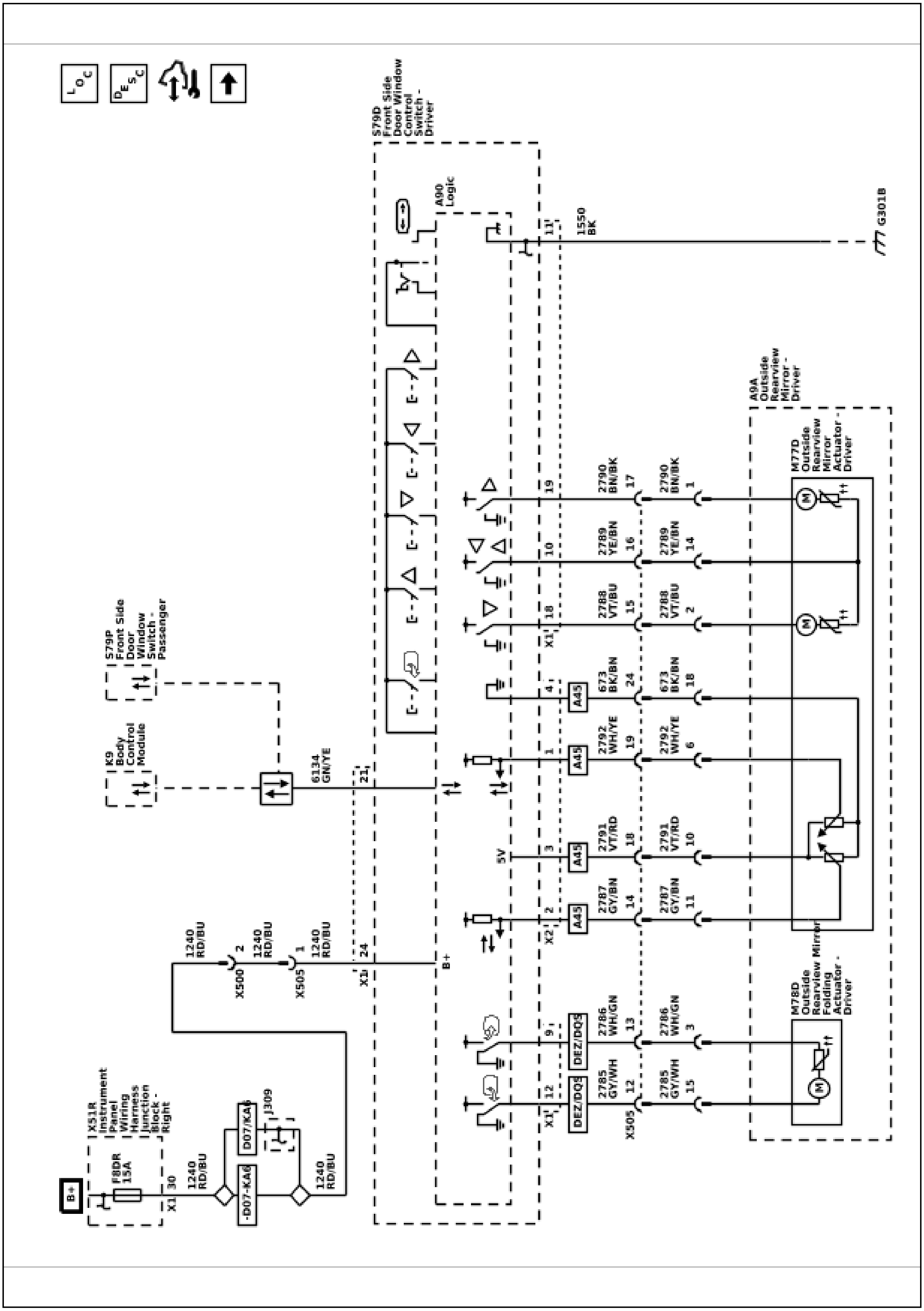
Mirrors

Schematic and Routing Diagrams

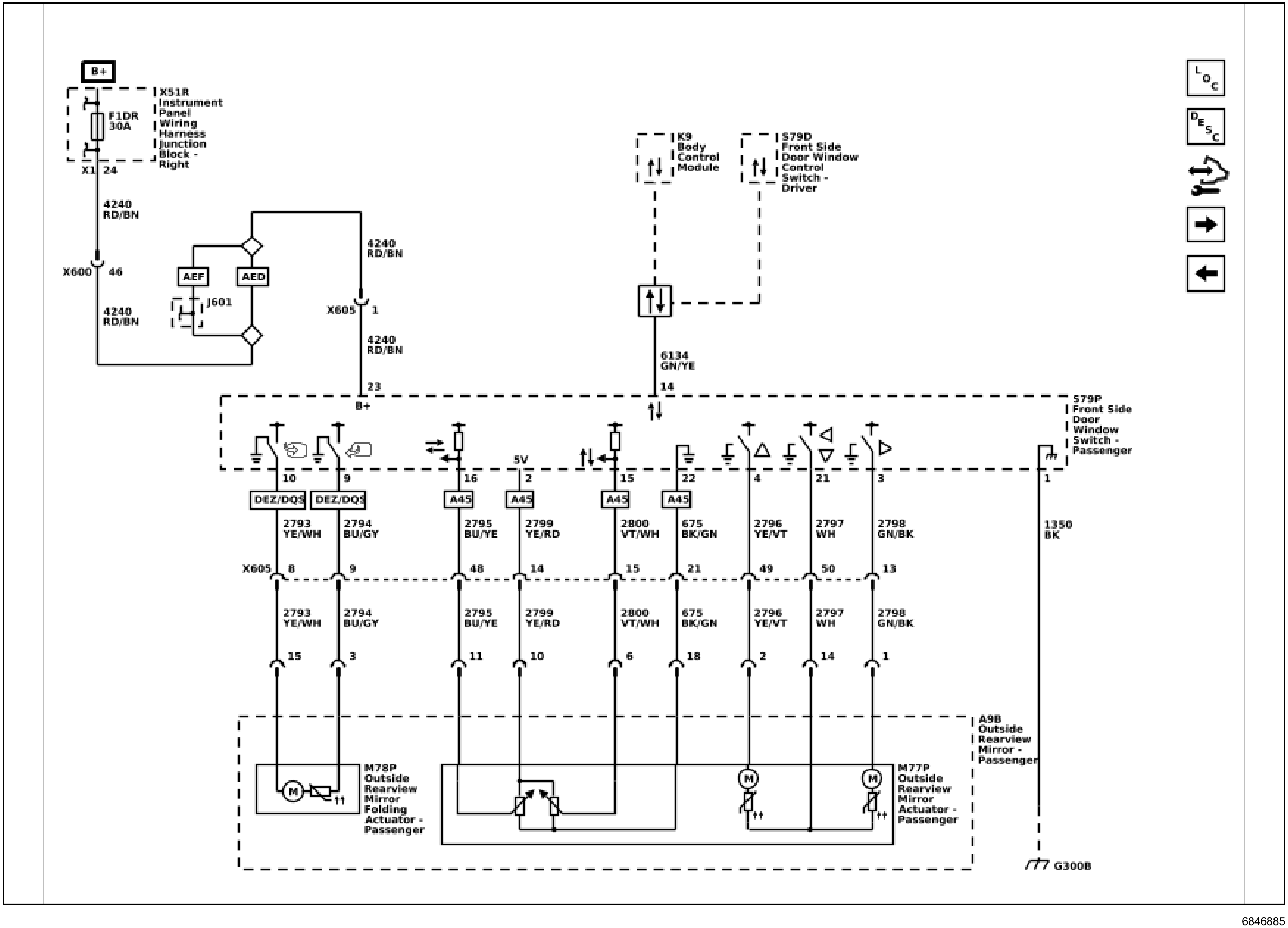
Inside Rearview Mirror Schematics (Inside Rearview Mirror (DD8 / DRZ))


6846883
LOC
DESC
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F37UA 10A
X1 H1
339 VT/BK
X211 1
339 VT/BK
J226
339 VT/BK
X370 2(-GFF)
X370 21(GFF)
339 VT/BK
GFF
-GFF
J331
339 VT/BK
X1 2
IGN
F5DR
K219 Lighting Control Module
X1 3
24 GN/WH
J212
24 GN/WH
X211 4
24 GN/WH
Exterior Lights Schematics
J241
24 GN/WH
X370 22(-GFF)
X370 10(GFF)
24 GN/WH
1
R
Outside Rearview Mirror Schematics
1691 BK/YE
8
1690 YE/WH
9
Image Display Camera Schematics
2387 COAX
DRZ
X2 BK
D
A10 Inside Rearview Mirror
A90 Logic
P7 Display
(DRZ)
DRZ
DRZ
DRZ
DRZ
DRZ
DRZ
A1 Mirror Dimming
X1 5
851 BK/WH
G201

Outside Rearview Mirror Schematics (Driver Controls, Position, and Folding)

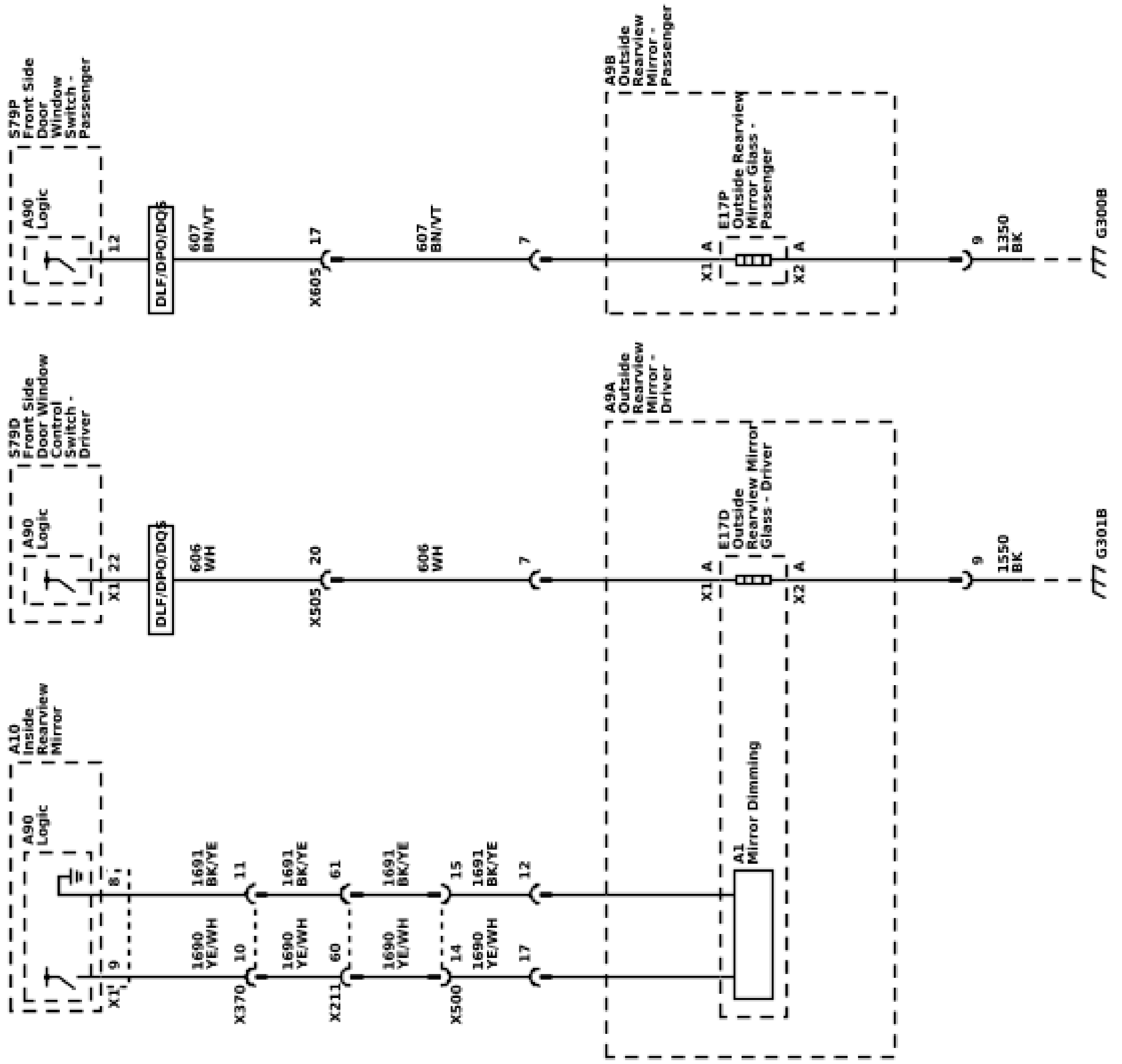

6846884
LOC
DESC
S79D Front Side Door Window Control Switch - Driver
A90 Logic
11
1550 BK
G301B
S79P Front Side Door Window Switch - Passenger
K9 Body Control Module
6134 GN/YE
21
A9A Outside Rearview Mirror - Driver
M77D Outside Rearview Mirror Actuator - Driver
19
2790 BN/BK
17
2790 BN/BK
1
10
2789 YE/BN
16
2789 YE/BN
14
18
2788 VT/BU
15
2788 VT/BU
2
X1
4
A45
673 BK/BN
24
673 BK/BN
18
1
A45
2792 WH/YE
19
2792 WH/YE
6
5V
3
A45
2791 VT/RD
18
2791 VT/RD
10
2
A45
2787 GY/BN
14
2787 GY/BN
11
X2
1240 RD/BU
X500
2
1240 RD/BU
X505
1
1240 RD/BU
X1
24
B+
M78D Outside Rearview Mirror Folding Actuator - Driver
9
DEZ/DQS
2786 WH/GN
13
2786 WH/GN
3
X1
12
DEZ/DQS
2785 GY/WH
12
2785 GY/WH
15
X505
X51R Instrument Panel Wiring Harness Junction Block - Right
B+
F8DR 15A
X1
30
1240 RD/BU
-D07-KA6
D07/KA6
J309
1240 RD/BU
M

Outside Rearview Mirror Schematics (Passenger Controls, Position, and Folding)


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F1DR 30A
X1 24
4240 RD/BN
X600 46
4240 RD/BN
AEF
AED
J601
4240 RD/BN
X605 1
4240 RD/BN
23
B+
K9 Body Control Module
S79D Front Side Door Window Control Switch - Driver
6134 GN/YE
14
S79P Front Side Door Window Switch - Passenger
5V
10
9
16
2
15
22
4
21
3
1
DEZ/DQS
DEZ/DQS
A45
A45
A45
A45
2793 YE/WH
2794 BU/GY
2795 BU/YE
2799 YE/RD
2800 VT/WH
675 BK/GN
2796 YE/VT
2797 WH
2798 GN/BK
1350 BK
X605 8
9
48
14
15
21
49
50
13
2793 YE/WH
2794 BU/GY
2795 BU/YE
2799 YE/RD
2800 VT/WH
675 BK/GN
2796 YE/VT
2797 WH
2798 GN/BK
15
3
11
10
6
18
2
14
1
A9B Outside Rearview Mirror - Passenger
M78P Outside Rearview Mirror Folding Actuator - Passenger
M77P Outside Rearview Mirror Actuator - Passenger
M
M
M
G300B
LOC
DESC
6846885

6846886

Outside Rearview Mirror Schematics (Dimming and Heating (DEZ))


S79P Front Side Door Window Switch - Passenger
A90 Logic
12
DLF/DPO/DQ$
607 BN/VT
17
X605
607 BN/VT
7
A9B Outside Rearview Mirror - Passenger
E17P Outside Rearview Mirror Glass - Passenger
X1 A
X2 A
9
1350 BK
G300B
S79D Front Side Door Window Control Switch - Driver
A90 Logic
X1 22
DLF/DPO/DQ$
606 WH
20
X505
606 WH
7
A9A Outside Rearview Mirror - Driver
E17D Outside Rearview Mirror Glass - Driver
X1 A
X2 A
9
1550 BK
G301B
A10 Inside Rearview Mirror
A90 Logic
X1 9
8
1691 BK/YE
11
1690 YE/WH
10
X370
1691 BK/YE
61
1690 YE/WH
60
X211
1691 BK/YE
15
1690 YE/WH
14
X500
1691 BK/YE
12
1690 YE/WH
17
A1 Mirror Dimming

Description and Operation

Automatic Day-Night Mirror Description and Operation

Inside Rearview Mirror with the Automatic Day-Night Feature System Operation

The inside rearview mirror uses 2 photocell sensors. One sensor is the headlight sensor, located on the face side of the mirror. The headlight sensor is used to determine light conditions present at the mirror face. The other sensor is the ambient light sensor, located on the rear of the mirror or windshield side. The ambient light sensor is used to determine the exterior light conditions. With a low exterior light condition detected, and a high light condition from behind the car at the headlight sensor, the inside rearview mirror will automatically darken the face of the mirror.

In the daytime, the mirror is in a normal state because of the high exterior light condition that is indicated by the ambient light sensor. With the gear selector lever in the REVERSE position and the Ignition ON/Vehicle in Service Mode, backup lamp supply voltage is supplied as an input to the inside rearview mirror. The mirror monitors this input to disable the automatic day-night feature. This allows the driver to see objects in the mirror clearly when backing up, even during the night.

Driver Outside Rearview Mirror with Automatic Day-Night System Operation (If Equipped)

The automatic day-night feature of the driver outside rearview mirror is controlled by the inside rearview mirror. The inside rearview mirror supplies control and low reference to the driver outside rearview mirror. At night, with the automatic day-night feature enabled, the driver outside rearview mirror will automatically darken with the inside rearview mirror to reduce glare from headlamps behind the vehicle.

Inside Rearview Camera Full Display Mirror System Operation

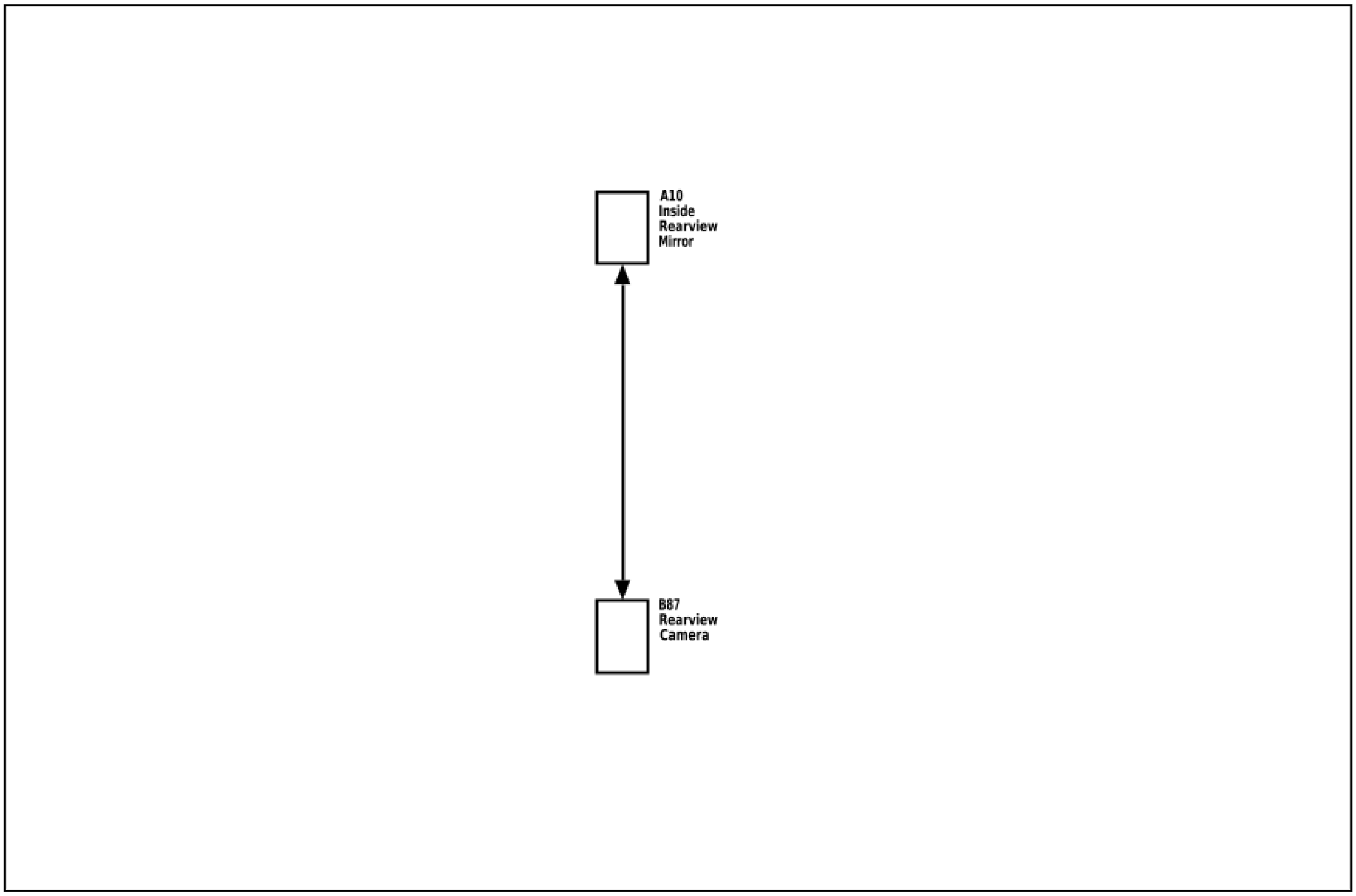
The A10 Inside Rearview Mirror is connected to the B352 Video Display inside Rearview Mirror Camera via a shielded coaxial cable. When the tab under the inside rearview mirror is pulled rearward, a view of the area behind the vehicle displays on the mirror. Adjust the rearview mirror for a clear view of the area behind the vehicle before turning on full display mirror. Use the button on the back of the mirror to adjust the brightness of the display. Make sure the light sensor is not covered when adjusting the brightness.

The inside rearview camera full display mirror may not work properly or display a clear image if:.

- It is dark.
- The sun or the beam of headlamps are shining directly into the camera lens.
- Ice, snow, mud, or anything else builds up on the camera lens. Clean the lens, rinse it with water, and wipe it with a soft cloth.

When the mirror detects that the camera is not sending a valid video signal, it “blue screens” with a “no video” decal for 3 seconds, then reverts back to the mirror.

Rearview Camera Full Display Mirror Block Diagram



4433072

Hard-Wired

A10 Inside Rearview Mirror

B87 Rearview Camera

Outside Mirror Description and Operation

Power Mirror System Components

The power mirror system consists of the following components:

- Body Control Module
- Driver Seat Adjuster Memory Module
- Outside Mirror Switch
- Passenger Window Switch
- Left Outside Rearview Mirror
- Right Outside Rearview Mirror

Power Mirror System Controls

The outside rearview mirror switch is part of the S79D Driver Front Side Door Window Control Switch and uses serial data to control the passenger mirror through the S79P Passenger Front Side Door Window Control Switch. Each S79 Side Door Window Control Switch has it own 12V, ground and data communications circuit along with mirror directional control and mirror fold circuits.

Driver Mirror Controls

The S79D Driver Front Side Door Window Control Switch has internal connections for the driver mirror. When the mirror position switch is active the driver mirror is commanded to move through bi-directional motor control circuits. The motor control circuits are floating while in an inactive state and the switches will apply power and ground to the control circuits as necessary to move the mirror in the commanded direction.

Passenger Mirror Controls

The S79D Driver Front Side Door Window Control Switch uses serial data circuits to communicate the active states for the passenger mirror switch to the S79P Passenger Front Side Door Window Control Switch. The S79P Passenger Front Side Door Window Control Switch has internal connections for the passenger mirror. When the mirror position switch is active the passenger mirror is commanded to move through bi-directional motor control circuits. The motor control circuits are floating while in an inactive state and the switches will apply power and ground to the control circuits as necessary to move the mirror in the commanded direction.

Mirror Position

Mirror position is determined by both horizontal and vertical position sensors in each of the power mirrors. Each S79 Front Side Door Window Control Switch supplies a 5 V reference, low reference, and horizontal and vertical position signal circuits to these sensors. The signal circuits are referenced from 5 V by the S79 Front Side Door Window Control Switch and the signal circuit voltage levels represent the mirror positions. The mirror positions are stored in each S79 Front Side Door Window Control Switch for memory mirror operation. When the memory seat module receives a memory recall command, the memory seat control module will send the go to position to the S79 Front Side Door Window Control Switch. The S79 Front Side Door Window Control Switches will then drive the appropriate mirror motors to the commanded position sensor settings.

Mirror Select

The S79D Driver Front Side Door Window Control Switch has internal connections for the mirror select switch. When the mirror select switch is active the S79 Front Side Door Window Control Switch will either control the driver mirror or send a serial data message to control the passenger mirror.

Folding Mirrors

The S79D Driver Front Side Door Window Control Switch sends the mirror fold/unfold inputs to the K9 Body Control Module (BCM) through serial data. When the BCM receives a fold/unfold signal it will send a fold/unfold command to the S79 Driver Front Side Door Window Control Switch which will send a serial data message to the S79P Passenger Front Side Door Window Control Switch. The outside mirrors will fold or unfold depending on their current state. The BCM will also send a serial data message to unfold the mirrors when the vehicle reaches 20 km/h (12 mph) unless equipped with camper/trailer mirrors. The S79 Front Side Door Window Control Switches control the fold/unfold motors through bi-directional control circuits

Heated Mirrors

The heated mirrors are controlled through each S79 Front Side Door Window Control Switch. When the vehicle is running and the HVAC control module receives a rear window defog request from the radio/HVAC controls, the HVAC control module will send a serial data message to the S79D Driver Front Side Door Window Control Switch and S79P Passenger Front Side Door Window Control Switch. Each S79 Front Side Door Window Control Switch provide B+ voltage to the driver and passenger outside rearview mirror heating elements.

Memory Mirror System

Memory Mirror System Controls

The K40D Driver Seat Adjuster Memory Module is capable of storing mirror positions and controlling the mirrors to these positions to the preferred settings of 2 different drivers. Each driver will be able to personalize the memory system by positioning the mirrors and seats to their preferred settings. Then press and hold the memory 1 or memory 2 button until an audible chime is heard and the current mirror positions will be stored into memory of the K40D Driver Seat Adjuster Memory Module. Seat and mirror position will be stored in the K40D Driver Seat Adjuster Memory Module. Once the mirror and seat positions have been stored into memory, a momentary memory 1 or memory 2 switch activation will supply the S79D Front Side Door Window Control Switch — Driver a battery voltage signal. The S79D Front Side Door Window Control Switch — Driver, upon receipt of the memory switch signal, with the transmission in park or neutral, will then drive the driver mirror to the corresponding stored memory position. The S79D Front Side Door Window Control Switch — Driver will also send a message to the S79P Front Side Door Window Switch — Passenger and K40D Driver Seat Adjuster Memory Module indicating that a memory switch activation occurred. The S79P Front Side Door Window Switch — Passenger will then drive the passenger mirror to the corresponding stored memory position. The memory system can also be controlled by any of the following, if programmed to enable/disable the features:

- Auto exit/entry seat positioning
- Mirror and seat position recall on a keyless entry unlock activation
- Mirror and seat position recall on ignition key insertion
- Mirror tilt in reverse

Memory Mirror System Operation

Mirror position is determined by both horizontal and vertical position sensors in each of the power mirrors. The S79D Front Side Door Window Control Switch — Driver and S79P Front Side Door Window Switch —

Passenger supplies a reference voltage and a low reference to these sensors and determines mirror position through the horizontal and vertical position signal circuits.

The memory switch receives power from the S79D Front Side Door Window Control Switch — Driver through the battery supply voltage circuit and the S79D Front Side Door Window Control Switch — Driver fuse. The S79D Front Side Door Window Control Switch — Driver upon receipt of a memory switch signal input or an appropriate message from the K40D Driver Seat Adjuster Memory Module, the S79D Front Side Door Window Control Switch — Driver and S79P Front Side Door Window Switch — Passenger will then supply battery voltage and ground to the appropriate power mirror motors through the mirror motor control circuits to move the mirrors to the predetermined positions.

Mirror Tilt in Reverse Controls

This feature is capable of tilting the left, right or both power mirrors when the transmission is placed in reverse to provide enhanced visibility during parking or backing maneuvers. This feature can be personalized to the needs of 2 different drivers.

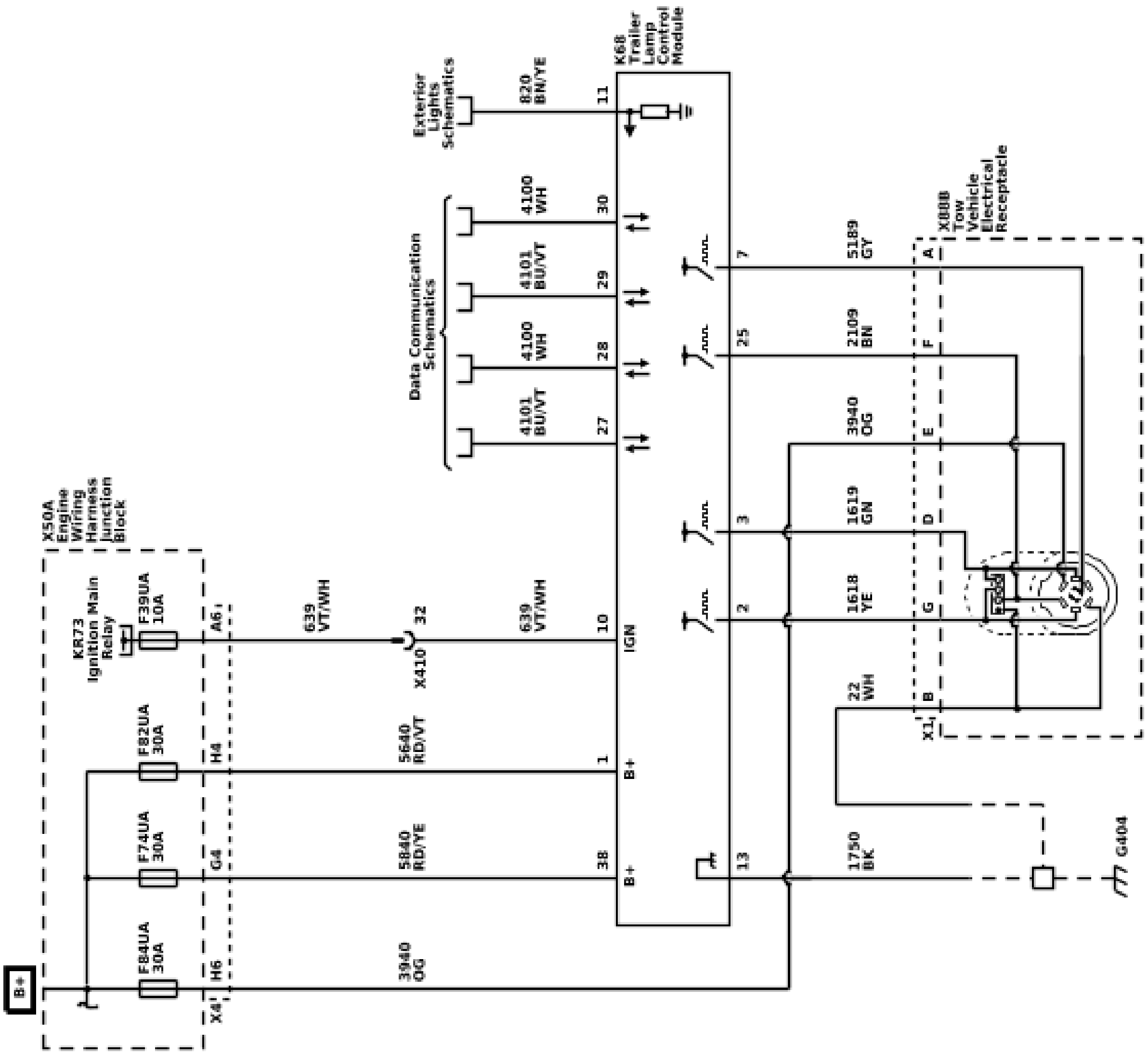
Mirror Tilt in Reverse Operation

When the vehicle is placed in reverse and the appropriate message from the K40D Driver Seat Adjuster Memory Module and K20 Engine Control Module is received by the S79D Front Side Door Window Control Switch — Driver and S79P Front Side Door Window Switch — Passenger, the S79D Front Side Door Window Control Switch — Driver and S79P Front Side Door Window Switch — Passenger will then supply battery voltage to the appropriate power mirror motors through the mirror motor control circuits to move the mirrors to the predetermined positions. The positions that are stored can be altered by starting the engine, applying the brake, placing the vehicle in reverse and controlling both the left and right mirrors to the desired positions and shifting the vehicle out of reverse. These new positions will be stored for the last memory recall that happened.

Trailering Systems

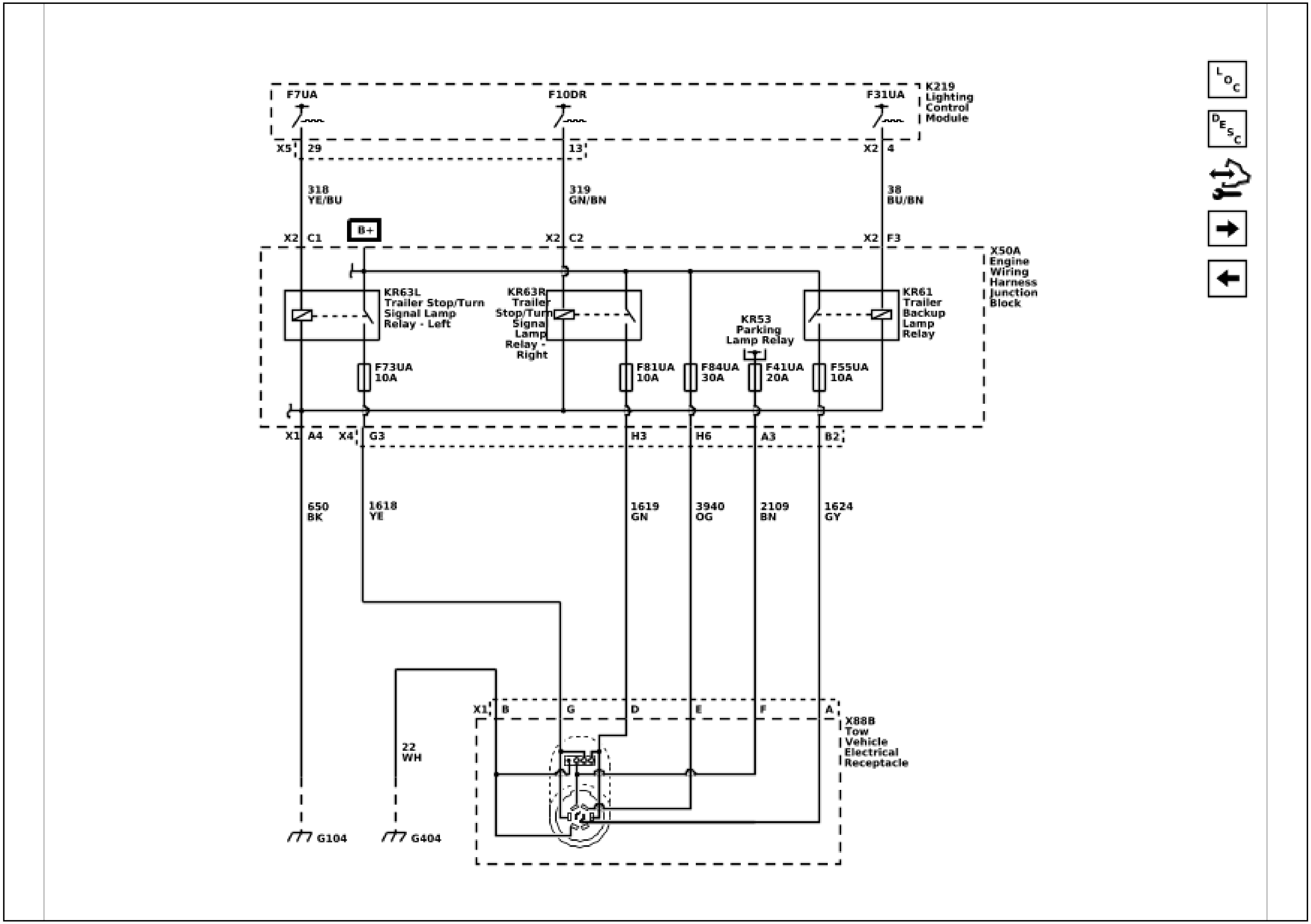
Schematic and Routing Diagrams

Trailering Systems Schematics (Trailer Lighting Control Module (UET))

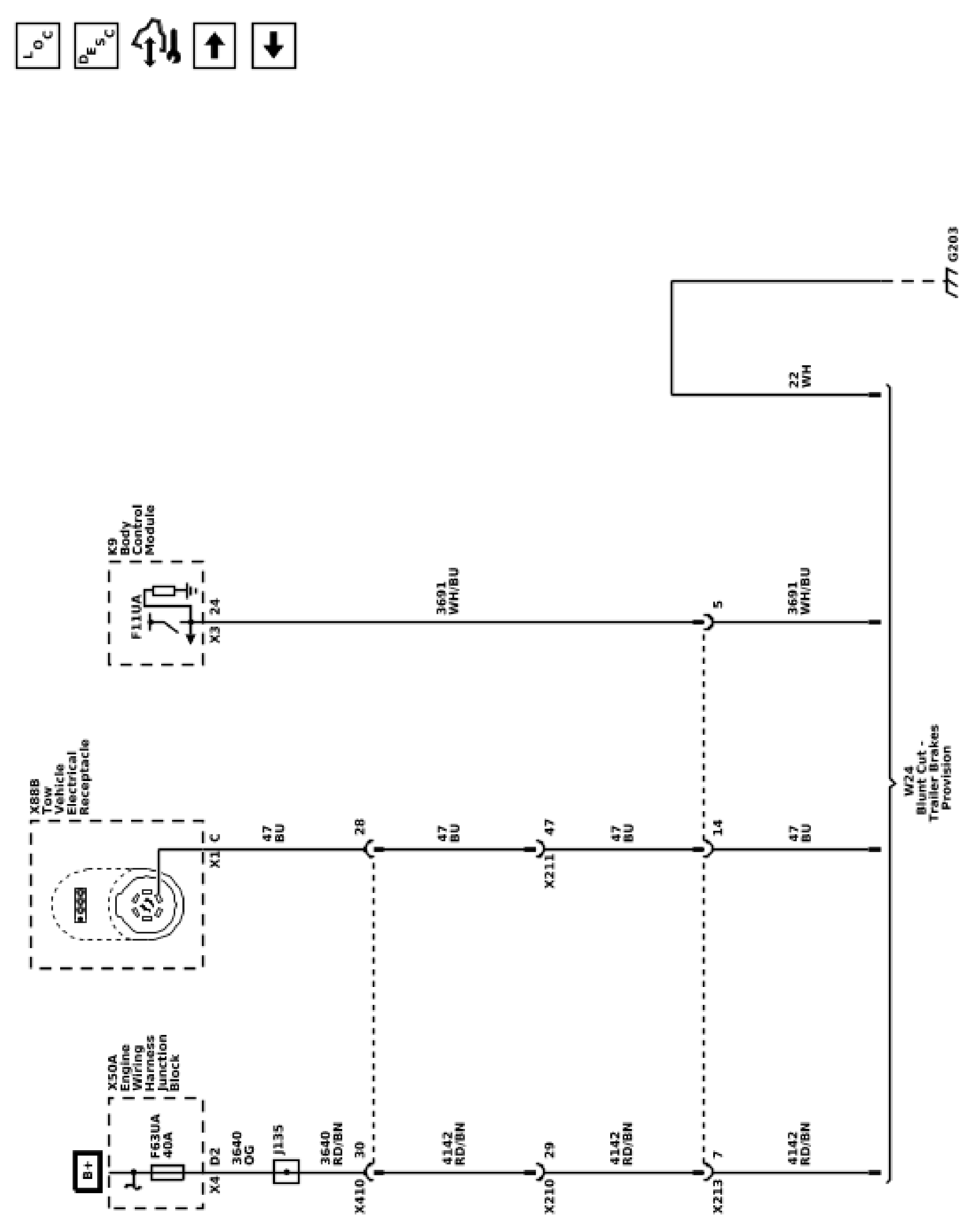

B+
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F39UA 10A
F82UA 30A
F74UA 30A
F84UA 30A
A6
H4
G4
H6
X4
639 VT/WH
32
X410
639 VT/WH
10
IGN
5640 RD/VT
1
B+
5840 RD/YE
38
B+
3940 OG
K68 Trailer Lamp Control Module
Exterior Lights Schematics
820 BN/YE
11
Data Communication Schematics
4100 WH
30
4101 BU/VT
29
4100 WH
28
4101 BU/VT
27
7
25
3
2
13
5189 GY
2109 BN
3940 OG
1619 GN
1618 YE
22 WH
1750 BK
A
F
E
D
G
B
X1
X888 Tow Vehicle Electrical Receptacle
G404

6846887

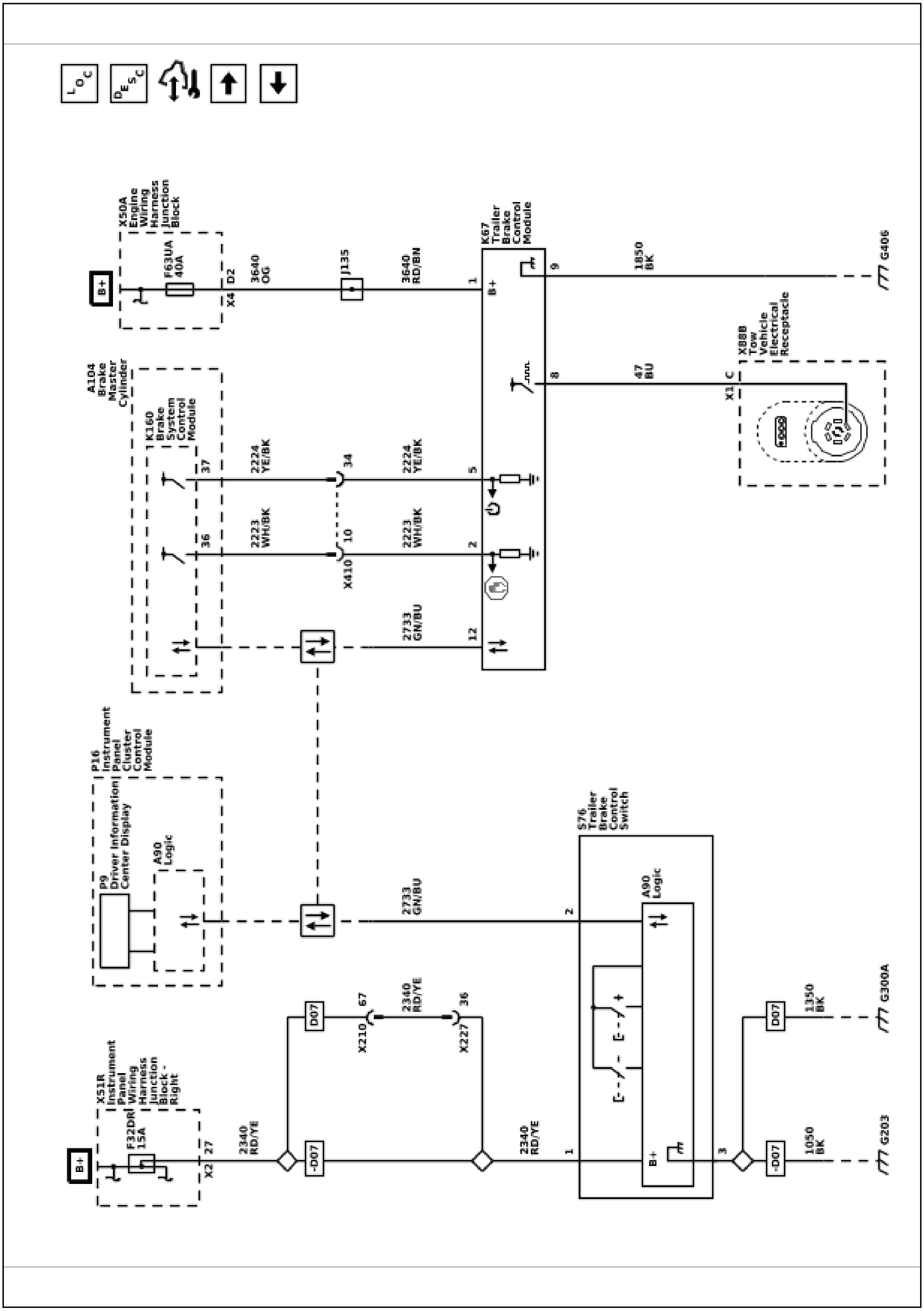
Trailering Systems Schematics (Trailer Connector Pins: A, B, D, E, F, G (Z82 - UET))


LOC
DESC
F7UA
F10DR
F31UA
K219 Lighting Control Module
X5 29
13
X2 4
318 YE/BU
319 GN/BN
38 BU/BN
B+
X2 C1
X2 C2
X2 F3
X50A Engine Wiring Harness Junction Block
KR63L Trailer Stop/Turn Signal Lamp Relay - Left
KR63R Trailer Stop/Turn Signal Lamp Relay - Right
KR53 Parking Lamp Relay
KR61 Trailer Backup Lamp Relay
F73UA 10A
F81UA 10A
F84UA 30A
F41UA 20A
F55UA 10A
X1 A4
X4 G3
H3
H6
A3
B2
650 BK
1618 YE
1619 GN
3940 OG
2109 BN
1624 GY
22 WH
X1 B
G
D
E
F
A
X88B Tow Vehicle Electrical Receptacle
G104
G404
6846888

Trailering Systems Schematics (Trailer Brake Provisions (Z82 - JL1))

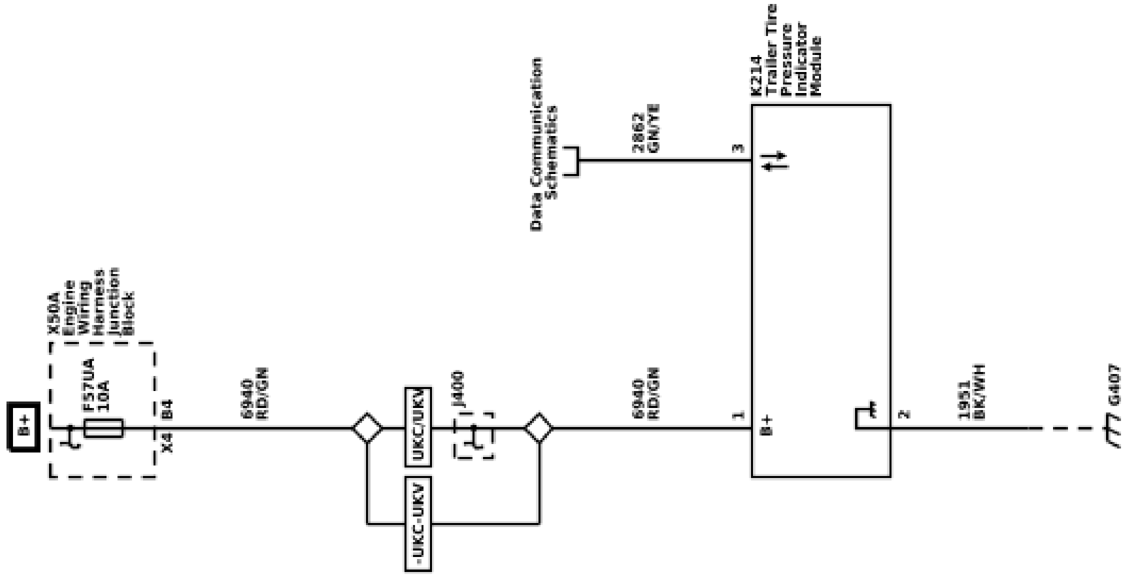

6846889
B+
X50A Engine Wiring Harness Junction Block
F63UA 40A
X4 D2
3640 OG
J135
3640 RD/BN
30
X410
4142 RD/BN
29
X210
4142 RD/BN
7
X213
4142 RD/BN
X88B Tow Vehicle Electrical Receptacle
X1 C
47 BU
28
47 BU
47
X211
47 BU
14
47 BU
K9 Body Control Module
F11UA
X3 24
3691 WH/BU
5
3691 WH/BU
22 WH
G203
W24 Blunt Cut - Trailer Brakes Provision

Trailering Systems Schematics (Trailer Brake (JL1))


6846890
LOC
DESC
B+
X50A Engine Wiring Harness Junction Block
F63UA 40A
X4 D2
3640 OG
J135
3640 RD/BN
1
B+
K67 Trailer Brake Control Module
9
1850 BK
G406
8
47 BU
X1 C
X88B Tow Vehicle Electrical Receptacle
A104 Brake Master Cylinder
K160 Brake System Control Module
37
2224 YE/BK
34
2224 YE/BK
5
36
2223 WH/BK
10
X410
2223 WH/BK
2
2733 GN/BU
12
P16 Instrument Panel Cluster Control Module
P9 Driver Information Center Display
A90 Logic
2733 GN/BU
2
S76 Trailer Brake Control Switch
A90 Logic
B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F32DR 15A
X2 27
2340 RD/YE
-D07
D07
67
X210
2340 RD/YE
36
X227
2340 RD/YE
1
3
D07
1350 BK
G300A
-D07
1050 BK
G203

Trailering Systems Schematics (Trailer Tire Pressure (UET))

6846891


B+
X50A Engine Wiring Harness Junction Block
F57UA 10A
X4 B4
6940 RD/GN
UKC/UKV
J400
-UKC-UKV
6940 RD/GN
Data Communication Schematics
2862 GN/YE
K214 Trailer Tire Pressure Indicator Module
3
1
B+
2
1951 BK/WH
G407

Description and Operation

Trailering Description and Operation

Trailering System Overview

Begin the trailering system diagnosis with [Link target (target-id 325938-) not found] . The Diagnostic System Check - Trailering will provide a complete strategy to locate and repair a vehicle trailering electrical fault. Not following this strategy may cause additional diagnostic time and/or misdiagnosis.

The trailering system consists of the following:

- Trailer Lighting, refer to [Link target (target-id 326023-) not found] for additional diagnostic information.
- {JL1} Trailer Brakes, refer to [Link target (target-id 326020-) not found] for additional diagnostic information.
- Trailer Battery Charging System, refer to [Link target (target-id 326019-) not found] for additional diagnostic information.
- Trailer Detection, refer to [Link target (target-id 326022-) not found] for additional diagnostic information.
- Trailer Tire Pressure Monitoring System, refer to [Link target (target-id 326024-) not found] for additional diagnostic information.
- Trailer Theft Detection.

7–Terminal Tow Vehicle Electrical Receptacle Pinout

- Terminal A – Trailer Backup Lamp Control
- Terminal B – Ground
- Terminal C – Trailer Brake Control
- Terminal D – Right Trailer Stop/Turn Signal Lamp Control
- Terminal E – B+
- Terminal F – Trailer Park Lamp Control
- Terminal G – Left Trailer Stop/Turn Signal Lamp Control

Connecting Aftermarket Accessories

- Some aftermarket accessories that connect to the X88B Tow Vehicle Electrical Receptacle will be recognized by the vehicle as a trailer connected, even if the accessory is not a trailer. As a result, side blind zone detection, rear park assist, and/or rear cross traffic alert will be turned off anytime the vehicle detects a trailer/accessory is connected.
- Vehicles equipped with U1D/UET have trailer theft detection that constantly monitors trailer connected status when enabled. This is done by randomly pulsing the lighting circuits of the trailer when the vehicle is parked. As a result, some aftermarket accessories may be turned ON/OFF when connected to the vehicle with theft detection enabled.
- Vehicles equipped with U1D/UET use pulse width modulation voltage (PWM) for trailer lighting functions. Some aftermarket accessories are incompatible with PWM and may not function correctly when connected to the trailer lighting circuits of the vehicle.

Trailer Battery Charging System

Trailer battery charging is accomplished through constant battery voltage from the X50A Engine Wiring Harness Junction Block to the X88B Tow Vehicle Electrical Receptacle. Battery voltage is supplied to terminal E at the X88B Tow Vehicle Electrical Receptacle at all times. If equipped, the trailer battery will constantly be charged by the vehicle’s electrical system anytime the trailer is connected. Some trailers require the B+ circuit to the X88B Tow Vehicle Electrical Receptacle for the trailer brakes to function.

Trailer Lighting and Detection With U1D/UET

Note:

- Some trailers utilize a trailer mounted control module to operate some or all of the trailer lights. These trailers may use the B+ circuit from the trailer connector to power the trailer lighting circuits. These trailers may not always be detected by the Trailer Lighting Control Module and may set faults.
- When a trailer is detected on a vehicle equipped with side blind zone detection, rear park assist, and/or rear cross traffic alert, the vehicle will automatically turn these features off. These features are turned off to prevent false detections due to the trailer obstructing the view of the sensors.
- Vehicles equipped with IOR/1FL do not come equipped with the trailering APP however may still be equipped with a K68 trailer Lamp Control Module.

The K68 Trailer Lamp Control Module is responsible for controlling the trailer lighting on vehicles with U1D/UET. The combined trailer stop/turn signal lamps of the trailer must draw at least 55mA of total current to be detected as a trailer or the Trailer Lamp Control Module will not control the lighting circuits. The Trailer Lamp Control Module receives serial data messages from the K9 Body Control Module (BCM) indicating what lamps have been activated on the vehicle. The Trailer Lamp Control Module responds by applying pulse width modulated voltage (PWM) to the appropriate control circuits for the requested lamps illuminating the lamps on the attached trailer. The Trailer Lamp Control Module constantly monitors for trailer connection status, trailer lighting faults, and trailer theft deterrent purposes. This is accomplished through the lighting circuits of the trailer to determine if a trailer is connected. When a trailer is connected, the Trailer Lamp Control Module senses the trailer connection and alerts the driver by requesting a trailer profile setup through the Trailering App, which is displayed on the infotainment screen. If a trailer is disconnected with the ignition ON, the vehicle will display multiple trailer lighting messages until a trailer is reconnected or the message is dismissed by the user. With the key OFF, the Trailer Lamp Control Module will periodically pulse the lighting circuits of the trailer to verify it is still connected. The lights on the trailer may flash at different intervals with the key OFF depending on which type of lights the trailer is built with. If a trailer is disconnected with the key ON, the vehicle will display a trailer disconnected message until a trailer is reconnected or the ignition is cycled.

Trailer Lighting Without U1D/UET

The K219 Lighting Control Module is responsible for controlling the trailer lighting on vehicles without U1D/UET. The lighting control module receives serial data messages from the K9 Body Control Module (BCM) indicating what lamps have been activated on the vehicle. The lighting control module responds by applying voltage to the appropriate relay control circuits for the requested lamps anytime the vehicle lamps are commanded ON. With the relay coil energized, the relay contacts close and allow voltage to flow through the relay illuminating the appropriate lamps on the attached trailer.

Trailering Messages

The Infotainment Display may display one or more of the following messages to the user related to trailering:

Trailering Messages

Trailering Message	Description
Check Trailer Left Turn Signal Lamp	The K68 Trailer Lighting Control Module detects a fault on the left trailer stop/turn lamp control circuit
Check Trailer Right Turn Signal Lamp	The K68 Trailer Lighting Control Module detects a fault on the right trailer stop/turn lamp control circuit
Check Trailer Rear Lamp	The K68 Trailer Lighting Control Module detects a fault on the trailer park lamp control circuit.
Check Trailer Reversing Lamp	The K68 Trailer Lighting Control Module detects a fault on the trailer backup lamp control circuit.
Check Trailer Brake Lamps	The K68 Trailer Lighting Control Module detects a fault on the left and/or right trailer stop/turn lamp control circuits
{JL1} Check Trailer Wiring	The K67 Trailer Brake Control Module detects a fault on the trailer brake control circuit or the trailer was disconnected.
Lane Change Alert Off	Reminder to the user that lane change alerts are turned off anytime a trailer is detected.
Rear Cross Traffic Alert Off	Reminder to the user that rear cross traffic alerts are turned off anytime a trailer is detected.
Rear Park Assist Off	Reminder to the user that rear park assist is turned off anytime a trailer is detected.
Remember to turn On Tow/Haul Mode	Reminder to the user to turn ON Tow/Haul Mode when towing.
{JL1} Service Trailer Brake System	The K67 Trailer Brake Control Module detects a fault on the trailer brake control circuit.
Service Trailer Tire Monitor System	The K214 Trailer Tire Pressure Indicator Module detects one or more issues with the trailer tire pressure monitoring system.
Trailer Detected	The K68 Trailer Lighting Control Module detects a trailer has been connected to the X88B Tow Vehicle electrical Receptacle.

Trailering Message	Description
{JL1} Trailer Brakes Detected	The K67 Trailer Brake Control Module detects a trailer with trailer brakes has been connected to the X88B Tow Vehicle electrical Receptacle.
Trailer Disconnected Check Connection	The K68 Trailer Lighting Control Module detects a trailer has been disconnected from the X88B Tow Vehicle electrical Receptacle.
Trailer Tire Pressure High	The K214 Trailer Tire Pressure Indicator Module detects one or more of the trailer tire pressures is high.
Trailer Tire Pressure Low	The K214 Trailer Tire Pressure Indicator Module detects one or more of the trailer tire pressures is low.
Trailer Tire Sensor Fault	The K214 Trailer Tire Pressure Indicator Module detects one or more of the trailer tire pressure sensors has a fault.
Trailer Tire Temperature High	The K214 Trailer Tire Pressure Indicator Module detects one or more of the trailer tire temperatures is too high.

Trailer Theft Detection (With U1D/UET Only)

Trailer theft monitoring can be turned ON and OFF through the vehicle Trailer App. When enabled, any time the trailer theft deterrent system is armed, the trailer lighting circuits are constantly monitored to determine if a trailer is connected for trailer theft deterrent purposes. With the key OFF, the K68 Trailer Lamp Control Module will randomly pulse the lighting circuits of the trailer to verify it is still connected by monitoring the voltage drop of the circuit. Depending on the configuration of the trailer lights, the trailer lights may randomly flash as part of the trailer theft deterrent function. These flashes correspond to when the K68 Trailer Lamp Control Module pulses the lighting circuits to ensure the trailer is still connected and is considered normal. If the trailer is disconnected while the trailer theft deterrent system is armed, the vehicle will flash the exterior lights and cycle the horn to alert of a trailer theft event. Refer to *Theft Systems Description and Operation 10-73* for more information on the content theft deterrent system.

Trailer Brakes (JL1)

The vehicle is equipped with the following trailer braking components:

- K160 Brake System Control Module
- K67 Trailer Brake Control Module
- S76 Trailer Brake Control Switch
- Trailer Brake Driver Information Center Display

Trailer Brake Circuits

- Circuit 2223 is the trailer brake apply signal circuit. The K160 Brake System Control Module receives vehicle braking force data and/or data from the application of the manual trailer brake slide lever. The brake system control module responds by applying the appropriate amount of pulse width modulated (PWM) voltage based on the amount of trailer brake application desired. The K67 Trailer Brake Control Module responds to the signal circuit by applying the appropriate amount of PWM voltage to the trailer auxiliary control circuit 47.
- Circuit 2224 is the trailer brake enable signal circuit. The K160 Brake System Control Module applies voltage to the enable circuit anytime a LIN data communication fault is not present, a trailer is connected, and the vehicle brakes are being applied. The enable circuit must have voltage applied to it before the K67 Trailer Brake Control Module applies the appropriate amount of pulse width modulated (PWM) voltage to the trailer auxiliary control circuit 47.
- Circuit 2733 is the brake system control module LIN bus 2 circuit. The K160 Brake System Control Module, K67 Trailer Brake Control Module, and the S76 Trailer Brake Control Switch all communicate through the brake system control module LIN bus 2 circuit. If the LIN bus has a fault on the circuit, trailer braking will be disabled until the fault is repaired.
- Circuit 47 is the trailer auxiliary control circuit. The K67 Trailer Brake Control Module responds to signal circuit 2223 and enable circuit 2224 by applying the appropriate amount of PWM voltage to the trailer auxiliary control circuit. A properly functioning trailer will apply the appropriate amount of braking force to the brakes of the trailer.

The Trailer Brake Control System is compatible with two types of Trailer Brake Systems as listed below:

1. **Electric Brakes** A controlled electrical output signal energizes an electric-magnet/lever arm assembly that directly actuates the brake mechanism. The GDS name for this system is “Electromagnetic Brakes”.
2. **Electric Over Hydraulic Brakes** A controlled electrical output signal energizes a remote, trailer mounted hydraulic pump to build brake pressure in a closed hydraulic system on the trailer. The

hydraulic fluid pressure actuates the brake mechanism. The GDS name for this system is “Electrohydraulic Brakes”.

Trailer Brake Output Versus Trailer Brake Type

- The trailer brake system characterizes the trailer brakes as either Electric Brake or Electric Over Hydraulic Brake automatically. This characterization may be affected by the number, type, and age of the trailer brake magnets, as well as any other devices installed on the trailer brakes (i.e. adapters for Electric Over Hydraulic brake functionality).
- The trailer brake system is fully operational with either characterization.
- Sliding the manual trailer brake apply lever will produce output at zero speed for either characterization.

The user gain allows the driver to adjust the amount of trailer brake output to match the trailer load and road surface. The controller determines the desired trailer brake output and provides a control signal to the K67 Trailer Brake Control Module (TBPM). The K67 Trailer Brake Control Module amplifies the signal and provides the output required to activate the Electric or Electric Over Hydraulic trailer brakes.

The trailer brake control can support up to a maximum of four axles with electric trailer brakes (8 brake magnets).

Connecting a trailer that is not compatible with the trailer brake system may result in reduced or complete loss of trailer braking. There may be an increase in stopping distance or trailer instability which could result in personal injury or damage to the vehicle, trailer or other property. An aftermarket controller may be available for use with incompatible trailer brake systems.

To determine the type of brakes on your trailer and the availability of controllers, check with your trailer manufacturer or dealer. Do not power up an aftermarket controller with the factory brake controller at the same time.

Trailer Brake Control Panel

The S76 Trailer Brake Control Switch contains the trailer gain and manual apply switches. It is located in the vehicle center stack. Refer to the owner’s manual for more information on the location. The control panel and switches allows you to adjust the amount of output, referred to as trailer gain, available to the Electric or Electric Over Hydraulic brakes. It also allows you to manually apply the trailer brakes. The trailer brake control switch is used along with the trailer brake display page on the driver information center to adjust and display power output to the trailer brakes.

Manual Trailer Brake Apply

The manual trailer brake apply lever is located on the S76 Trailer Brake Control Switch and is used to apply the trailer’s Electric or Electric Over Hydraulic brakes independent of the vehicle’s brakes. This lever is used in the trailer gain adjustment procedure to properly adjust the power output to the trailer brakes.

Sliding the lever will apply only the trailer brakes. The power output to the trailer is indicated in the trailer brake display page in the Driver Information Center (DIC). If the vehicle’s service brakes are applied while using the manual trailer brake apply lever, the trailer brake control output power will be the greater of the two.

The trailer and the vehicle’s brake lamps will come on when either the vehicle’s braking or manual trailer brakes are applied.

Trailer Brake Gain Adjustment

Trailer gain should be set for a specific trailering condition and must be adjusted any time vehicle loading, trailer loading or road surface conditions change. It is important to re-adjust trailer gain any time the tow vehicle, trailer loading or road surface conditions change or if you notice trailer wheel lock-up at any time while you are towing.

Setting the trailer gain properly is needed for the best trailer stopping performance. A trailer that is over-gained may result in locked trailer brakes. A trailer that is under-gained may result in not enough trailer braking. Both of these conditions may result in poor stopping and stability of the vehicle and trailer.

Trailer Gain Adjustment Procedure

- Adjust trailer gain in 0.5 step increments up to 10 gain setting by using the gain adjustment +/− buttons on the trailer brake control panel switch. Pressing and holding a gain button will cause the trailer gain to continuously increment or decrement. To turn the output to the trailer off, set the gain to zero.
- Drive the tow vehicle and trailer combination on a level surface representative of the towing condition and free of traffic at approximately 32–40 km/h (20–25 mph) and fully apply the manual trailer brake apply lever mechanism located on the trailer brake control panel switch. Adjusting the trailer gain at slower speeds may result in an incorrect gain setting.
- Adjust the trailer gain to just below the threshold of trailer wheel lock-up . Trailer wheel lock-up may not occur if towing a heavily loaded trailer. In this case, adjust the trailer gain to the highest allowable setting for the towing condition.

Trailer Brake Gain and Output Display

This display menu can be accessed by scrolling through the DIC menu, or any time the trailer gain +/− button is depressed, or the manual trailer brake apply lever is actuated. The trailer output is displayed from 0 to full output and indicates the output power provided to the trailer brakes, relative to the gain setting.

After the electrical connection is made to a trailer equipped with electric brakes or electric over hydraulic brakes, the TRAILER CONNECTED message will be displayed momentarily on the DIC. The Trailer Brake Display Page can be selected on the DIC showing TRAILER GAIN and OUTPUT, after all vehicle related service messages are acknowledged by the driver. Depending on which instrument panel cluster is in the vehicle, the DIC may display dashed lines, a greyed out display, or it may be blank signifying a disconnected trailer or a trailer brake fault condition.

Tow/Haul Mode

Tow/Haul mode is selected through the Ride Control Switch for hauling heavy loads to provide increased performance and vehicle control. Tow/Haul Mode adjusts the transmission shift pattern, steering, and Electronic Stability Contol (ESC) performance.

If the vehicle is turned off with Tow/Haul mode active and then restarted within four hours or less Tow/Haul will remain active. Otherwise, the vehicle will start in Normal mode.

If equipped with a diesel engine, exhaust braking is automatically activated when Tow/Haul mode is selected. The system will command down shifts to reduce vehicle speed when the brake is applied. The normal tow/haul shift pattern will return once the vehicle is on a low grade or when the accelerator pedal is pressed.

Trailer Brake Driver Information Center Indicators and Messages

Trailer Brake Detection

The K67 Trailer Brake Control Module constantly monitors the trailer auxiliary control circuit from Terminal C at the X88B Tow Vehicle electrical Receptacle. When a trailer is connected with trailer brakes, the K67 Trailer Brake Control Module senses the connection and alerts the driver with a Trailer Connected message. If the K67 Trailer Brake Control Module senses a fault, or the trailer becomes disconnected, the vehicle will alert the driver with a Check Trailer Wiring message.

The following indicators are used to inform the driver of several different conditions:

Trailer Connected

This message will be briefly displayed when a trailer with Electric or Electric Over Hydraulic brakes is first connected to the vehicle. This message will automatically turn off in about ten seconds. The driver can also acknowledge this message before it automatically turns off.

Check Trailer Wiring

This message will be displayed if:

- The system detects that a trailer with Electric or Electric Over Hydraulic brakes is connected to the vehicle and then the trailer harness becomes disconnected from the vehicle.
- The trailer connection is recognized initially and then a disconnect occurs while the vehicle is stationary. This message will automatically turn off in about thirty seconds. This message will also turn off if the driver selects to turn this message off or if the trailer harness is reconnected.
- A disconnect of the trailer wiring harness occurs while the vehicle is moving. The Check Trailer Wiring message will continue until the ignition is turned off. The message will also turn off if the driver selects to turn this message off or it the trailer harness is re-connected.
- There is an electrical fault in the wiring to the electric trailer brakes. The Check Trailer Wiring message will continue as long as there is an electrical fault in the trailer wiring. This message will also turn off if the driver acknowledges this message off.
- A poor connection at the 7–way connector may cause the Check Trailer Wiring message. Some aftermarket 7–way trailer side connector adapters or plugs may cause deformation or excessive wear to the vehicle’s trailer terminals. It is recommended that you use an OEM or Pollak heavy duty 7–way trailer side connector adapter.

Service Trailer Brake System

This message will be displayed when there is a problem with the trailer brake control system. The trailer brake system may not be fully functional, or may not be functioning at all. The trailer brake system is designed to provide trailer braking, if possible, even when faults prevent it from being fully functional. This reduced functionality includes:

1. Providing trailer braking when the master cylinder pressure or brake pedal switch are faulted.
2. Providing trailer braking when hill start assist and trailer sway control communication is faulted.
3. Providing trailer braking when certain manual trailer brake apply lever faults are present.

Trailer Tire Pressure Monitoring

Special Tools

- *EL-46079/J-46079*
  Tire Pressure Monitor Diagnostic Tool
- *EL-50448*
  Tire Pressure Monitor Sensor Activation Tool
- *EL-52641* Trailer Presence Simulator Tool

For equivalent regional tools, refer to [Link target (target-id 59410-) not found] .

The Trailer Tire Pressure Monitor System is designed to monitor the pressure of the trailer tires, and warn the driver when a low pressure condition exists. Four Trailer Tire Pressure Monitor System sensors may be provided in the vehicle's glove box as an accessory when equipped. The system can accommodate a trailer with up to (6) tires if additional sensors are purchased from the dealership. Also, the system can be paired with up to (5) individual trailers. The sensors must be mounted onto each tire and wheel assembly, and the sensors must be learned by the vehicle by following the learning procedure as shown in the Trailering App section of this manual. For sensor installation assistance, please contact your trailer service center or tire service center. The Trailer Tire Pressure Monitor System sensors monitor the air pressure in the trailer tires and transmit the trailer tire pressure readings to a receiver located in the vehicle. The trailer tire pressure sensors can transmit up to 23 feet (7 meters) from the hitch receiver of the vehicle. The tire pressure values can be viewed in the trailering app in the vehicle's center stack.

Trailering Diagnostic Tools

In some situations when diagnosing trailer tire pressure monitoring, trailer lighting, or integrated trailer brakes, it may be necessary to connect the vehicle to a trailer to confirm proper operation. Performing this activity may prove difficult in the service environment since trailers are not often available for diagnostic use, may have existing electrical issues outside of the issues a technician is attempting to diagnose, or simply may be too unwieldily to connect for diagnosis.

With all this in mind, it may be helpful to build or create a tool that can be plugged into the vehicle's trailer connector and simulate a connected trailer. This tool would include park lamps, stop lamps, and a reverse lamp for lighting and trailer tire pressure monitoring diagnosis. It can be expanded to include trailer brake magnets to diagnose integrated trailer brake concerns. Also, an additional lamp can be included to diagnose the B+ circuit to the trailer.

Trailer issues are NOT covered under warranty, but these tools may be used to verify the vehicle is functioning properly and to help the customer understand and correct any trailer related issues if they so choose.

Available Trailer Presence Simulator Tool

Illustration	Tool Number/Description
5166189	*EL-52641* Trailer Presence Simulator Tool

Simulated Trailer Lighting

Creating a tool to simulate a connected trailer can be used to diagnose issues with trailer lighting, trailer brake (if equipped), the Trailering App (if equipped), and trailer tire pressure monitoring system (if equipped).

If the vehicle is equipped with a K68 Trailer Lamp Control Module (U1D/UET), the module monitors the current on the lighting circuits to determine a trailer has been connected. The Trailer Lamp Control Module pulses current on the trailer lighting circuits every 42 minutes to monitor for a connected trailer. If a current draw greater than 55mA is detected, the Trailer Lamp Control Module recognizes this as a connected trailer. This will enable any trailer lighting controlled by the Trailer Lamp Control Module. The Center Stack Module will also use this trailer detection as a cue to enable the Trailering App and trailer tire pressure monitoring functions.

Creating a Simulated Trailer Lighting Tool

Parts needed:

- 7-way RV trailer connector Qty: 1

Note: The combination trailer stop/turn, and backup lamps must draw at least 55mA of total current to be detected as a trailer. Some LED combination lamps will not draw enough current. If an LED combination lamp is used, make sure it draws at least 55mA. A load resistor can be added to the circuit if necessary to obtain the correct load.

- Combination trailer park/stop/turn lamp (greater than 55mA drawn when on) Qty: 2
- Reverse lamp Qty: 1

- 12 gauge wire and terminals/connectors Qty: As needed
- 18 gauge wire and terminals/connectors Qty: As needed
- Mounting board Qty: 1

1. Connect a 12 gauge wire to the ground terminal of the 7-way trailer connector and the ground circuit of each combination trailer park/stop/turn lamp and the reverse lamp in parallel.
2. Connect an 18 gauge wire between the park lamp terminal of the 7-way trailer connector and the park lamp circuit of each combination trailer park/stop/turn lamp in parallel.
3. Connect an 18 gauge wire between the left turn/stop lamp terminal of the 7-way trailer connector and the turn/stop lamp circuit of left trailer park/stop/turn lamp.
4. Connect an 18 gauge wire between the right turn/stop lamp terminal of the 7-way trailer connector and the turn/stop lamp circuit of right trailer park/stop/turn lamp.
5. Connect an 18 gauge wire between the reverse lamp terminal of the 7-way trailer connector and the reverse lamp.

Note: A combination trailer lighting and trailer brake tool can be created on the same mounting board.

6. Mount the left combination trailer park/stop/turn lamp, right combination trailer park/stop/turn lamp, and reverse lamp to the mounting board.
7. Plug the 7-way RV trailer connector to the vehicle and verify functionality.

Simulated Trailer Brakes

Creating a tool to simulate trailer brakes can be used to diagnose trailer brake issues.

The trailer brake control system is compatible with two types of trailer brake systems: electromagnetic or electro-over hydraulic trailer brakes. The Brake System Control Module must determine which type of brakes the trailer is equipped with so the system can output correctly for the trailer's brake system. Because the Brake System Control Module has to determine the type of trailer brake system that is being used, it can be sensitive to a variety of trailer wiring issues.

The Trailer Brake Control Module continuously sends a test pulse out on the trailer brake control circuit (circuit 47) to determine if a trailer with trailer brakes has been connected. How the pulse reacts when a trailer is connected is how the Trailer Brake Control Module determines which type of braking system the trailer is equipped with.

Even after the system detects the trailer, Trailer Brake Control Module will continue to send this test pulse on the trailer brake control circuit, which now is monitoring both the truck and trailer circuitry. The trailer brake control circuit continues to be monitored for any faults so the driver can be notified of any issues that may occur within the truck or trailer, as well as, to determine when the trailer is disconnected from the truck.

Creating a Simulated Trailer Brake Tool
Parts needed:

- 7-way RV trailer connector Qty: 1
- Electric trailer brake magnets Qty: 2, 4, 6, or 8
- Reverse lamp Qty: 1
- Mounting board Qty: 1
- 12 gauge wire and terminals/connectors Qty: As needed

1. Connect a 12 gauge wire to the ground terminal of the 7-way trailer connector.
2. Connect a 12 gauge wire to the brake controller output terminal of the 7-way trailer connector.

Note: The trailer brake magnets must be connected in parallel. Connecting in series will create an excessive current draw and disable the trailer brake system.

3. Connect the trailer brake magnets to the 12 gauge wires from the 7-way trailer connector in parallel.

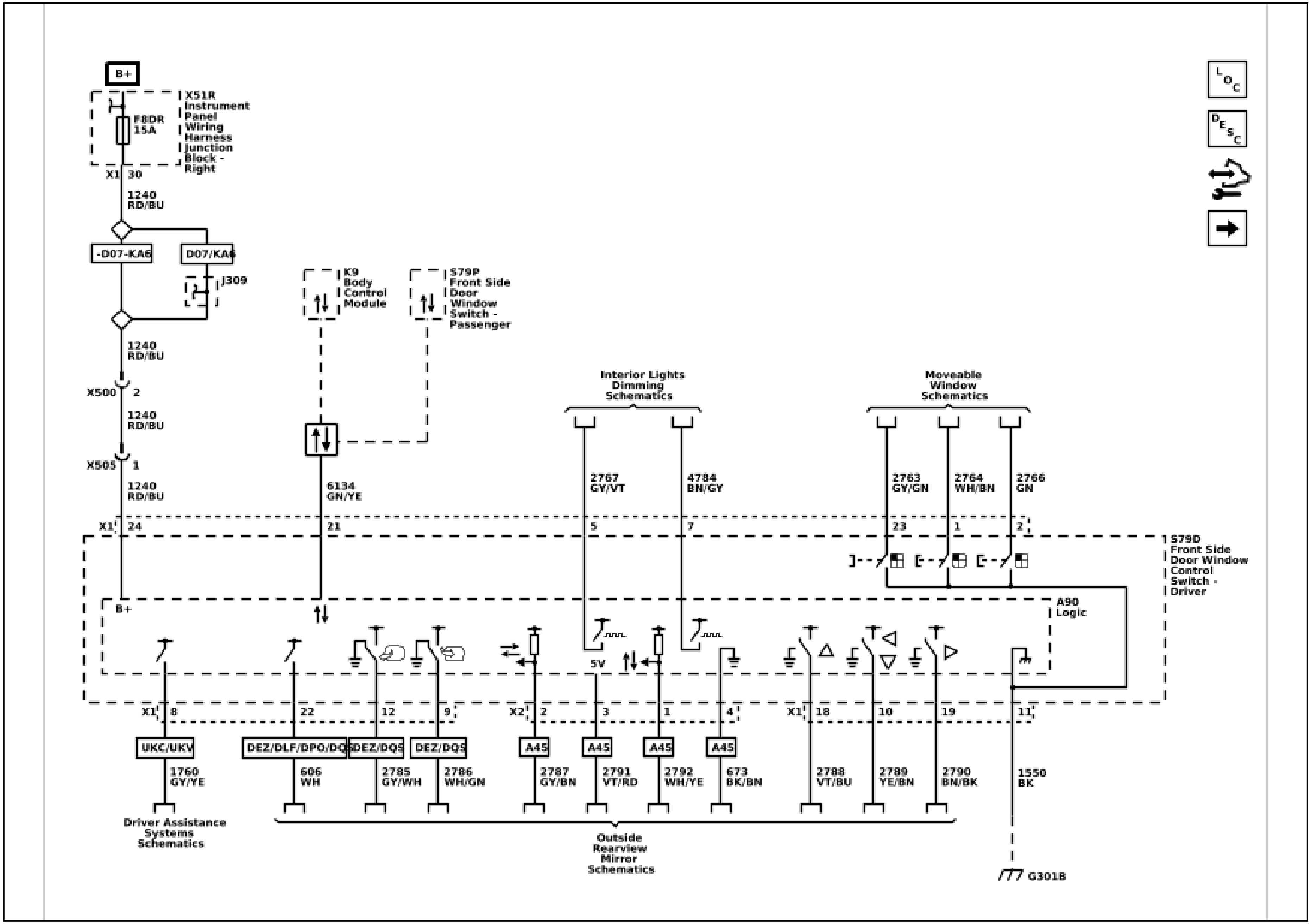
Note: A combination trailer lighting and trailer brake tool can be created on the same mounting board.

4. Mount the trailer brake magnets to the mounting board.
5. Plug the 7-way RV trailer connector to the vehicle and verify functionality.

Vehicle Access

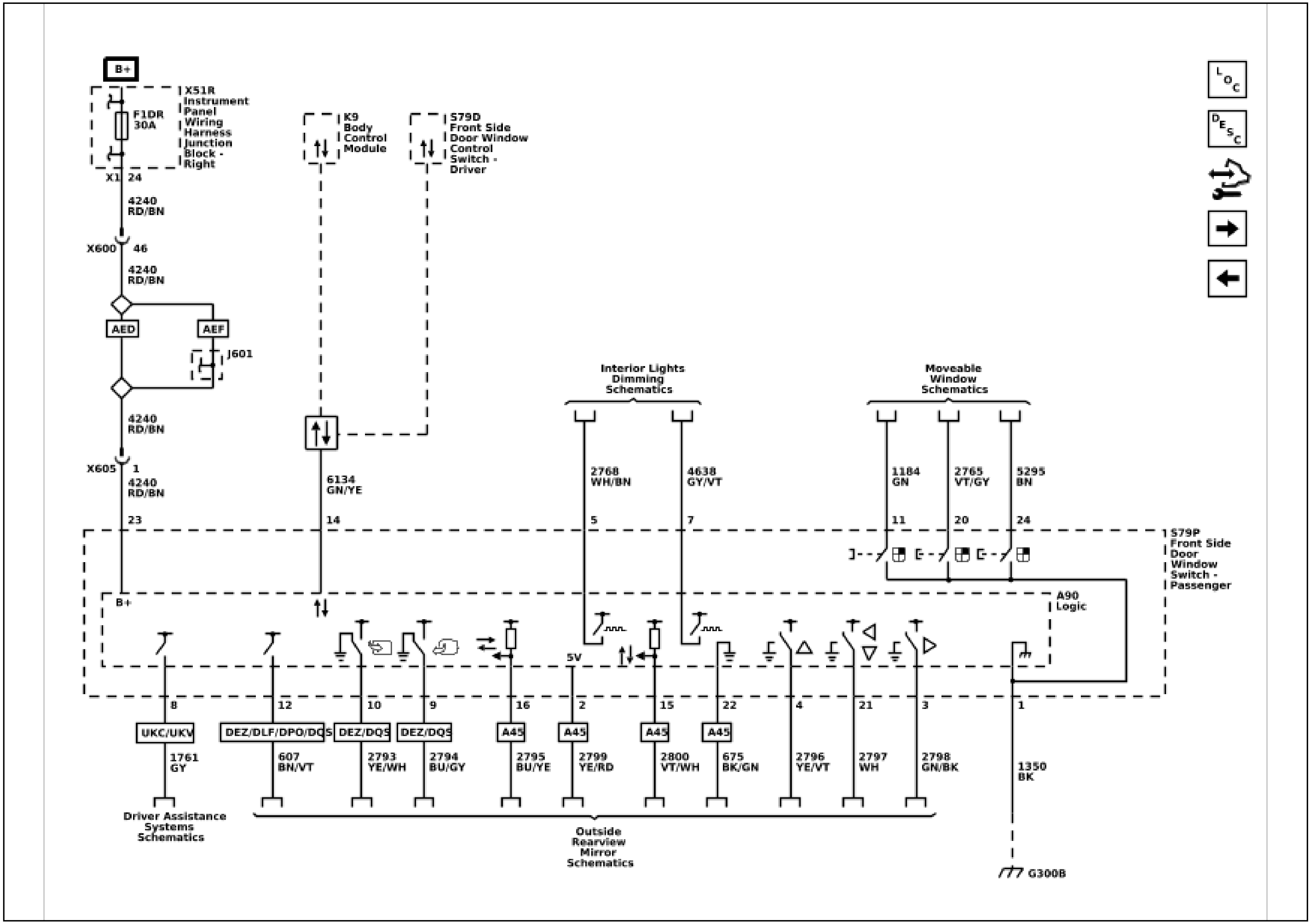
Schematic and Routing Diagrams

Door Lock/Indicator Schematics (Driver Door Switch Panel Control Module Power, Ground, Serial Data, and Subsystem References)

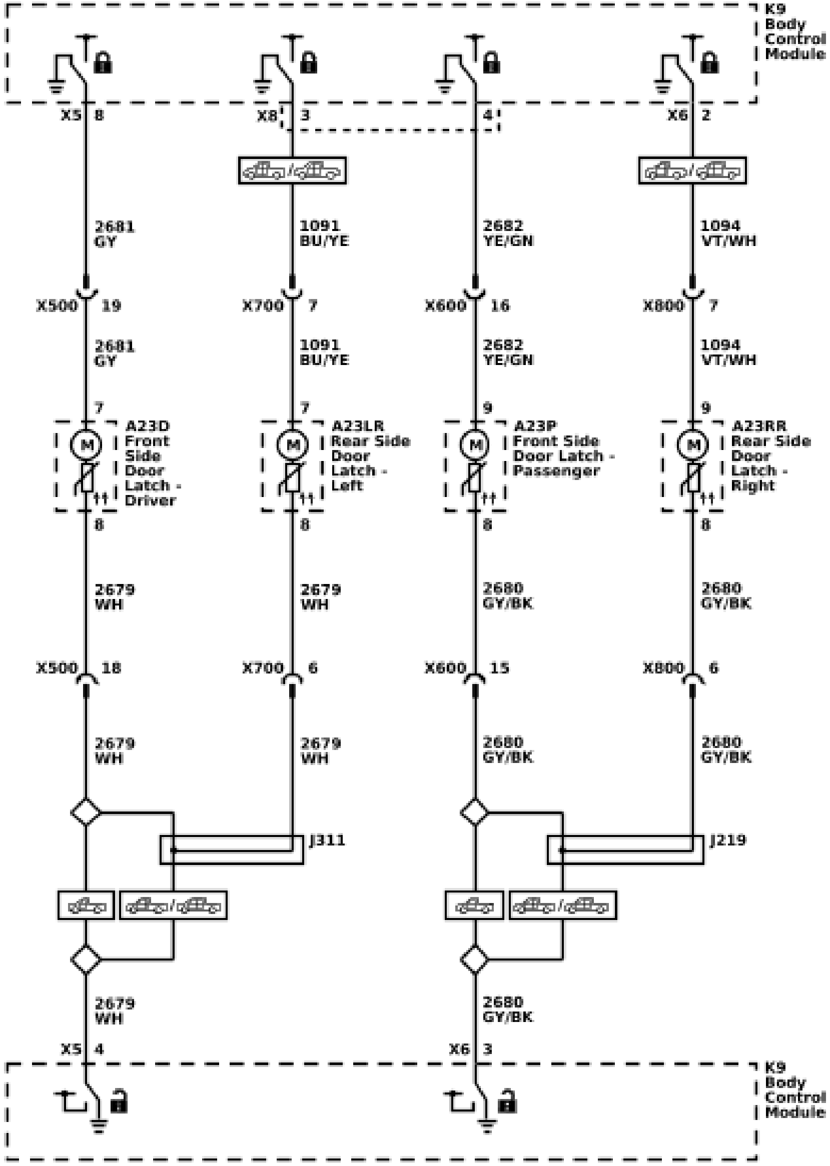

B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F8DR 15A
X1 30
1240 RD/BU
-D07-KA6
D07/KA6
J309
1240 RD/BU
X500 2
1240 RD/BU
X505 1
1240 RD/BU
K9 Body Control Module
S79P Front Side Door Window Switch - Passenger
6134 GN/YE
Interior Lights Dimming Schematics
2767 GY/VT
4784 BN/GY
Moveable Window Schematics
2763 GY/GN
2764 WH/BN
2766 GN
X1 24
21
5
7
23
1
2
S79D Front Side Door Window Control Switch - Driver
A90 Logic
B+
5V
X1 8
22
12
9
X2 2
3
1
4
X1 18
10
19
11
UKC/UKV
DEZ/DLF/DPO/DQS
DEZ/DQS
DEZ/DQS
A45
A45
A45
A45
1760 GY/YE
606 WH
2785 GY/WH
2786 WH/GN
2787 GY/BN
2791 VT/RD
2792 WH/YE
673 BK/BN
2788 VT/BU
2789 YE/BN
2790 BN/BK
1550 BK
Driver Assistance Systems Schematics
Outside Rearview Mirror Schematics
G301B
LOC
DESC

6846892

Door Lock/Indicator Schematics (Passenger Door Switch Panel Control Module Power, Ground, Serial Data, and Subsystem References)

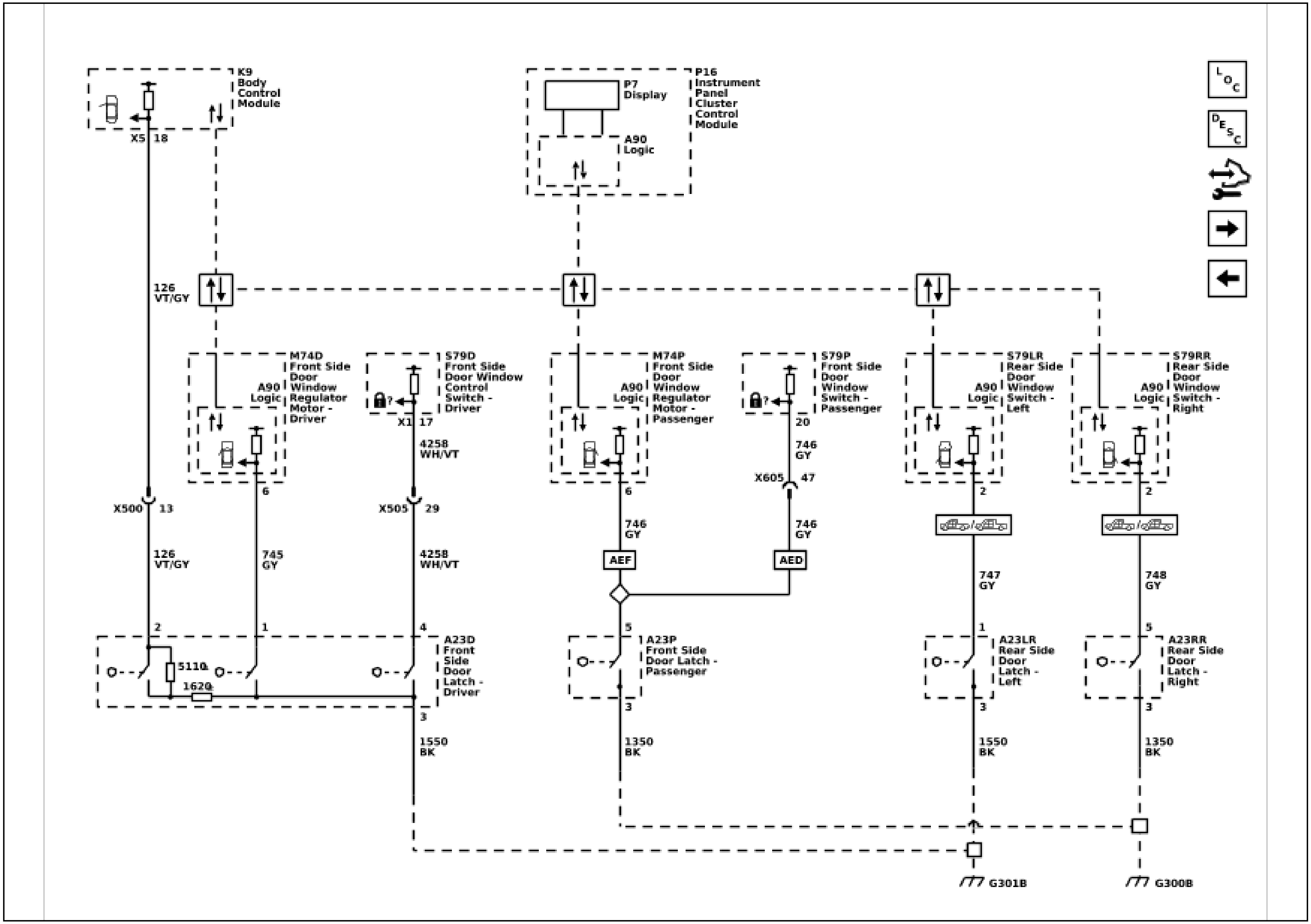

B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F1DR 30A
X1 24
4240 RD/BN
X600 46
4240 RD/BN
AED
AEF
J601
4240 RD/BN
X605 1
4240 RD/BN
23
K9 Body Control Module
S79D Front Side Door Window Control Switch - Driver
6134 GN/YE
14
Interior Lights Dimming Schematics
2768 WH/BN
5
4638 GY/VT
7
Moveable Window Schematics
1184 GN
11
2765 VT/GY
20
5295 BN
24
S79P Front Side Door Window Switch - Passenger
A90 Logic
B+
5V
8
12
10
9
16
2
15
22
4
21
3
1
UKC/UKV
DEZ/DLF/DPO/DQS
DEZ/DQS
DEZ/DQS
A45
A45
A45
A45
1761 GY
607 BN/VT
2793 YE/WH
2794 BU/GY
2795 BU/YE
2799 YE/RD
2800 VT/WH
675 BK/GN
2796 YE/VT
2797 WH
2798 GN/BK
1350 BK
Driver Assistance Systems Schematics
Outside Rearview Mirror Schematics
G300B
6846893

Door Lock/Indicator Schematics (Actuators)

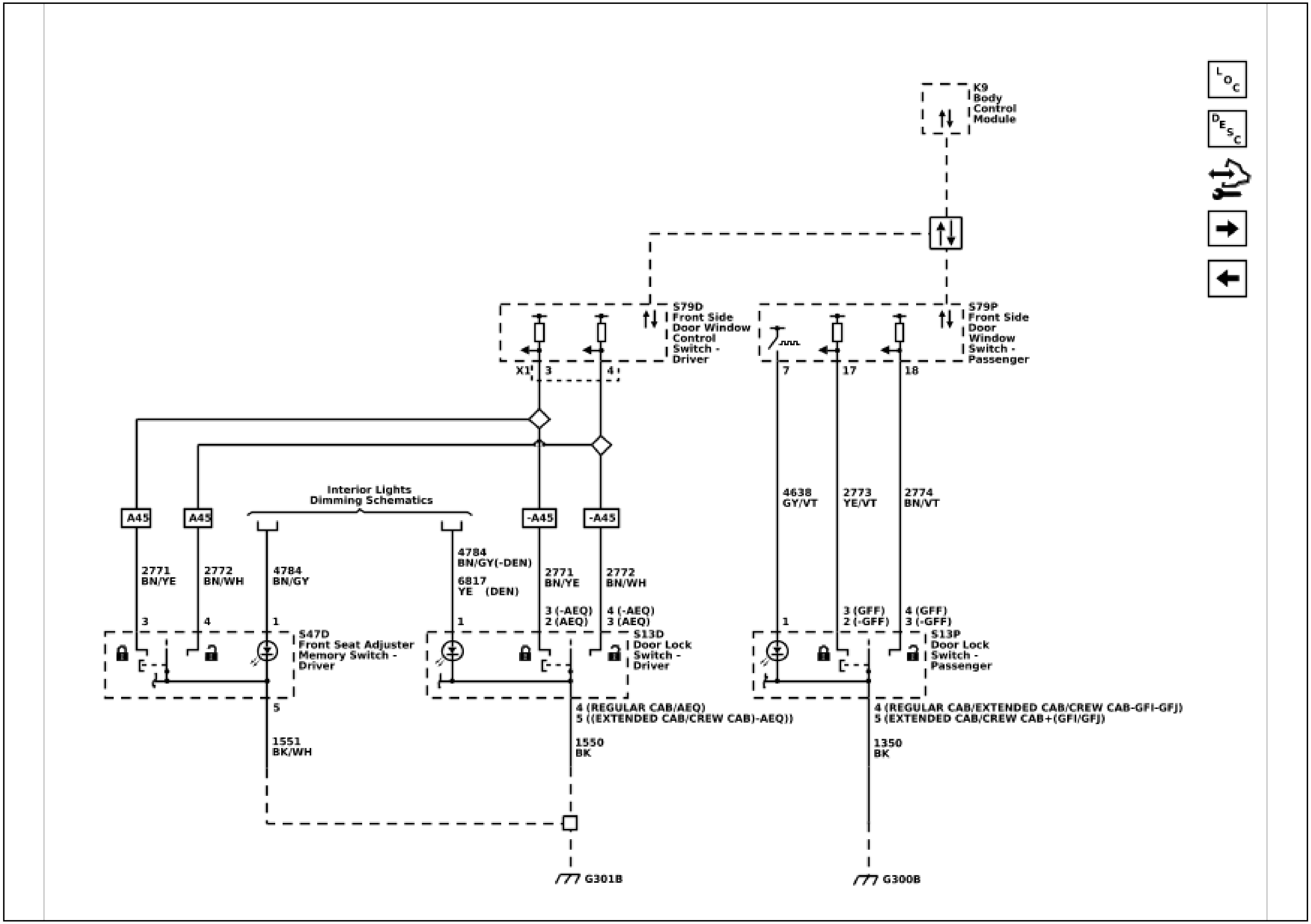

K9 Body Control Module
X5 8
X8 3
4
X6 2
2681 GY
1091 BU/YE
2682 YE/GN
1094 VT/WH
X500 19
X700 7
X600 16
X800 7
2681 GY
1091 BU/YE
2682 YE/GN
1094 VT/WH
7
7
9
9
A23D Front Side Door Latch - Driver
A23LR Rear Side Door Latch - Left
A23P Front Side Door Latch - Passenger
A23RR Rear Side Door Latch - Right
M
M
M
M
8
8
8
8
2679 WH
2679 WH
2680 GY/BK
2680 GY/BK
X500 18
X700 6
X600 15
X800 6
2679 WH
2679 WH
2680 GY/BK
2680 GY/BK
J311
J219
2679 WH
2680 GY/BK
X5 4
X6 3
K9 Body Control Module

6846894

Door Lock/Indicator Schematics (Ajar Switches, Lock Status and Child Lock Status)

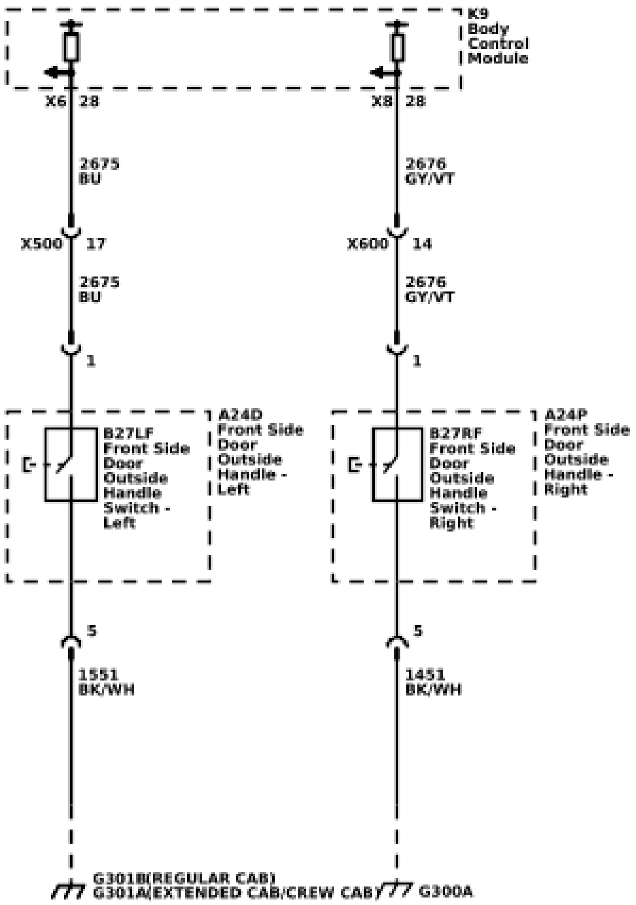

K9 Body Control Module
X5 18
126 VT/GY
X500 13
126 VT/GY
P7 Display
A90 Logic
P16 Instrument Panel Cluster Control Module
M74D Front Side Door Window Regulator Motor - Driver
A90 Logic
6
745 GY
S79D Front Side Door Window Control Switch - Driver
X1 17
4258 WH/VT
X505 29
4258 WH/VT
M74P Front Side Door Window Regulator Motor - Passenger
A90 Logic
6
746 GY
AEF
S79P Front Side Door Window Switch - Passenger
20
746 GY
X605 47
746 GY
AED
S79LR Rear Side Door Window Switch - Left
A90 Logic
2
747 GY
S79RR Rear Side Door Window Switch - Right
A90 Logic
2
748 GY
2
1
4
511Ω
162Ω
A23D Front Side Door Latch - Driver
3
1550 BK
5
A23P Front Side Door Latch - Passenger
3
1350 BK
1
A23LR Rear Side Door Latch - Left
3
1550 BK
5
A23RR Rear Side Door Latch - Right
3
1350 BK
G301B
G300B
6846895

Door Lock/Indicator Schematics (Door Lock Switches and Indicators)


K9
Body
Control
Module
S79D
Front Side
Door Window
Control
Switch -
Driver
S79P
Front Side
Door
Window
Switch -
Passenger
X1
3
4
7
17
18
4638
GY/VT
2773
YE/VT
2774
BN/VT
A45
A45
-A45
-A45
Interior Lights
Dimming Schematics
2771
BN/YE
2772
BN/WH
4784
BN/GY
4784
BN/GY(-DEN)
6817
YE (DEN)
2771
BN/YE
2772
BN/WH
3 (-AEQ)
2 (AEQ)
4 (-AEQ)
3 (AEQ)
3 (GFF)
2 (-GFF)
4 (GFF)
3 (-GFF)
3
4
1
1
1
S47D
Front Seat Adjuster
Memory Switch -
Driver
S13D
Door Lock
Switch -
Driver
S13P
Door Lock
Switch -
Passenger
5
4 (REGULAR CAB/AEQ)
5 ((EXTENDED CAB/CREW CAB)-AEQ))
4 (REGULAR CAB/EXTENDED CAB/CREW CAB-GFI-GFJ)
5 (EXTENDED CAB/CREW CAB+(GFI/GFJ))
1551
BK/WH
1550
BK
1350
BK
G301B
G300B

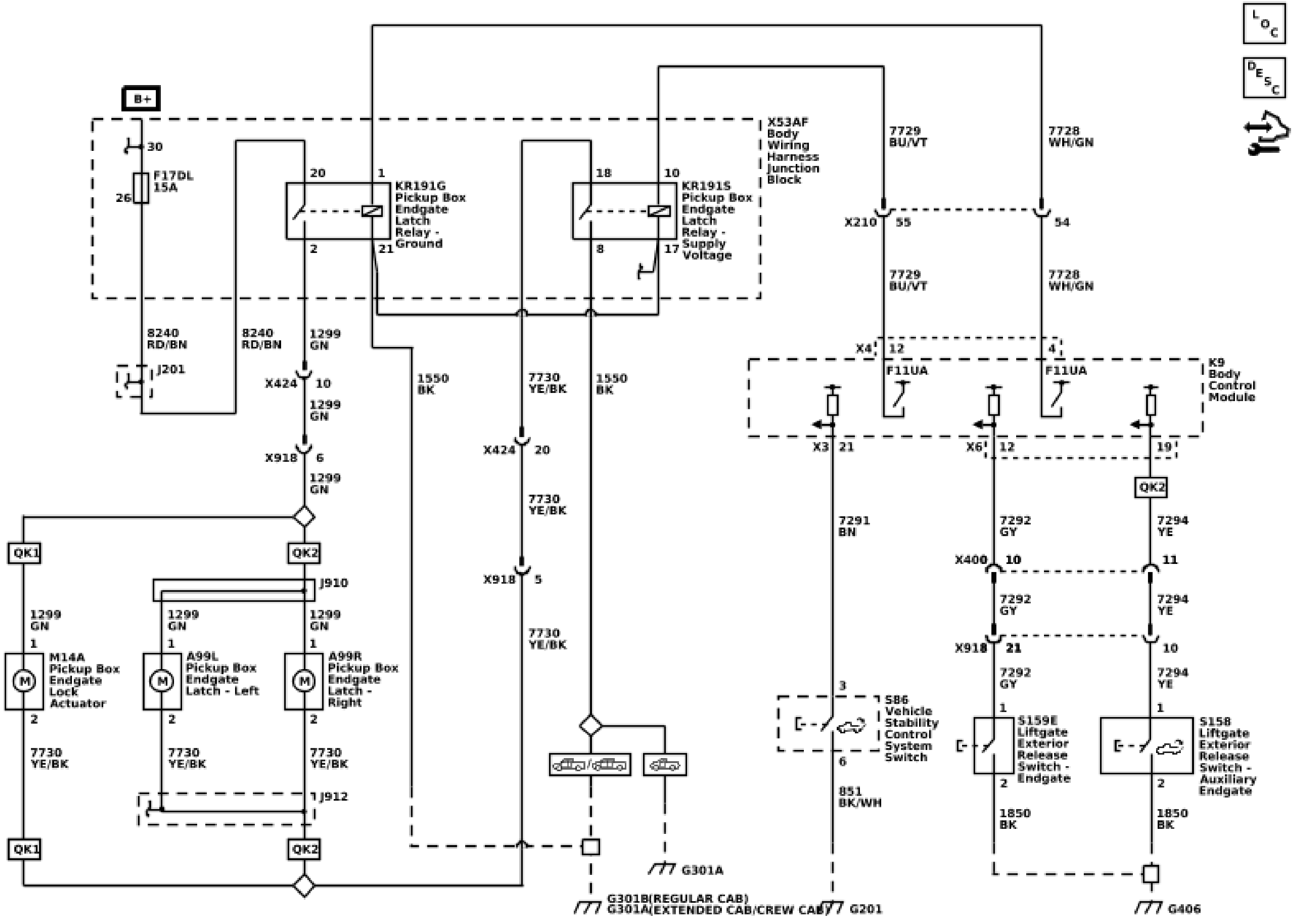
6846896

Door Lock/Indicator Schematics (Door Handle Switches)


K9
Body
Control
Module
X6 28
X8 28
2675
BU
2676
GY/VT
X500 17
X600 14
2675
BU
2676
GY/VT
1
1
B27LF
Front Side
Door
Outside
Handle
Switch -
Left
A24D
Front Side
Door
Outside
Handle -
Left
B27RF
Front Side
Door
Outside
Handle
Switch -
Right
A24P
Front Side
Door
Outside
Handle -
Right
5
5
1551
BK/WH
1451
BK/WH
G301B(REGULAR CAB)
G301A(EXTENDED CAB/CREW CAB)
G300A

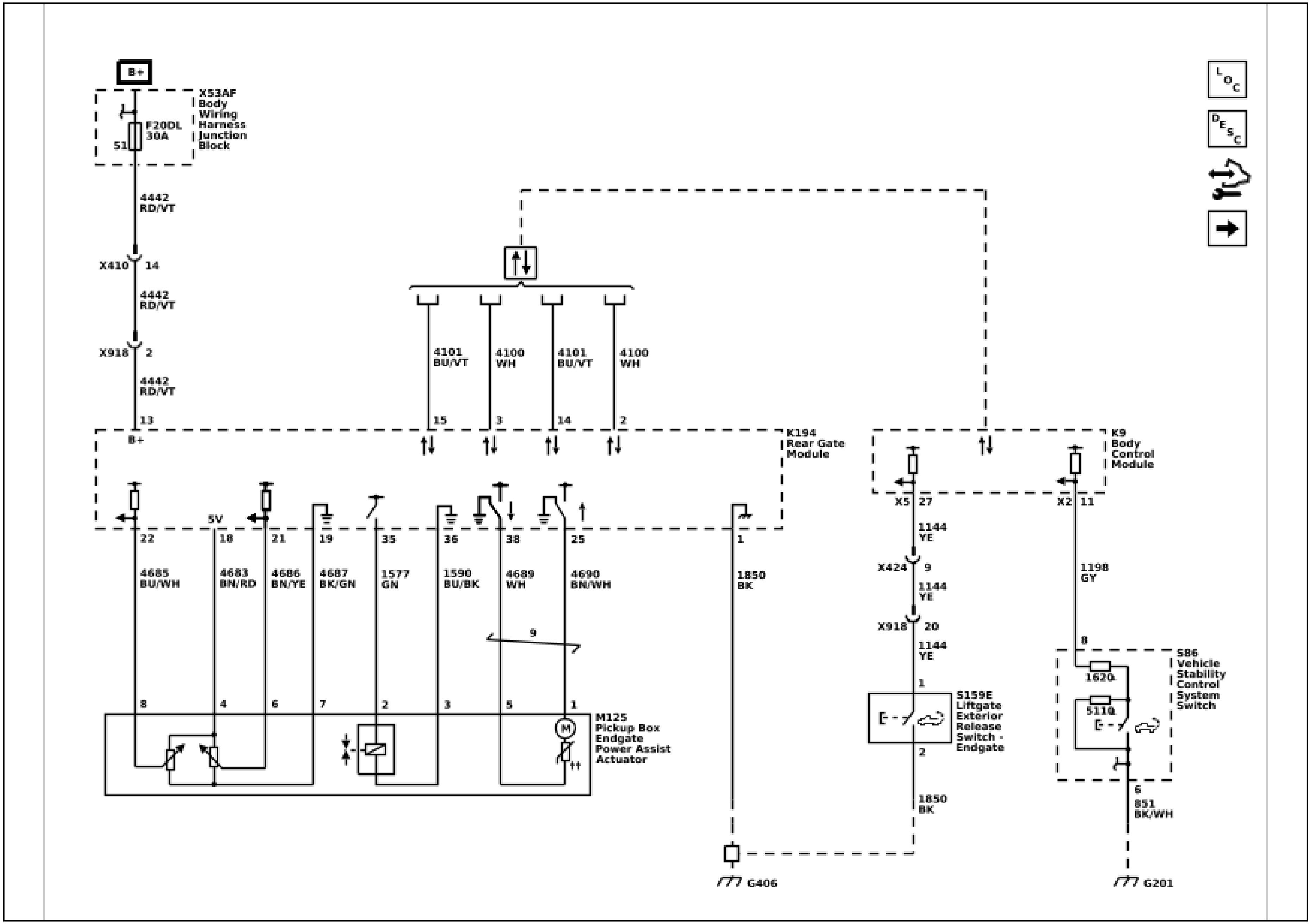
6846897

Release Systems Schematics (Endgate Release (QT5))


B+
30
F17DL
15A
26
X53AF
Body
Wiring
Harness
Junction
Block
20
1
KR191G
Pickup Box
Endgate
Latch
Relay -
Ground
2
21
18
10
KR191S
Pickup Box
Endgate
Latch
Relay -
Supply
Voltage
8
17
7729
BU/VT
7728
WH/GN
X210
55
54
8240
RD/BN
1299
GN
J201
X424
10
X918
6
1550
BK
7730
YE/BK
X424
20
X918
5
X4
12
4
F11UA
K9
Body
Control
Module
X3
21
X6
12
19
QK2
7291
BN
7292
GY
7294
YE
X400
10
11
X918
21
10
QK1
QK2
J910
M14A
Pickup Box
Endgate
Lock
Actuator
A99L
Pickup Box
Endgate
Latch - Left
A99R
Pickup Box
Endgate
Latch -
Right
M
1
2
J912
3
6
S86
Vehicle
Stability
Control
System
Switch
S159E
Liftgate
Exterior
Release
Switch -
Endgate
S158
Liftgate
Exterior
Release
Switch -
Auxiliary
Endgate
851
BK/WH
1850
BK
G301A
G301B(REGULAR CAB)
G301A(EXTENDED CAB/CREW CAB)
G201
G406
LOC
DESC

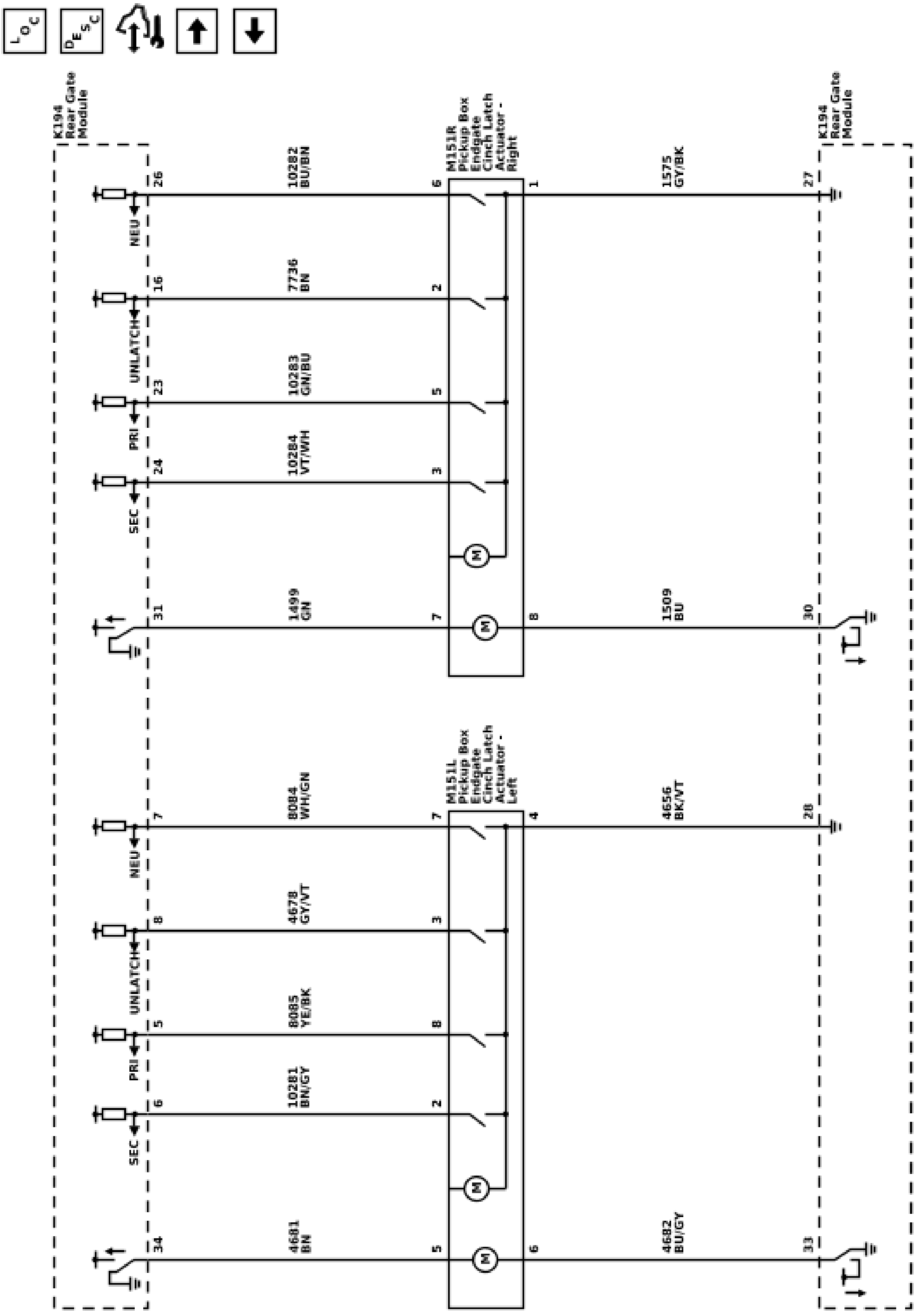
6846898

Endgate Schematics (Power Endgate Controls (QT6))

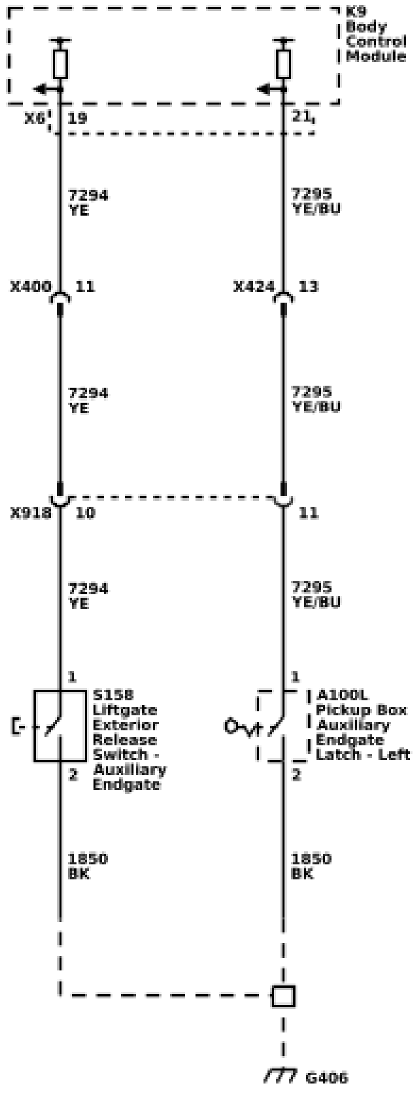

L O C
D E S C
B+
X53AF Body Wiring Harness Junction Block
F20DL 30A
51
4442 RD/VT
X410 14
4442 RD/VT
X918 2
4442 RD/VT
13
B+
4101 BU/VT
4100 WH
4101 BU/VT
4100 WH
15
3
14
2
K194 Rear Gate Module
22
5V
18
21
19
35
36
38
25
1
4685 BU/WH
4683 BN/RD
4686 BN/YE
4687 BK/GN
1577 GN
1590 BU/BK
4689 WH
4690 BN/WH
9
1850 BK
8
4
6
7
2
3
5
1
M
M125 Pickup Box Endgate Power Assist Actuator
G406
K9 Body Control Module
X5 27
1144 YE
X424 9
1144 YE
X918 20
1144 YE
1
S159E Liftgate Exterior Release Switch - Endgate
2
1850 BK
X2 11
1198 GY
8
162Ω
511Ω
S86 Vehicle Stability Control System Switch
6
851 BK/WH
G201

6846899

Endgate Schematics (Power Endgate Latches (QT6))

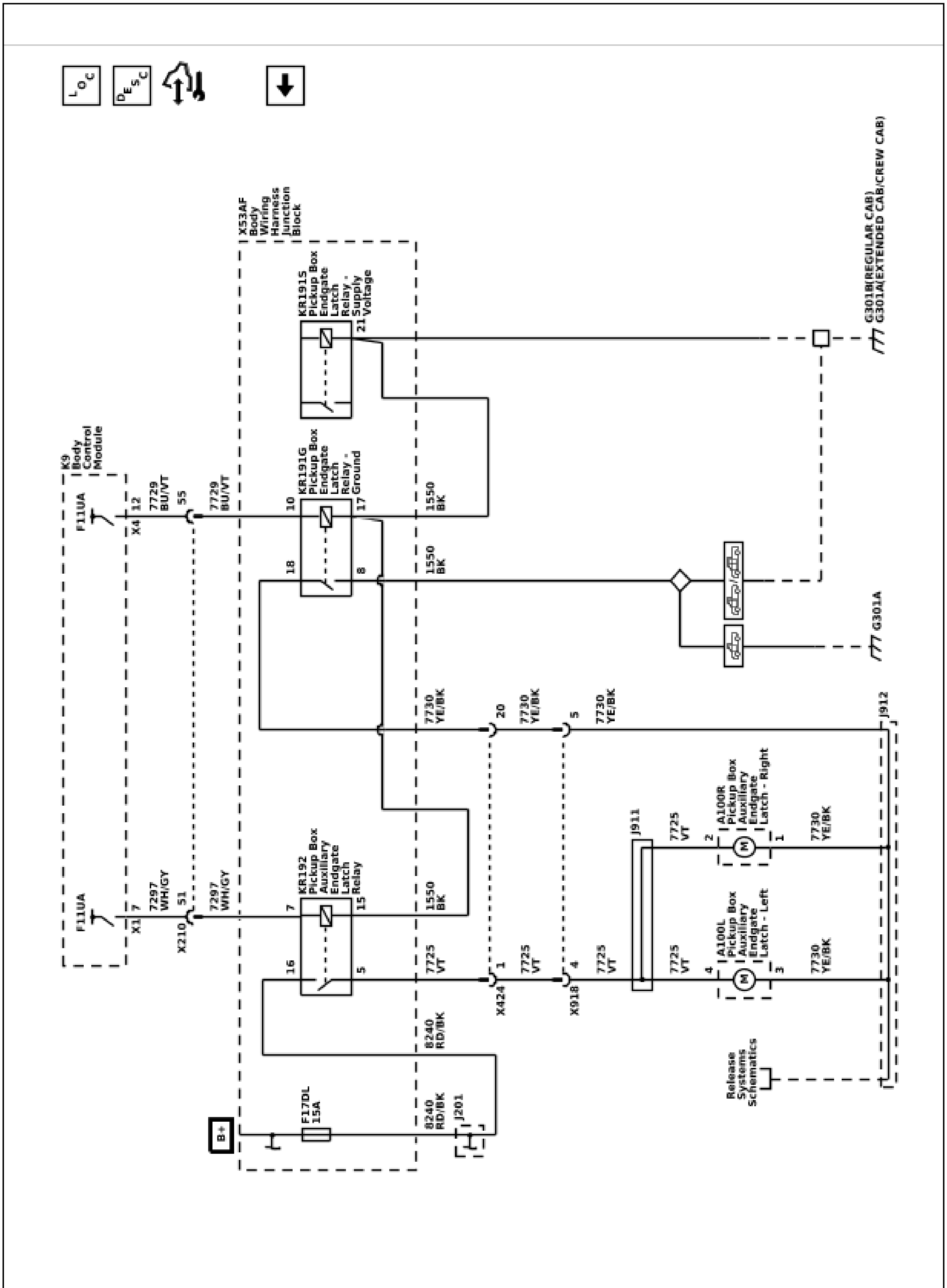

6846900
K194 Rear Gate Module
NEU
UNLATCH
PRI
SEC
26
16
23
24
31
7
8
5
6
34
10282 BU/BN
7736 BN
10283 GN/BU
10284 VT/WH
1499 GN
8084 WH/GN
4678 GY/VT
8085 YE/BK
10281 BN/GY
4681 BN
M151R Pickup Box Endgate Cinch Latch Actuator - Right
6
2
5
3
7
1
8
M
M151L Pickup Box Endgate Cinch Latch Actuator - Left
7
3
8
2
5
4
6
M
1575 GY/BK
1509 BU
4656 BK/VT
4682 BU/GY
K194 Rear Gate Module
27
30
28
33

Endgate Schematics (Auxiliary Endgate Latch Controls and Switches (QK2 & QT5))

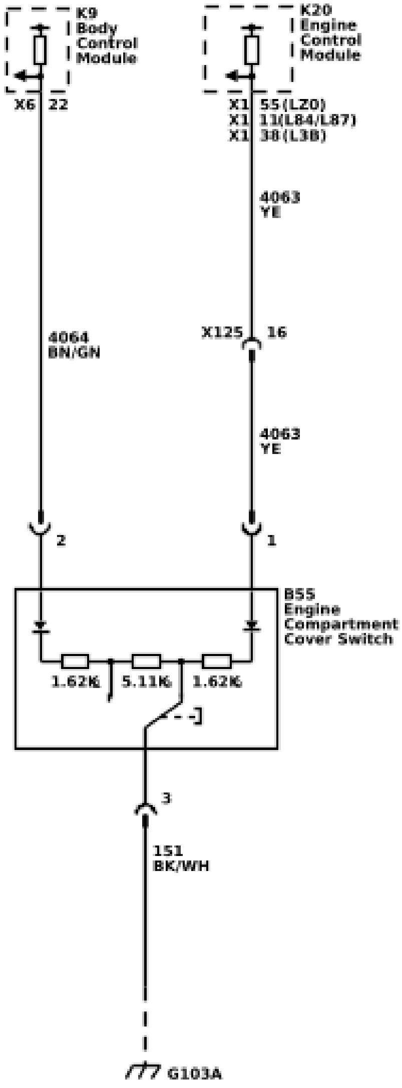

K9
Body
Control
Module
X6
19
21
7294
YE
7295
YE/BU
X400
11
X424
13
7294
YE
7295
YE/BU
X918
10
11
7294
YE
7295
YE/BU
1
S158
Liftgate
Exterior
Release
Switch -
Auxiliary
Endgate
2
1
A100L
Pickup Box
Auxiliary
Endgate
Latch - Left
2
1850
BK
1850
BK
G406

6846901

Endgate Schematics (Auxiliary Endgate Latch Motors)


6846902
K9 Body Control Module
F11UA
X4 12
X1 7
7729 BU/VT
55
7297 WH/GY
51
X210
X53AF Body Wiring Harness Junction Block
KR191S Pickup Box Endgate Latch Relay - Supply Voltage
21
KR191G Pickup Box Endgate Latch Relay - Ground
10
17
18
8
KR192 Pickup Box Auxiliary Endgate Latch Relay
7
15
16
5
1550 BK
7730 YE/BK
7725 VT
8240 RD/BK
F17DL 15A
B+
J201
20
1
X424
4
X918
J911
J912
A100R Pickup Box Auxiliary Endgate Latch - Right
A100L Pickup Box Auxiliary Endgate Latch - Left
2
3
M
G301B(REGULAR CAB)
G301A(EXTENDED CAB/CREW CAB)
G301A
Release Systems Schematics

Hood Latch Schematics (Engine Compartment Cover Switch)


K9
Body
Control
Module
X6 22
4064
BN/GN
2
K20
Engine
Control
Module
X1 55(LZ0)
X1 11(L84/L87)
X1 38(L3B)
4063
YE
X125 16
4063
YE
1
B55
Engine
Compartment
Cover Switch
1.62K
5.11K
1.62K
3
151
BK/WH
G103A

6846903

Description and Operation

Door Ajar Indicator Description and Operation

Door Ajar Indicator System Components

The door ajar indicator system consists of the following components:

- Body control module (BCM)
- Instrument cluster
- Driver door latch
- Passenger door latch
- Left rear door latch
- Right rear door latch
- Driver window motor
- Passenger window motor
- Left rear side door window switch
- Right rear side door window switch

Driver and Passenger Door Ajar

The window motor supplies a 12V signal to the door ajar switch within the door latch, when a door is open the door ajar switch closes pulling the 12V signal low. When the window motor detects the drop in the 12V signal circuit, it will then communicate this status to the BCM via local interconnect network (LIN) bus. The BCM communicates with the instrument cluster via serial data message. The instrument cluster, upon receipt of this serial data message, will illuminate the door ajar indicator and also send a serial data message to the radio to activate the door ajar audible warning when the vehicle speed is greater then 8 km/h (5 mph).

Rear Doors Ajar

The rear side door window switches each provide a 12V signal to their respective door ajar switch signal circuits. The rear door ajar switches are integral to each rear door latch assembly. When a rear door is opened, the normally open door ajar switch closes. With the door ajar switch closed, ground is provided to the door ajar switch signal circuit and the voltage within the signal circuit drops. The rear side door window switches will detect the voltage drop and will send a serial data message to the body control module which will then send a message to the instrument cluster to command the door ajar message

Endgate Description and Operation (QT6)

System Description

The power endgate system consists of the following components:

- Rear gate module
- Pickup box endgate power assist actuator
- Pickup box endgate position sensor (part of the power assist actuator)
- Interior pickup box endgate control switch (Part of the Instrument panel multifunction switch)
- Exterior pickup box endgate control switch
- Right pickup box endgate latch assembly
- Left pickup box endgate latch assembly
- Keyless entry transmitter
- Remote control door lock receiver

Operation

The power endgate can be commanded to power open by the following methods:

- Pressing the interior pickup box endgate control switch on the center stack
- Pressing the touch pad on the exterior endgate handle (vehicle doors must be unlocked)
- Pressing the endgate button on the RKE transmitter twice and holding until the endgate latches release

The power endgate can be commanded to power close by the following methods:

- Pressing and holding the interior pickup box endgate control switch on the center stack until the endgate is fully closed and latched
- Pressing the touch pad on the exterior endgate handle
- Pressing the endgate button on the RKE transmitter twice and holding until the endgate is fully closed and latched
- Lifting the tailgate at least 10 cm (4 in) above the full close position and holding momentarily

The vehicle must be in Park for any of the power tailgate functions to operate.

The rear gate module will respond to a request by commanding the left and right pickup box endgate latches to release the endgate and activate the pickup box endgate power assist actuator and lower the endgate or to raise and cinch the endgate closed.

Power Latch

The rear gate module continuously monitors power endgate operation and calculates its location and direction of travel from an endgate position sensor (part of the power assist actuator). One input returns the position of the endgate relative to the x-axis and y-axis. The rear gate module then uses these 2 inputs together to calculate its angle relative to the endgate.

The left and right pickup box endgate latches are bi-directional motors and latch or unlatch operation is the result of the direction of the motor rotation. The rear gate module controls the left and right pickup box endgate latches through the control circuits by supplying power and ground in the appropriate polarity. The motor control circuits are monitored by the rear gate module prior to activation for a high or low condition and during motor operation for an insufficient current flow condition. The ratchet, pawl and sector switches are part of the left and right pickup box endgate latches and are used by the rear gate module to determine the state of the latch during the process of latching or unlatching. Each of the latch switch signal circuits are supplied battery voltage and monitored within the rear gate module. The latch switches share a common low reference circuit from the rear gate module and when the switch contacts close the signal circuit goes low and the rear gate module determines the switch to be active. The ratchet, pawl and unlatch switches are inactive when the endgate is closed and will transition to active as the endgate is opened. The sector switch will be inactive when the endgate is closed, during opening of the endgate the sector switch will change to active and back to inactive when the endgate is in the fully open position.

The exterior pickup box endgate control switch signal circuit is supplied battery voltage by the rear gate module. When the switch is pressed the contacts close and the signal circuit goes low, the rear gate module will detect the voltage drop and will command the endgate to release and lower or to power raise the endgate to the closed position.

For vehicles without the optional passive keyless entry, when the exterior pickup box endgate control switch is pressed, the rear gate module will check the status of the vehicle door locks by sending a serial data message to the body control module requesting the door lock status. If the vehicle doors are locked, the rear gate module will ignore the signal from the exterior pickup box endgate control switch. If the vehicle doors are unlocked, the rear gate module will permit the endgate to unlatch and power open when the exterior pickup box endgate control switch is pressed.

For vehicles with the optional passive keyless entry system, the keyless entry control module monitors the proximity of the keyless entry transmitter. If the exterior pickup box endgate control switch is pressed and the keyless entry transmitter is within range, the keyless entry control module will send a serial data message to the rear gate module indicating the presence of the keyless entry transmitter and the rear gate module will permit the endgate to unlatch and power open. If the doors are locked and the keyless entry transmitter is not within range, the rear gate module will ignore the signal from the exterior pickup box endgate control switch.

Manual Endgate Operation

The endgate can be manually closed from the full-open position when the endgate is lifted in a continuous motion. If the endgate motion is stopped between the full-open and half-closed positions, the lift to close feature can engage and power close the endgate. If the touch pad is pressed during power operation, the endgate will stop and allow manual operation. The endgate must be held after stopping, or it will continue to open

Tailgate Release Unavailable Driver Information Center Message

Power Endgate Functions Disabled Without Setting DTCs

The driver information center displays Tailgate Release Unavailable when a thermal inhibit occurs in the latch or drive unit or the position count is out of range.

The power endgate functions will be restored by performing the following actions:

- Closing the endgate which will reset the position counts
- Closing the endgate and removing the F20DL 30A fuse for greater than 5 minutes

Power Endgate Functions Disabled With DTCs Current

The driver information center displays Tailgate Release Unavailable when the rear gate module control module detects a malfunction in the power endgate system and the system is disabled.

Endgate Description and Operation (QT5 Without MultiPro Tailgate)

Endgate Release System Components

- Body control module (BCM)
- Pickup box endgate control switch-interior (Part of the instrument panel multifunction switch)
- Pickup box endgate control switch-exterior
- Pickup box endgate unlatch actuator
- Pickup box endgate unlatch relay

Endgate Release Operation (Without MutiPro Tailgate Option)

Interior Endgate Release Switch
The body control module monitors the voltage level of the endgate unlatch signal circuit so that when the switch is pressed contacts within the switch closes providing a ground path for the endgate unlatch signal circuit, the voltage within the signal circuit is pulled low, the body control module will detect the voltage drop and if the passenger doors are unlocked, will energize the pickup box endgate unlatch relay.

Exterior Endgate Release Switch
The body control module monitors the status of the vehicle doors, if the doors are locked the body control module will ignore the request from the exterior pickup box endgate control switch. If the passenger doors have been commanded to unlock, pressing the exterior pickup box endgate control switch will close contacts within the switch and provide a ground path for the endgate unlatch signal circuit, the body control module will detect the voltage drop and will energize the pickup box endgate unlatch relay.

If the vehicle has been equipped with the passive keyless entry system and the keyless entry transmitter is within 3 feet (1 meter) of the endgate, pressing the exterior pickup box endgate control switch will also function in the same manner but without unlocking the passenger doors. Refer to *Keyless Entry System Description and Operation 10-53* for more information on the passive keyless entry system.

Pickup Box Endgate Unlatch actuator
When body control module receives a endgate release command from the exterior pickup box endgate control switch, the body control module applies brief pulse of voltage to the pickup box endgate unlatch relay control circuit, which energizes the coil side of the relay. The switch side of the pickup box endgate unlatch relay then momentarily closes, supplying a brief pulse of battery positive voltage to the pickup box endgate unlatch actuator. The pickup box endgate unlatch actuator is continuously grounded and when it receives the voltage pulse, it will become energized and the latch will activate releasing the endgate so that it may be manually lowered to an open position.

Endgate Description and Operation (QT5 With MultiPro Tailgate)

Endgate Release System Components

- Body control module (BCM)
- Pickup box endgate control switch-interior (Part of the instrument panel multifunction switch)
- Pickup box endgate control switch-exterior
- Left pickup box endgate latch
- Right pickup box endgate latch
- Left pickup box auxiliary endgate latch
- Right pickup box auxiliary endgate latch
- Left pickup box endgate latch relay
- Right pickup box endgate latch relay
- Left pickup box auxiliary endgate latch relay
- Right pickup box auxiliary endgate latch relay

Endgate Release Operation (With MutiPro Tailgate Option)

Key Fob Liftgate Release Switch
Press twice to open the major endgate. Refer to *Keyless Entry System Description and Operation 10-53* for more information on the passive keyless entry system.

Interior Endgate Release Switch
The body control module monitors the voltage level of the endgate unlatch signal circuit so that when the switch is pressed contacts within the switch closes providing a ground path for the endgate unlatch signal circuit, the voltage within the signal circuit is pulled low. The body control module will detect the voltage drop and if the passenger doors are unlocked, will energize the left pickup box endgate latch relay and right pickup box endgate latch relay which will cause the major endgate to release. When the switch is pressed the body control module will also send a serial data message to the lighting control module to pulse the tail lamps three times.

Exterior Endgate Release Switch
The body control module monitors the status of the vehicle doors, if the passenger doors have been commanded to unlock, pressing the appropriate exterior pickup box endgate control switch will close contacts within the switch and provide a ground path for the major or minor endgate unlatch signal circuit, the body control module will detect the voltage drop and will energize the appropriate pickup box endgate latch relays. When either switch is pressed the body control module will also send a serial data message to the lighting control module to pulse the tail lamps three times. If the vehicle doors are locked an exterior switch press will be ignored.

If the vehicle has been equipped with the passive keyless entry system and the keyless entry transmitter is within 3 feet (1 meter) of the endgate, pressing the exterior pickup box endgate control switch will also function in the same manner but without unlocking the passenger doors. If the vehicle doors are locked the first switch press will just pulse the tail lamps two times, the second switch press will release the gate and pulse the tail lamps three times. Refer to *Keyless Entry System Description and Operation 10-53* for more information on the passive keyless entry system.

Major Pickup Box Endgate
Note: The auxiliary pickup box endgate must be in the latched position before commanding the major pickup box endgate to release. The body control module will disable the major pickup box endgate release function if the auxiliary pickup box endgate is open or ajar.

When body control module receives a major endgate release command from the exterior pickup box endgate control switch, the body control module applies brief pulse of voltage to the left and right pickup box endgate latch relay control circuits, which energizes the coil side of the relays. The switch side of the left and right pickup box endgate latch relay then momentarily closes, supplying a brief pulse of battery positive voltage to the left and right pickup box endgate latches. The left and right pickup box endgate latches will become energized and the latches will activate releasing the major endgate so that it may be manually lowered to an open position.

Minor Pickup Box Endgate
When body control module receives a major endgate release command from the exterior pickup box endgate control switch, the body control module applies brief pulse of voltage to the left and right pickup box auxiliary endgate latch relay control circuits, which energizes the coil side of the relays. The switch side of the left and right pickup box auxiliary endgate latch relay then momentarily closes, supplying a brief pulse of battery positive voltage to the left and right pickup box auxiliary endgate latches. The left and right pickup box auxiliary endgate latches will become energized and the latches will activate releasing the minor endgate so that it may be manually lowered to an open position.

Hood Ajar Indicator Description and Operation

Hood Ajar Switch

Hood Status A
The engine control module (non electric vehicle or hybrid vehicle) or battery energy control module (electric vehicle) applies approximately 5V to the hood status A signal circuit and monitors the voltage to determine the position of the hood. The hood ajar switch contains a multiplexed resistor. When the hood is open, the switch is open and voltage is pulled low. When the hood is closed, the switch is closed and the voltage remains high.

The engine control module or battery energy control module will not allow the vehicle to shift out of park if the hood status is not closed.

Hood Status B
The body control module (BCM) applies approximately 5V to the hood status B signal circuit and monitors the voltage to determine the position of the hood. The hood ajar switch contains a multiplexed resistor. When the hood is open, the switch is open and voltage remains high. When the hood is closed, the switch is closed and the voltage is pulled low.

The BCM uses the hood ajar status as a content theft deterrent alarm trigger.

Hood Ajar Indicator/Message

If either hood status signal shows the hood is ajar or if there is a fault in either hood status signal circuit a message is displayed on the DIC or the hood ajar indicator will be illuminated.

Power Door Locks Description and Operation

Door Lock System Components

The power door lock system consists of the following components:

- Driver door lock switch
- Passenger door lock switch
- Left rear door lock switch
- Right rear door lock switch
- Driver front side door window control switch
- Passenger front side door window switch
- Driver front side door latch
- Passenger front side door latch
- Left rear side door latch
- Right rear side door latch
- Exterior door handle switches
- Body control module
- Lighting control module

Door Lock System Controls

The power door lock system can be controlled by any of the following:

- Power door lock switch activation
- Keyless entry lock or unlock command
- Delayed locking command
- Automatic door lock command
- When the OnStar® system is used to unlock the driver door

Door Lock and Unlock Operation

The driver or passenger front side door window control switch will monitor the voltage of their respective door lock switches, when the driver or passenger door lock switch is activated in the lock or unlock position the signal voltage will be pulled low, the corresponding front side door window control switch will detect the voltage drop in the signal circuit and will send a serial data message to the body control module requesting the door lock or unlock command.

The lighting control module will monitor the voltage of the left rear and right rear door lock switches, when the left rear or right rear door lock switch is activated in the lock or unlock position the signal voltage will be pulled low, the lighting control module will detect the voltage drop in the signal circuit and will send a serial data message to the body control module requesting the door lock or unlock command.

The body control module powers the reversible door latch actuators by providing battery positive voltage and ground to the appropriate lock and unlock control circuits of the door latches. Transitioning of the lock actuators to the lock or unlocked position depends upon which control circuits receive voltage and which control circuits receive ground. When the interior door lock switch is pressed, the body control module disables the functions of exterior door handle unlock switches preventing the unlatching of the vehicle doors until an the interior door unlock switch has been pressed or the appropriate button has been pressed on the keyless entry transmitter.

The body control module provides the driver and left rear door latches and fuel filler door lock actuator (If equipped with RPO N08) with the Unlatch Low Reference Circuit 1.

The body control module provides the passenger and right rear door latches and the liftgate latch (If equipped with RPO TB4) with the Unlatch Low Reference Circuit 2.

Each door latch, the fuel filler door lock actuator (If equipped with RPO N08), and the liftgate latch (If equipped with RPO TB4) is provided an Unlatch Control Circuit by the body control module.

When the drivers door is commanded to unlock the body control module will pull the Unlatch Low Reference Circuit 1 low and will pull the driver door and fuel filler lock actuator Unlatch/Unlock Control Circuits will be pulled high causing the driver door latch and fuel filler lock actuator to transition to the unlocked/ unlatched state.

When all doors have been commanded to unlock the body control module will pull the Unlatch Low Reference Circuit 1 and Unlatch Low Reference Circuit 2 low and each door latch and the fuel filler lock actuator Unlatch/Unlock Control Circuits will be pulled high causing the doors and fuel filler lock actuator to transition to the unlocked/unlatched state.

When the TB4 liftgate is commanded to open the body control module, if the vehicle doors are unlocked, will pull the Unlatch Low Reference Circuit 2 low and the Rear Closure Unlatch Actuator Unlatch Control Circuit will be pulled high causing the TB4 liftgate Latch to activate and release the liftgate.

When the lock actuators are inactive the circuits are disconnected from power and ground and the circuits will have a floating voltage.

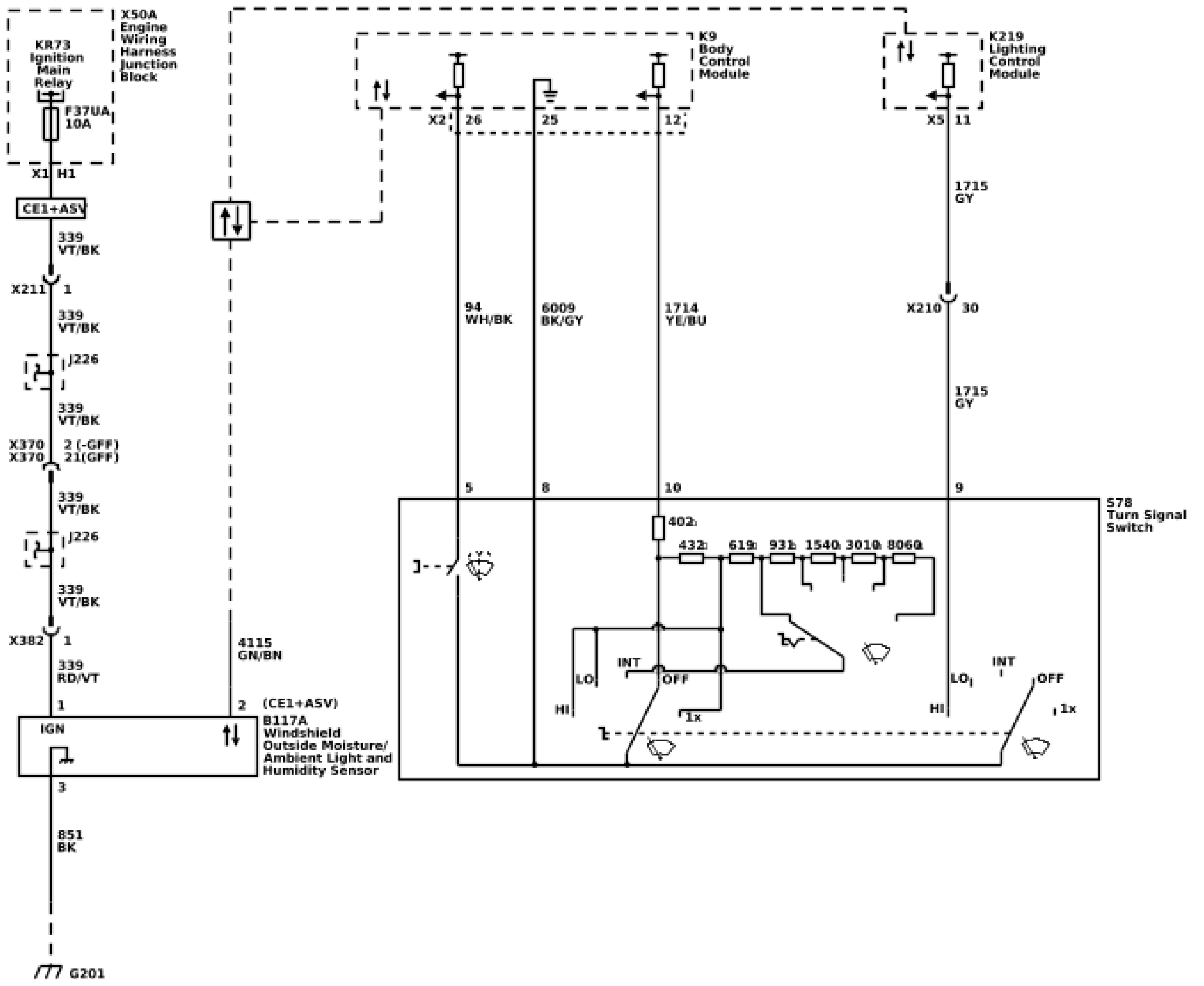
Passive Door Lock/Unlock Operation

The exterior door handle switch signal circuits provide inputs to the body control module when the exterior door handle switches are activated. These inputs allow the body control module to detect a door lock or a door unlock request. The body control module provides a 7 V signal to each exterior door handle switch via the door handle switch signal circuits. When a door handle switch is pressed, the switch closes and the voltage signal within the signal circuit is pulled to ground. The body control module will detect the voltage drop and a low frequency antenna will transmit a challenge to the keyless entry transmitter. If the challenge is met, the keyless entry transmitter will respond, and the body control module will command the door(s) to be locked or unlocked

Wipers and Washers

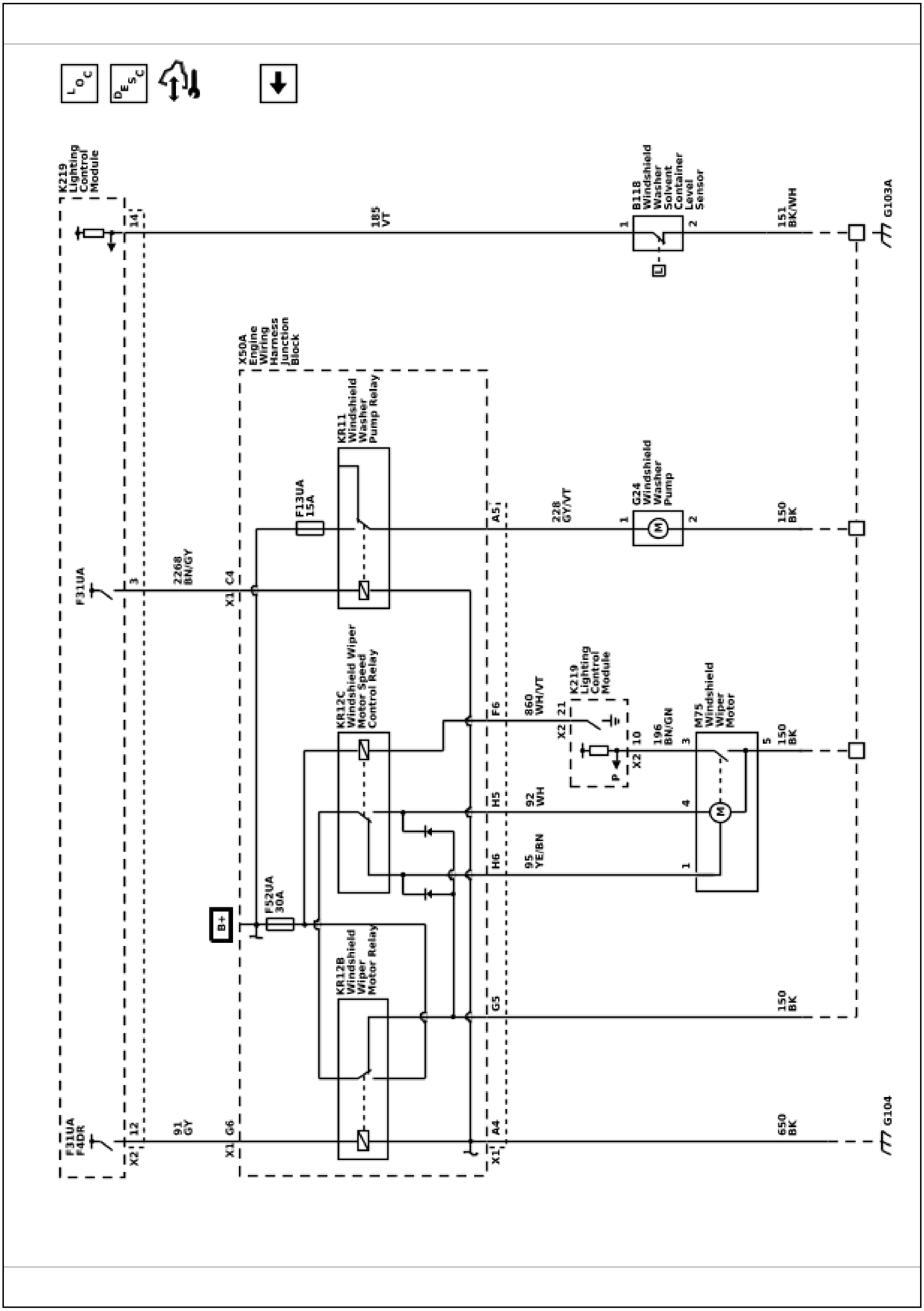
Schematic and Routing Diagrams

Wiper/Washer Schematics (Wiper/Washer Controls)


X50A
Engine
Wiring
Harness
Junction
Block
KR73
Ignition
Main
Relay
F37UA
10A
X1 H1
CE1+ASV
339
VT/BK
X211 1
339
VT/BK
J226
339
VT/BK
X370 2 (-GFF)
X370 21(GFF)
339
VT/BK
J226
339
VT/BK
X382 1
339
RD/VT
1
IGN
3
851
BK
G201
4115
GN/BN
2 (CE1+ASV)
B117A
Windshield
Outside Moisture/
Ambient Light and
Humidity Sensor
K9
Body
Control
Module
X2 26
25
12
94
WH/BK
6009
BK/GY
1714
YE/BU
K219
Lighting
Control
Module
X5 11
1715
GY
X210 30
1715
GY
5
8
10
9
S78
Turn Signal
Switch
402Ω
432Ω
619Ω
931Ω
1540Ω
3010Ω
8060Ω
LO
HI
INT
OFF
1x
LO
HI
INT
OFF
1x

6846904

Wiper/Washer Schematics (Wiper Motor and Washer Pump)


K219 Lighting Control Module
14
185 VT
1
B118 Windshield Washer Solvent Container Level Sensor
2
151 BK/WH
G103A
X50A Engine Wiring Harness Junction Block
KR11 Windshield Washer Pump Relay
F13UA 15A
A5
228 GY/VT
G24 Windshield Washer Pump
150 BK
F31UA
3
2268 BN/GY
X1 C4
KR12C Windshield Wiper Motor Speed Control Relay
F6
860 WH/VT
K219 Lighting Control Module
X2 21
X2 10
P
196 BN/GN
M75 Windshield Wiper Motor
3
5
150 BK
H5
92 WH
4
H6
95 YE/BN
1
B+
F52UA 30A
KR12B Windshield Wiper Motor Relay
G5
150 BK
F31UA F4DR
X2 12
91 GY
X1 G6
A4
X1
650 BK
G104
6846905

Description and Operation

Wiper/Washer System Description and Operation

Front Windshield Wiper Operation

The windshield wipers system allows the driver to clear the vehicle’s windshield using a discrete switch or through an automatic rain sensing system. The windshield wiper system functions through a primary control, but also allows redundant high speed-only operation in the event of a system fault. The wiper systems uses the S78 Turn Signal Switch as the primary means of driver control, along with the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor to modulate intermittent wiper operation. The S78 Turn Signal Switch is a discrete input to the K9 Body Control Module. The K9 Body Control Module communicates with the K219 Lighting Control Module over CAN, and with the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor over LIN, to control wiper activation.

Low Speed Wiper Operation

With the S78 Turn Signal Switch in the low speed position, the discrete signal circuit to the K9 Body Control Module is pulled down through two resistors in a resistor ladder to a low reference provided by the K9 Body Control Module. The K9 Body Control Module communicates with the K219 Lighting Control Module over CAN, requesting consistent low speed wiping operation. To initiate low speed operation, the K219 Lighting Control Module energizes the KR12B Windshield Wiper Relay. This allows battery voltage from the wiper fuse to be applied through the switched contacts of the KR12B Windshield Wiper Relay, through the normally closed contacts of the KR12C Windshield Wiper Speed Control Relay, to the windshield wiper low speed control circuit of the M75 Windshield Wiper Motor.

Intermittent Wiper Operation

With the S78 Turn Signal Switch in the intermittent position, the discrete signal circuit to the K9 Body Control Module is pulled down through a number of resistors within a resistor ladder to a low reference provided by the K9 Body Control Module. The number of resistors the signal travels through is dependent on the intermittent selection made on the S78 Turn Signal Switch. The K9 Body Control Module interprets this range of voltage pull-down as a request for intermittent wiper activation, with each pull-down voltage value equating an intermittent delay (sensitivity) level. If the rain sense is enabled the K9 Body Control Module communicates with the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor via LIN. The B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor utilizes windshield optics to determine the amount of water on the windshield and will communicate this info to the K9 Body Control Module, which will vary wiping cadence based on the intermittent sensitivity selection on the S78 Turn Signal Switch and the amount of water on the windshield. If the rain sense is disabled the K9 Body Control will vary the wiping cadence based on a preset amount of time determined by the intermittent delay selection on the S78 Turn Signal Switch. To initiate wiper operation, the K219 Lighting Control Module energizes the KR12B Windshield Wiper Relay. This allows battery voltage from the wiper fuse to be applied through the switched contacts of the KR12B Windshield Wiper Relay, through the normally closed contacts of the KR12C Windshield Wiper Speed Control Relay, to the low speed control circuit of the M75 Windshield Wiper Motor.

High Speed Wiper Operation

With the S78 Turn Signal Switch in the high speed position, the discrete signal circuit to the K9 Body Control Module is pulled down through two resistors in a resistor ladder to a low reference provided by the K9 Body Control Module. The K9 Body Control Module interprets this specific voltage pull-down as a request for wiper activation. In addition to this pull-down signal, a second switch in the S78 Turn Signal Switch is also pulled down to low reference. This signal is a discrete input to the K219 Lighting Control Module. The K219 Lighting Control Module requests wiping operation. To initiate high speed operation, the K219 Lighting Control Module energizes the KR12B Windshield Wiper Relay and grounds the KR12C Windshield Wiper Speed Control Relay. This allows battery voltage from the wiper fuse to be applied through the switched contacts of the KR12B Windshield Wiper Relay, through the switched contacts of the KR12C Windshield Wiper Speed Control Relay, to the windshield wiper motor high speed control circuit of the M75 Windshield Wiper Motor.

Mist (Single Wipe) Operation

The mist (single wipe) position is a momentary switch position that will return the S78 Turn Signal Switch to the off position as soon as the switch is released. With the S78 Turn Signal Switch in the mist (single wipe) position, the discrete signal circuit to the K9 Body Control Module is pulled down through two resistors in a resistor ladder to a low reference provided by the K9 Body Control Module. The K9 Body Control Module interprets this specific voltage pull-down as a request for wiper activation. The K9 Body Control Module communicates with the K219 Lighting Control Module via CAN, requesting consistent low speed wiping operation as long as the S78 Turn Signal Switch is held in the mist (single wipe) position. If the mist (single wipe) position is only briefly selected, the K9 Body Control Module will request only a single wipe.

Wiper Park Operation

With the S78 Turn Signal Switch in the off position, the discrete signal circuit to the K9 Body Control Module is pulled down through one resistor in a resistor ladder to a low reference provided by the K9 Body Control Module. The K9 Body Control Module interprets this specific voltage pull-down as a request to stop wiper activation. The K9 Body Control Module communicates with the K219 Lighting Control Module via CAN, requesting wiper operation stop. At this time, the K219 Lighting Control Module will deactivate the KR12B Windshield Wiper Relay and KR12C Windshield Wiper Speed Control Relay. The relay contacts will switch back to their normally closed position and will apply ground to the wiper motor power inputs through the normally closed contacts of the wiper relays. This deactivates and dynamically brakes the wiper motor in the park position. When the wiper switch is turned to the OFF position while the wiper motor is somewhere in mid-cycle, the K219 Lighting Control Module will continue to operate the motor until the wipers reach the park position. If the ignition is turned OFF while the wipers are in mid-cycle, the wipers will stop immediately, regardless of position. The K219 Lighting Control Module will park the wipers next time the ignition is turned ON.

The windshield wiper system consists of the following electrical components:

- S78 Turn Signal Switch
- K9 Body Control Module
- K219 Lighting Control Module
- KR12B Windshield Wiper Relay
- KR12C Windshield Wiper Speed Control Relay
- B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor
- M75 Windshield Wiper Motor

Front Windshield Wiper Components

S78 Turn Signal Switch

The S78 Turn Signal Switch is the primary input to the K9 Body Control Module for the driver to control windshield wiper operation. The S78 Turn Signal Switch also provides discrete input to the K219 Lighting Control Module and M75 Windshield Wiper Motor during high speed wiper operation.

The S78 Turn Signal Switch contains three individual internal switch. One switch changes between mist (single wipe), off, intermittent, low speed, and high speed selection. The second switch changes with differing intermittent sensitivity selection. The third switch is only active when high speed wiper operation is selected. A resistor ladder is also used to determine switch selection and intermittent sensitivity selection. The high speed switch does not utilize the resistor ladder.

The K9 Body Control Module provides the S78 Turn Signal Switch with ground through a single low reference circuit and monitors the switch position through a single signal circuit. Voltage is applied by the K9 Body Control Module to this signal circuit and voltage drop is monitored to determine switch selection. This voltage drop will vary depending on the number of resistors in the resistor ladder, which changes depending on switch position. In the off position, current flows through a single resistor. In the mist (single wipe), low speed, and high speed position, current flows through two resistors. In the intermittent position, current flows through three or more resistors, depending on the intermittent sensitivity selected.

The S78 Turn Signal Switch provides a discrete switch input to the K219 Lighting Control Module during high speed wiper operation. Voltage is applied by the K219 Lighting Control Module to this signal circuit and voltage drop is monitored to determine switch selection. When high speed operation is selected, the signal circuit is pulled to ground (low reference).

K9 Body Control Module

The K9 Body Control Module will send a CAN message to the K219 Lighting Control Module to request wiper operation. The K9 Body Control Module responds to input requests from the S78 Turn Signal Switch. The K9 Body Control Module provides a constant ground for the S78 Turn Signal Switch and monitors a signal circuit to determine the requested windshield wiper position.

The K9 Body Control Module communicates with the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor via LIN. Messages are received from the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor to indicate the amount of water on the windshield.

K219 Lighting Control Module

The K219 Lighting Control Module controls the wiper motor via two PCB relays (KR12B Windshield Wiper Relay and KR12C Windshield Wiper Speed Control Relay). The K219 Lighting Control Module receives a message from K9 Body Control Module over CAN to determine what type of wiper operation is requested.

KR12B Windshield Wiper Relay

The KR12B Windshield Wiper Relay supplies B+ to the M75 Windshield Wiper Motor and is controlled by the K219 Lighting Control Module. The coil side of the relay receives a constant chassis ground and the switch side receives a constant B+. When wiper operation is requested, the K219 Lighting Control Module will provide voltage to the coil side of the relay. This will energize the relay, closing the high current contact, and supply B+ to the M75 Windshield Wiper Motor through the KR12C Windshield Wiper Speed Control Relay, enabling wiper operation.

KR12C Windshield Wiper Speed Control Relay
The KR12C Windshield Wiper Speed Control Relay controls B+ to the M75 Windshield Wiper Motor and is controlled by the K219 Lighting Control Module. The coil side of the relay receives a ground controlled by the K219 Lighting Control Module. The switch side of the relay receives B+ through the KR12B Windshield Wiper Relay. When high speed wiper operation is requested, the K219 Lighting Control Module will provide ground to the coil side of the relay. This will energize the relay, closing the high current contact, and supply the B+ to the M75 Windshield Wiper Motor high speed control, enabling high speed wiper operation.

B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor
Note: Due to the sensitivity of the sensor, the wipers may swipe once upon start up or rapid lighting changes.

The B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor utilizes an internal infrared LED and an optic sensor to determine the amount of water on the windshield. The infrared LED bounces infrared light against the inside of the windshield. The optic sensor measures the amount of light returned after bouncing off the windshield. With a dry windshield, all light bounced off the windshield is returned to the optic sensor. As water accumulates on the windshield, the light input to the optic sensor is diffused and reduced. The amount of light reduction corresponds directly to the amount of water on the windshield. The B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor interprets the amount of light returned and communicates this info to the K9 Body Control Module, which will control intermittent wiper operation based on the sensitivity selection of the S78 Turn Signal Switch and the amount of water on the windshield.

M75 Windshield Wiper Motor
The M75 Windshield Wiper Motor receives a constant chassis ground. B+ is controlled by the KR12B Windshield Wiper Relay and KR12C Windshield Wiper Speed Control Relay being operated by the K219 Lighting Control Module.

The M75 Windshield Wiper Motor includes a DC motor and an internal position switch to indicate the wiper park position. When wiper operation is requested, the DC motor spins. The spinning motor is directed to a wiping motion through the windshield wiper transmission. When wiper operation is no longer required, the M75 Windshield Wiper Motor will continue spinning until the internal position switch indicates it is in the park position.

Windshield Washer Operation

The windshield washer system allows the driver to clean the vehicle's windshield using a discrete switch. The washer system uses the S78 Turn Signal Switch as the primary means of driver control. The S78 Turn Signal is a discrete input to the K9 Body Control Module. The K9 Body Control Module communicates with the K219 Lighting Control Module over CAN to control G24 Windshield Washer Pump activation. The K9 Body Control Module also communicates with the K219 Lighting Control Module to control B+ to the M75 Windshield Wiper Motor during operation.

The windshield wiper system consists of the following electrical components:

- S78 Turn Signal Switch
- K9 Body Control Module
- K219 Lighting Control Module
- KR12B Windshield Wiper Relay
- KR11 Windshield Washer Pump Relay
- G24 Windshield Washer Pump
- M75 Windshield Wiper Motor
- B118B Windshield Washer Fluid Level Switch

Windshield Washer Components

S78 Turn Signal Switch
The S78 Turn Signal Switch is the primary input to the K9 Body Control Module for the driver to control windshield washer operation.

The K9 Body Control Module provides the S78 Turn Signal Switch with ground through a single low reference circuit and monitors the switch position through a single signal circuit. Voltage is applied by the K9 Body Control Module to this signal circuit and voltage drop is monitored to determine switch selection. The S78 Turn Signal Switch contains an internal switch dedicated to windshield washer operation. When the switch is closed, the signal circuit is pulled to ground, indicating washer operation is requested.

K9 Body Control Module
The K9 Body Control Module responds to input requests from the S78 Turn Signal Switch. The K9 Body Control Module provides a constant ground for the S78 Turn Signal Switch and monitors a signal circuit to determine the requested windshield wiper position.

When washer operation is requested, the K9 Body Control Module will send a CAN message to the K219 Lighting Control Module to enable the G24 Windshield Washer Pump, as well as supply B+ to the M75 Windshield Wiper Motor. The K9 Body Control Module communicates with the M75 Windshield Wiper Motor via LIN. When washers are requested, the K9 Body Control Module will request low speed wiper activation from the M75 Windshield Wiper Motor.

K219 Lighting Control Module
The K219 Lighting Control Module controls B+ to the G24 Windshield Washer Pump. When washer operation is requested from a CAN message from the K9 Body Control Module, the K219 Lighting Control Module will apply voltage via a high side driver to the KR11 Windshield Washer Pump Relay. The K219 Lighting Control Module also controls B+ to the M75 Windshield Wiper Motor. When washer operation is requested, the K219 Lighting Control Module will apply voltage via a high side driver to the KR12B Windshield Wiper Relay.

The K219 Lighting Control Module also monitors the B118B Windshield Washer Fluid Level Switch through a discrete signal circuit.

KR12B Windshield Wiper Relay
The KR12B Windshield Wiper Relay supplies B+ to the M75 Windshield Wiper Motor and is controlled by the K219 Lighting Control Module. The coil side of the relay receives a constant chassis ground and the switch side receives a constant B+. When wiper operation is requested, the K219 Lighting Control Module will provide voltage to the coil side of the relay. This will energize the relay, closing the high current contact, and supply B+ to the M75 Windshield Wiper Motor, enabling wiper operation.

KR11 Windshield Washer Pump Relay
The KR11 Windshield Washer Pump Relay supplies B+ to the G24 Windshield Washer Pump and is controlled by the K219 Lighting Control Module. The coil side of the relay receives a constant chassis ground and the switch side receives a constant B+. When wiper operation is requested, the K219 Lighting Control Module will provide voltage to the coil side of the relay. This will energize the relay, closing the high current contact, and supply B+ to the G24 Windshield Washer Pump, enabling washer pump operation.

G24 Windshield Washer Pump
The G24 Windshield Washer Pump receives a constant chassis ground. B+ is controlled by the KR11 Windshield Washer Pump Relay. With voltage applied, a DC motor spins, connecting and pressurizing washer fluid from the washer fluid reservoir. The pressurized washer fluid is deposited on the windshield through a series of lines and nozzles.

M75 Windshield Wiper Motor
The M75 Windshield Wiper Motor receives a constant chassis ground. B+ is controlled by the KR12B Windshield Wiper Relay and KR12C Windshield Wiper Speed Control Relay being operated by the K219 Lighting Control Module.

The M75 Windshield Wiper Motor includes a DC motor and an internal position switch to indicate the wiper park position. When wiper operation is requested, the DC motor spins. The spinning motor is directed to a wiping motion through the windshield wiper transmission. When wiper operation is no longer required, the M75 Windshield Wiper Motor will continue spinning until the internal position switch indicates it is in the park position.

B118B Windshield Washer Fluid Level Switch
The B118B Windshield Washer Fluid Level Switch receives a constant chassis ground. A signal circuit is monitored by the K219 Lighting Control Module. The K219 Lighting Control Module applies voltage to the signal circuit. When the B118B Windshield Washer Fluid Level Switch is closed, voltage on the signal circuit is pulled to ground, indicating fluid in the washer fluid reservoir.

Section 2

Brakes

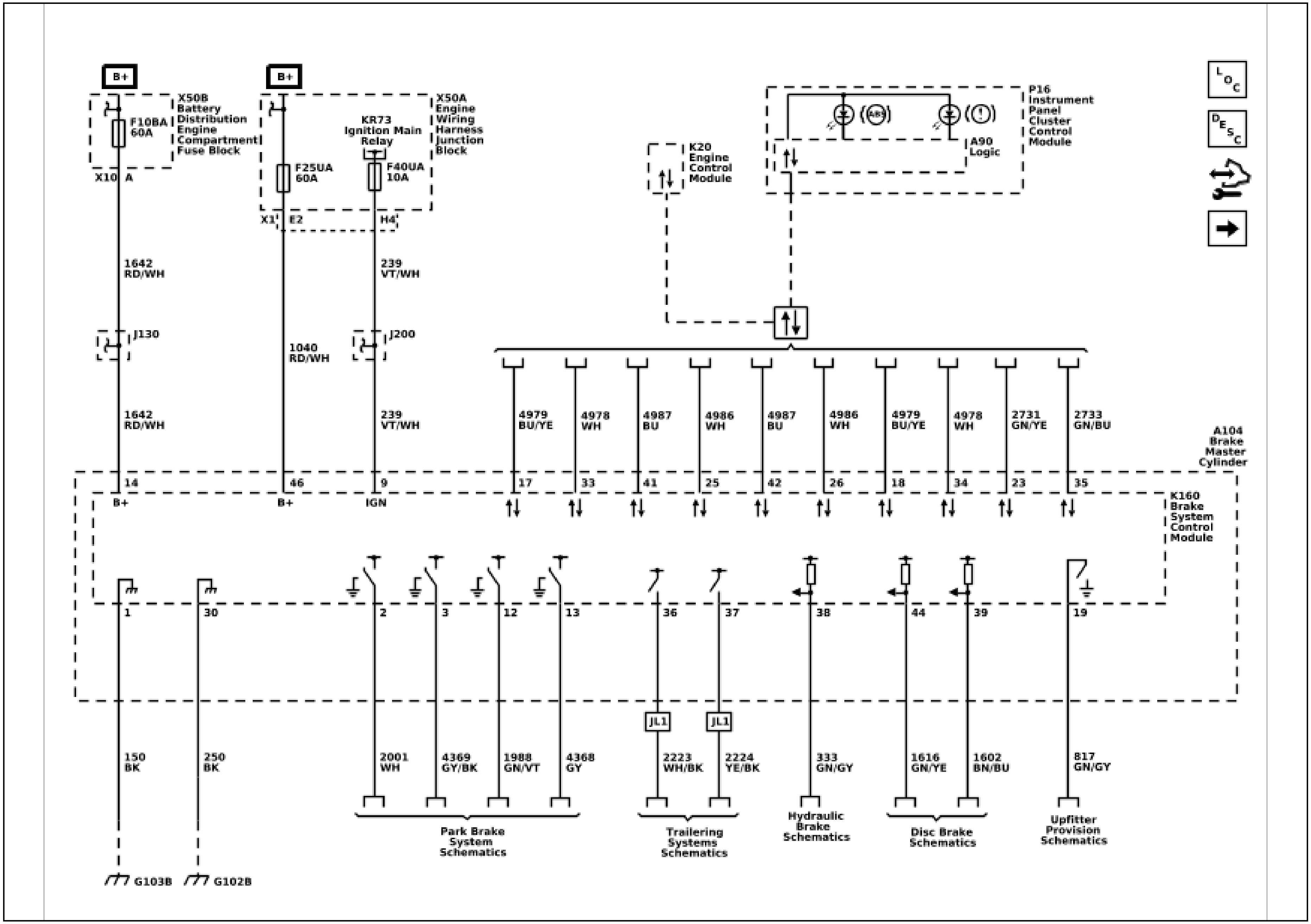
Antilock Brake System **2-2**
Schematic and Routing Diagrams **2-2**
Antilock Brake System Schematics 2-3
Description and Operation **2-6**
ABS Description and Operation 2-6
Disc Brakes **2-11**
Schematic and Routing Diagrams **2-11**
Disc Brake Schematics 2-12
Description and Operation **2-13**
Brake Pad Life Monitoring Description and Operation 2-13
Disc Brake System Description and Operation 2-13
Hydraulic Brakes **2-15**
Schematic and Routing Diagrams **2-15**
Hydraulic Brake Schematics 2-16
Description and Operation **2-17**
Brake Assist System Description and Operation 2-17
Hydraulic Brake System Description and Operation 2-21
Park Brake **2-24**
Schematic and Routing Diagrams **2-24**
Park Brake System Schematics 2-25

Brakes

Antilock Brake System

Schematic and Routing Diagrams

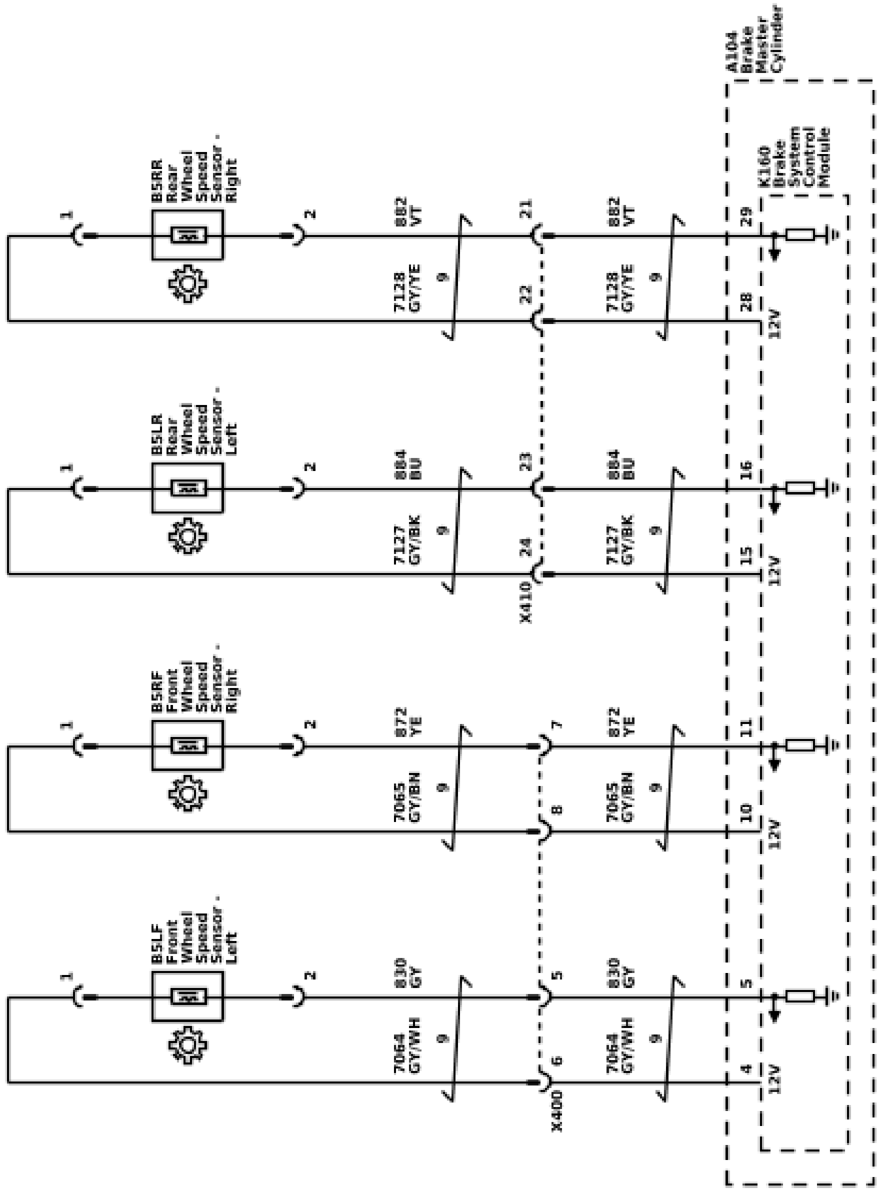
Antilock Brake System Schematics (Module Power, Ground, Serial Data, Indicators, and Subsystem References)


B+
X50B Battery Distribution Engine Compartment Fuse Block
F10BA 60A
X10 A
1642 RD/WH
J130
1642 RD/WH
B+
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F25UA 60A
F40UA 10A
X1 E2
H4
1040 RD/WH
239 VT/WH
J200
239 VT/WH
K20 Engine Control Module
P16 Instrument Panel Cluster Control Module
ABS
A90 Logic
4979 BU/YE
4978 WH
4987 BU
4986 WH
4987 BU
4986 WH
4979 BU/YE
4978 WH
2731 GN/YE
2733 GN/BU
A104 Brake Master Cylinder
14 B+
46 B+
9 IGN
17
33
41
25
42
26
18
34
23
35
K160 Brake System Control Module
1
30
2
3
12
13
36
37
38
44
39
19
JL1
JL1
150 BK
250 BK
2001 WH
4369 GY/BK
1988 GN/VT
4368 GY
2223 WH/BK
2224 YE/BK
333 GN/GY
1616 GN/YE
1602 BN/BU
817 GN/GY
G103B
G102B
Park Brake System Schematics
Trailering Systems Schematics
Hydraulic Brake Schematics
Disc Brake Schematics
Upfitter Provision Schematics
L O C
D E S C

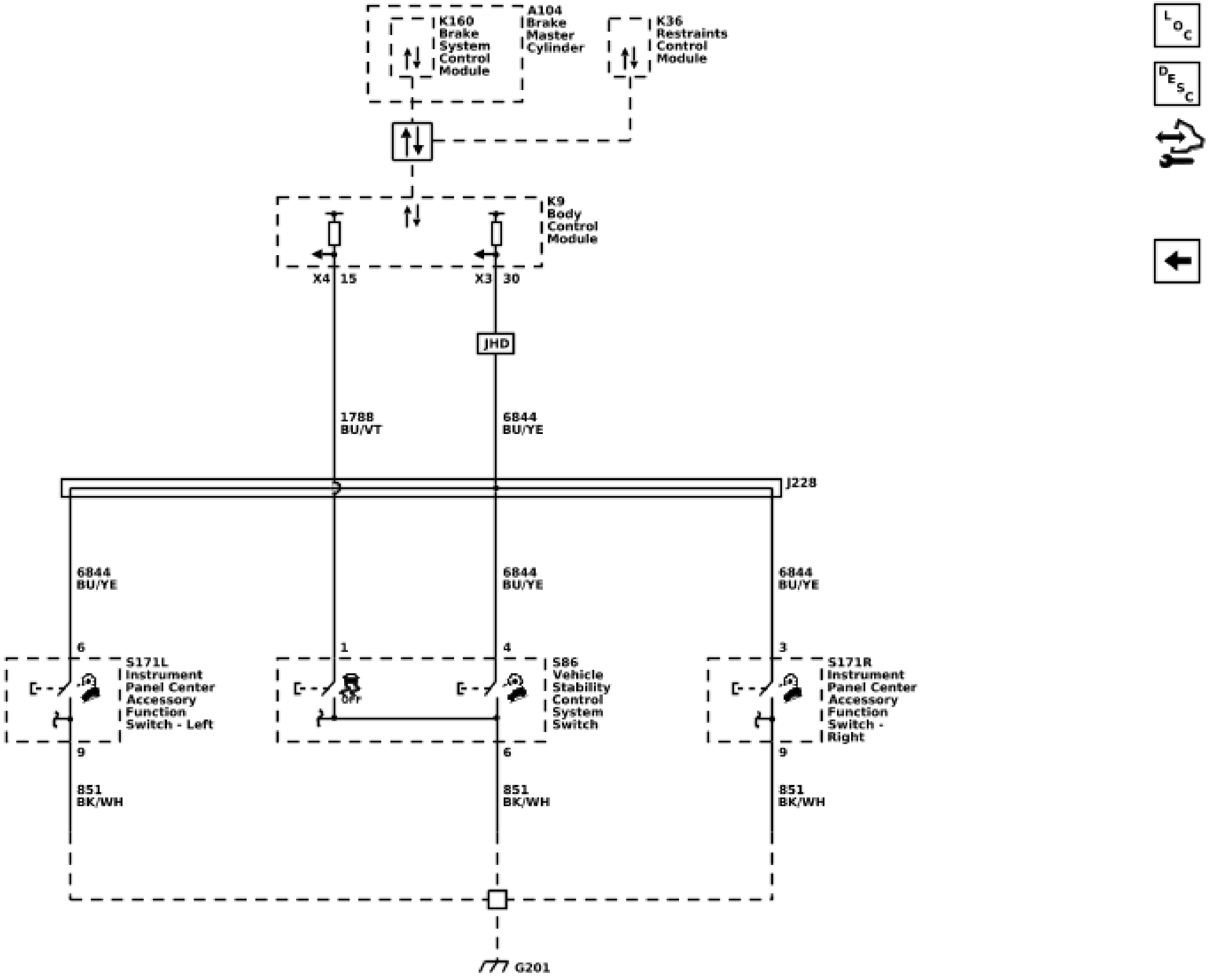
6846906

Antilock Brake System Schematics (Wheel Speed Signals)

6846907


A104 Brake Master Cylinder
K160 Brake System Control Module
B5RR Rear Wheel Speed Sensor - Right
B5LR Rear Wheel Speed Sensor - Left
B5RF Front Wheel Speed Sensor - Right
B5LF Front Wheel Speed Sensor - Left
1
2
882 VT
7128 GY/YE
884 BU
7127 GY/BK
872 YE
7065 GY/BN
830 GY
7064 GY/WH
9
21
22
23
24
X410
7
8
5
6
X400
29
28
16
15
11
10
5
4
12V

Antilock Brake System Schematics (Vehicle Stability and Hill Descent Control)


K160 Brake System Control Module
A104 Brake Master Cylinder
K36 Restraints Control Module
K9 Body Control Module
X4 15
X3 30
JHD
1788 BU/VT
6844 BU/YE
J228
6844 BU/YE
6844 BU/YE
6844 BU/YE
6
1
4
3
S171L Instrument Panel Center Accessory Function Switch - Left
OFF
S86 Vehicle Stability Control System Switch
S171R Instrument Panel Center Accessory Function Switch - Right
9
6
9
851 BK/WH
851 BK/WH
851 BK/WH
G201
L O C
D E S C

6846908

Description and Operation

ABS Description and Operation

Description and Operation

This vehicle is equipped with a Integrated Brake Control (IBC), also known as Brake System Control Module.

The Integrated Brake Control is an electromechanical device that interprets and converts driver input and provides a corresponding hydraulic pressure output to activate a standard brake system according to the drivers demand. The electro-hydraulic boost system replaces the conventional vacuum-based power assist brake system, which provides an advantage in efficiency. The electro-hydraulic brake system supplies "on-demand" power when the driver presses the brake pedal. In an event of no electrical energy or failure condition the drivers input is mechanically converted to a hydraulic pressure output.

Depending on options, the following vehicle performance enhancement systems are provided.

- ABS
- Traction Control
- Stability Control
- Brake Pad Life Monitoring
- Dynamic Rear Proportioning
- Panic Brake Assist
- Teen Mode Support
- Trailer Sway Control
- Engine Drag Control
- Brake Drying/Cleaning
- Extended Hill Hold Start Assist
- Hill Descent Control
- Collision Imminent Braking
- Full Speed Range Adaptive Cruise Control Braking
- Trailer Brake Control
- Park Brake Control Motor on Caliper/Drum (with Push/Push)
- Unidirectional WSS
- CAN messages:
  - Chassis System Total Brake Axle Torque
  - DIC message during ABS (no pedal feedback)
  - Switch based ESC disable
  - Switch based Traction disable
  - ESC enable
  - OBDII - Rough Road Wheel Speed Usage

- The Body control module (BCM) monitors the brake pedal position sensor signal when the brake pedal is applied and sends a high speed serial data message to the Brake System Control Module indicating the brake pedal position.
- Instrument cluster - The instrument cluster displays the vehicle speed based on the information from the engine control module. The engine control module sends the vehicle speed information via a high speed serial data to the body control module. The body control module then sends the vehicle speed information via serial data to the instrument cluster in order to display the vehicle speed, either in kilometers or miles, based on the vehicle requirements.
- Multi-axis acceleration sensor - The yaw rate, lateral acceleration and longitudinal acceleration sensors are combined into one multi-axis acceleration sensor, internal to the inflatable restraint sensing and diagnostic module. The Brake System Control Module receives serial data message inputs from the yaw rate, lateral acceleration and longitudinal acceleration sensor and activates stability control and hill hold start assist function depending on multi-axis acceleration sensor input.
- Multifunction switch - The traction control switch is a multifunction momentary switch. The body control module monitors the signal circuit from the traction control switch and sends a high speed serial data message to the Brake System Control Module indicating the switch position. The traction control and stability control are manually disabled or enabled by pressing the traction control switch.
- Steering wheel angle sensor - The Brake System Control Module receives serial data message inputs from the steering angle sensor. The steering wheel angle sensor signal is used to calculate the intended driving direction. The steering wheel angle sensor is installed as an internal part of the power steering gear.
- Transmission control module - The Brake System Control Module receives high speed serial data message inputs from the transmission control module indicating the gear position of the transmission for hill start assist or hill hold functions.
- Wheel speed sensors – This vehicle is equipped with unique directional wheel speed sensors that can detect wheel direction as well as zero wheel speed. The wheel speed sensors are Active sensors that receive a 12 V power supply voltage from the Brake System Control Module and provide an output signal to the module. As the wheel spins, the wheel speed sensor sends the Brake System Control Module a DC square wave signal. The Brake System Control Module uses the

frequency of the square wave signal to calculate the wheel speed.

Power-Up-Self Test

The Brake System Control Module is able to detect many malfunctions whenever the ignition is ON. However, certain failures cannot be detected unless active diagnostic tests are performed on the components. Shorted solenoid coil or motor windings, for example, cannot be detected until the components are commanded ON by the Brake System Control Module. Therefore, a power-up self-test is performed to verify correct operation of system components. The Brake System Control Module performs the first phase of the power-up self-test when the ignition is first turned ON. This phase consists of internal self-testing of the Brake System Control Module along with electrical checks of system sensors and circuits.

Antilock Brake System (ABS) Features

The active control/modulation of brake fluid hydraulic modulates pressure to the front and/or rear brake corner subsystems (brake torque control) to preclude wheel lock-up and enhance tire-to-road longitudinal braking traction. Wheel lock-up (sliding wheel, not rolling wheel) occurs when the wheel brake torque exceeds the available tire-to-road traction. Avoidance of wheel lock-up provides the driver with the ability to maintain vehicle stability and steer-ability. Improved tire-to-road longitudinal braking traction minimizes vehicle stopping distance.

Brake Assist Features

The Brake Assist provides additional brake pressure over the pressure provided by the conventional brake apply system.

Panic Brake Assist

This feature will apply brakes more quickly when a panic brake situation is determined. Panic Brake Assist detects that the driver intent is to stop the vehicle as quickly as possible, but does not apply sufficient brake pressure to do so. The feature will detect the driver intent then actively apply brake pressure to maximum pressure, thus activating the ABS system and stopping the vehicle as quickly as possible.

Hydraulic Fade Compensation

Based on a brake disc/pad temperature estimate, driver applied master cylinder pressure and vehicle deceleration rate, Hydraulic Fade Compensation will increase brake system pressure above driver applied brake pressure when the brake system determines a gross fade condition. The goal of providing additional brake system pressure is to reduce stopping distance during high deceleration requests from the driver. The driver will experience fading brakes while using low or medium brake pedal force application. The Hydraulic Fade Compensation will only activate during high brake pedal force application.

Rear Brake Boost

The Rear Brake Boost function provides rear hydraulic brake assist to ensure that all four corners are achieving maximum braking during ABS. When vehicle loading is heavily rear axle biased the rear brakes may not utilize all of the available road adhesion. The hydraulic Rear Brake Boost feature is designed to provide additional pressure to the rear brakes when the front brakes ABS are activated and the rear wheels have low slip.

Electronic Brake Pre-Fill

This feature is used to reduce the brake response time when the driver quickly releases the accelerator pedal. This will also be used to support the use of low drag calipers.

Motor on Caliper Torque Overlay

This feature is used to reduce the driver's braking effort when in backup (no power) mode. Torque is applied with the Electric Park Brake motors on the front or rear calipers, preferably isolating that hydraulic circuit, to provide assist. When in this mode, the Electric Park Brake motors are controlled to apply torque in accordance with the driver's commanded deceleration, instead of clamping to a certain force.

Electronic Stability Control (ESC) Features

Roll Over Mitigation / Preemptive ESC

Using the standard ESC sensor set, Roll Over Mitigation will detect driving situations that could cause a vehicle rollover. After detection, ESC brake control will be modified to reduce the chance of vehicle rollover.

Trailer Sway Control

Trailer Sway Control uses the ESC system to detect trailer instability and apply differential braking to dampen out trailer oscillation and instability. Trailer Sway Control will detect the vehicle dynamic characteristics associated with trailer sway and actuate the vehicle’s brakes and reduce engine torque, if required, to dampen or eliminate trailer oscillations. Trailer Sway Control shall recognize repeated trailer instability and communicate to the display device to warn a driver of unsafe trailer setup.

Torque Vectoring by Brakes

Torque Vectoring by Brakes enhances vehicle agility by using active brake applies and engine torque requests to maximize traction on drive wheels. While cornering, brakes are applied to the inside drive wheels, thus allowing more torque to the outside wheels without slipping the inside wheels. Increasing the engine torque, above driver request, gives more torque to outer wheels. Torque Vectoring by Brakes is designed for all around performance, while this feature is solely designed for high cornering maneuvers.

Flat Tire ESC Enable
If flat tire is detected, ESC system shall not be allowed to be disabled by the driver (ESC shall be re-enabled if driver has already disabled). The traction control system will be allowed to be disabled by the driver.

ESC Control With Vehicle Weight Estimation
Brake System Control Module shall have the capability to estimate vehicle weight while the vehicle is being driven. This feature shall modify ESC control based on estimated vehicle weight when a compact spare tire is detected on the rear axle.

Traction Control System (TCS) Features

Vehicle Stuck Control
The traction control system shall recognize a vehicle “stuck” condition by monitoring excessive wheel slip for greater than 5 seconds with a vehicle reference velocity of less than 3 kph. Once detected, TCS will allow additional wheel slip of 5% to “dig” the vehicle out. This feature does not guarantee the vehicle to get unstuck, only to assist the driver.

Power Hop Control
Power hop is defined as an oscillation of the driven wheels due to acceleration on high coefficient surfaces. This wheel oscillation causes the vehicle to bounce resulting in driver discomfort, failure of driveline components and potentially other damage to the vehicle. This feature will be detected using Wheel speed sensor signal when TCS is “ ON”. In case TCS is “ OFF”, Brake System Control Module and ECM will be required to mitigate power hop. If the vehicle is exhibiting this signature, the traction control system will attenuate power hop by reducing engine torque and applying brake pressure.

Engine Drag Control
This feature is designed to mitigate drop-throttle-oversteer/understeer.

On a rear-wheel-drive vehicle during maximum cornering while applying throttle, the vehicle could exhibit oversteer when the driver quickly releases the throttle. This feature will slowly reduce the engine torque in order to maintain vehicle stability.

The Enabling Conditions include: Engine is required to be running, Clutch is released for Manual Trans , Vehicle speed is above 18kph (12mph) and the Powertrain is engaged through fault message from ECM/TCM/PCM

Enhanced Off Road Control (Rock Crawling)
This feature is intended to maximize rock crawling capability while in Offroad mode or 4 Low transfer case mode**.** This feature shall be enabled when in Offroad mode (if available) or when transfer case is in 4 Low. The traction control calibration shall be biased towards low speed, active capability through the use of more brake control with less wheel slip.

Brake System Control Module Features

Brake Drying/Cleaning

Brake Drying/Cleaning autonomously applies a small amount of brake pressure during long driving on wet roads in order to remove water from the rotor surface. The brake application is unperceivable to the driver, but should result in improved brake feel and performance. Conditions to enable Brake Drying/Cleaning.

- Wipers need to be ON
- If Cruise is Active, Brake Drying/Cleaning will not function as minimum pedal position is required
- If driver brakes, the distance counter will be reset
- Brake pressure needs to build up to 3 bar at all 4 wheels

Hill Start Assist

Hill Start Assist is a feature that will temporarily hold the vehicle while on a grade. This feature will hold the vehicle 2-5 seconds after the driver has removed their foot from brake pedal and the vehicle is on a grade exceeding 7%. The design is to prevent the vehicle from rolling down the hill before the driver has an opportunity to apply accelerator pedal. The brakes will automatically release when the accelerator pedal is applied. It will not activate if the vehicle is in a drive gear and facing downhill, or if the vehicle is facing uphill and in Reverse.

Driveline Damping

Driveline Damping is required on vehicles with ESC, Stop/Start functionality and an automatic transmission. This feature holds brake pressure to dampen driveline acceleration disturbance as engine is restarted and holds brake pressure to retard or prevent the vehicle from rolling. It is used for driver comfort and has also been used to extend vehicle hold on a steep grade.

Extended Hold Hill Start Assist
Extended Hold Hill Start Assist will function the same as Hill Start Assist except there will be an indefinite vehicle hold instead of a temporary vehicle hold. The vehicle will be held by the Brake System Control Module for up to five minutes, and then will transfer the hold to Electronic Park Brake when necessary. This

feature is required for all Stop/Start variants to prevent vehicle rollback when the engine shuts off. All of the driver exit strategies of Hill Start Assist with Electronic Park Brake will also apply to this feature.

Hill Descent Control
Hill Descent Control provides autonomous braking when the vehicle is descending a very steep incline in either forward or reverse transmission gear. The grade activation minimum threshold is 10%. Typical vehicle speeds while using this feature are 5-30kph (6–19mph). This feature can provide convenience and comfort for steep offroad driving.

Hill Descent Control is enabled by the driver activating the Hill Descent Control switch at a vehicle speed below the maximum enabling vehicle speed.

Hill Descent Control is disabled if vehicle speed exceeds 60 km/h for 30 seconds or immediately if vehicle speed exceeds 80km/h. Cruise control will not be allowed to activate when Hill Descent Control is enabled by the driver.

Automatic Vehicle Hold
Automatic Vehicle Hold is a driver enabled feature that holds the vehicle at a standstill for an indefinite amount of time. This feature is similar to the Extended Hold Hill Start Assist except it will function on all road grades. It must be enabled by the driver and will revert to a disabled state upon key-up. The brake System Control Module will hold vehicle, then transfer hold to Electric Park Brake (EPB) when necessary.

The Automatic Vehicle function requires the vehicle to have an electronic parking brake which will allow the brake pressure hold time to increase up to 5 minutes before engaging the electronic park brake. Automatic Vehicle is available on vehicles with automatic transmissions and only available on vehicles with manual transmissions if equipped with a neutral gear position indicator (start/stop engines have neutral gear position indicator).

Vehicle Moding
The Brake System Control Module shall use ‘Driver Selected Mode Status signals to determine what mode the vehicle is in. The Brake System Control Module shall use the supported Driving modes to indicate to the customer what mode they are in. Mode 0 that is correspond to “ Tour or Normal” mode shall always be supported and will be considered the default. Other supported modes are: Sport, Offroad, Track, Snow/Ice and Tow Haul.

Electric Park Brake Features

Park Rollaway EPB Apply

This feature applies the EPB autonomously when vehicle motion is detected while in Park. The most likely scenario for activation of this feature is a vehicle on a split-mu grade and an open differential. The low mu wheel can spin in the opposite direction from the vehicle motion, and so the high mu wheel may allow the vehicle to roll. Applying the EPB to both rear wheels prevents vehicle motion by preventing the high mu wheels from rotating.

Steep Grade Apply:

This feature autonomously applies the EPB when the vehicle is on a steep grade. The Steep Grade apply can be enabled if Park Rollaway Detection apply is enabled. It can also be enabled on its own.

Interface with Other Features

The features set below are systems that will be controlled (to various degrees) by the Brake System Control Module by sending out performance requests to each system which should be arbitrated in the sub-system for execution. The idea is that the Brake System Control Module request should override normal sub-system control and these requests should not override diagnostic, failure, or other special or overriding control.

Steering Torque Overlay (for both ABS and TCS)

This feature provides haptic feedback by increasing or decreasing steering assist to encourage appropriate course correction. This feature functions in combination with ESC or ABS

4WD Interface

Brake Controls send front and rear torque requests to the transfer case system while ABS/TCS/ESC is activating.

4WD w/4Low Interface

Brake Controls send front and rear torque requests to the transfer case system while ABS/TCS/ESC is activating

Trailer Braking Control Interface

The Brake System Control Module shall be able to independently use the trailer brake activation request to stabilize and decelerate the vehicle**.** The Brake System Control Module can use Trailer Braking Force Output and Trailer Braking Gain Setting as feedback to know how much braking the Integrated Trailer Brake Control is currently doing

Dynamic Braking with EPB

Dynamic Braking with EPB provides autonomous braking when the EPB switch is pressed when the vehicle is in motion. With the use of this feature, if the EPB switch is pressed while the vehicle is moving, the Brake System Control Module will apply braking at all 4 corners until the vehicle is stopped, then the EPB will apply and Brake System Control Module will release pressure.

Electronic Transmission Range Select (ETRS) Autonomous Apply

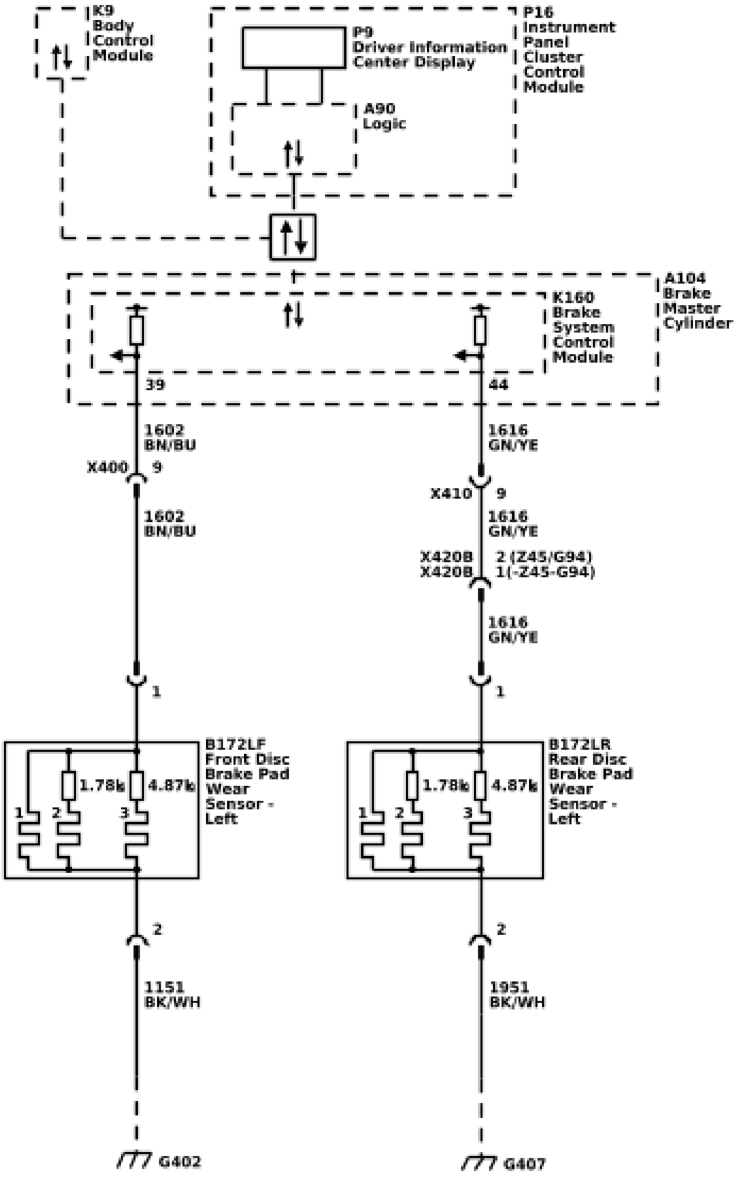
This feature applies brake pressure on a request from ETRS. This is done temporarily until the EPB can apply, using the ETRS EPB Apply feature.

The Brake Control System shall provide a short service brake hold to prevent the vehicle from rolling between when the ETRS commands a hold and the electronic park brake is applied. The primary purpose of the ETRS/Brakes interface is to apply the park brake when ETRS has a failure that prevents the transmission from achieving park; or if the driver shifts to park on a grade, EPB will reduce the load on the park pawl by applying (ETRS calculates and calibrates this grade).

Disc Brakes

Schematic and Routing Diagrams

Disc Brake Schematics (Brake Pad Wear Sensors (JBP))


K9
Body
Control
Module
P9
Driver Information
Center Display
P16
Instrument
Panel
Cluster
Control
Module
A90
Logic
A104
Brake
Master
Cylinder
K160
Brake
System
Control
Module
39
44
1602
BN/BU
X400
9
1602
BN/BU
1616
GN/YE
X410
9
1616
GN/YE
X420B
X420B
2 (Z45/G94)
1(-Z45-G94)
1616
GN/YE
1
1
1.78k
4.87k
1
2
3
B172LF
Front Disc
Brake Pad
Wear
Sensor -
Left
B172LR
Rear Disc
Brake Pad
Wear
Sensor -
Left
2
2
1151
BK/WH
1951
BK/WH
G402
G407

6846909

Description and Operation

Brake Pad Life Monitoring Description and Operation

This vehicle has a system that estimates the remaining life of the front and rear brake pads. When the feature is active, brake pad life is displayed in the Driver Information Center (DIC) as a percentage.

When the system has determined that the brake pads need to be replaced, a message will display, which may include mileage remaining.

Customers can use this information to plan their vehicle maintenance. A prognostic indicator of life remaining, especially in distance remaining, enables customers to arrange brake pad replacement at a convenient time.

The system will display a percent pad life on the DIC at all time just like oil life monitoring. When you approach end of pad life, the messaging will change to a distance parameter (i.e. 2000 miles remaining, etc.) and it will start to actively remind the driver to take action at ignition cycle intervals.

If the feature has malfunctioned, fault messaging will be provided. The customer will be able to disable the feature display if desired, and the display will confirm this.

The Brake System Control Module has one signal input for a front axle brake pad wear sensor and one signal input for a rear axle brake pad wear sensor. The brake system control module supply voltage to the brake pad wear sensor and the sensor is grounded to the vehicle ground. The brake system control module diagnose any issues with the power supply for the sensors and set “ invalid” if there is a failure detected in the supply voltage system.

When the brake pads are new, the scan tool parameter Brake Pad Wear Sensors will be near 0 volts. The brake pad wear sensor consists of breakable wire resistors. As the brake pad sensor wears, it causes the breakable sensor wire resistors to wear away, causing the scan tool parameter Brake Pad Wear Sensors voltage to increase. The brake system algorithm along with the remaining wear sensors will determine the amount of wear and display this as a percentage of brake pad life remaining and is displayed on the DIC.

After replacing the brake pads, the Axle Brake Pad Life Monitor Reset Learn must be performed.

The brake pad life system can be turned off. This may be necessary if aftermarket brake pads without wear sensors are installed. When the system is turned off, the front and rear brake pad life percentages will not display.

Disc Brake System Description and Operation

System Component Description

The disc brake system consists of the following components:

Disc Brake Pads: Applies mechanical output force from the hydraulic brake calipers to friction surfaces of brake rotors.

Disc Brake Rotors: Uses mechanical output force applied to friction surfaces from the disc brake pads to slow speed of tire and wheel assembly rotation.

Disc Brake Pad Hardware: Secures disc brake pads firmly in proper relationship to the hydraulic brake calipers. Enables a sliding motion of brake pads when mechanical output force is applied.

Disc Brake Caliper Hardware (Floating Caliper): Provides mounting for hydraulic brake caliper and secures the caliper firmly in proper relationship to caliper bracket. Enables a sliding motion of the brake caliper to the brake pads when mechanical output force is applied.

System Operation (Floating Caliper)

Mechanical output force is applied from the hydraulic brake caliper pistons to the inner brake pads. As the pistons press the inner brake pads outward, the caliper housings draw the outer brake pads inward. This allows the output force to be equally distributed. The brake pads apply the output force to the friction surfaces on both sides of the brake rotors, which slows the rotation of the tire and wheel assemblies. The correct function of both the brake pad and brake caliper hardware is essential for even distribution of braking force.

System Operation (Fixed Caliper)

Mechanical output force is applied from the hydraulic brake caliper inboard and outboard pistons to the inner and outer brake pads. The brake calipers are a fixed, opposed-piston design, allowing the output force to be equally distributed through the distribution of the pressurized brake fluid within the caliper. The brake pads apply the output force to the friction surfaces on both sides of the brake rotors, which slows the rotation of the tire and wheel assemblies. The correct function of the brake pad hardware and of the brake caliper inboard and outboard pistons is essential for even distribution of braking force.

System Characteristics

Brake Noise

Brake noise can occur and to a degree, some brake noise is normal. Variations in driving conditions such as the weather, environment, driving patterns, differences in vehicle loading, and type or style of driving, can affect brake wear. Any one of these variations can cause brake noise to become apparent. Inspect and verify that all metal-to-metal contact areas of the brake pads, brake pad guides or springs, brake caliper housing, caliper bracket and/or suspension knuckle, as applicable, are clean and free of corrosion and scale.

Brake noise is a “slip-stick” vibration of disc brake components and, if it occurs intermittently, can be considered normal. Most brake noise may be eliminated or temporarily reduced by performing 3 or 4 aggressive brake applications. If the brake noise persists or consistently recurs, application of a damping compound to the brake pad mounting plate where it contacts the caliper can lessen the vibration as the components move relative to each other. Refer to [Link target (target-id 176959-) not found] in this section for recommended compounds.

The following brake noises are characteristic of all brake systems. These noises cannot be avoided, and may not indicate improper operation of the brake system.

Squeak/Squeal Noise
A squeak or squeal noise can occur on vehicles with front semi-metalic brake pads during light to medium brake pedal application at low to moderate vehicle speeds. Occasionally this noise may appear from the front or rear brakes after a period of non-use such as overnight, or cold brakes and/or in high humidity conditions.

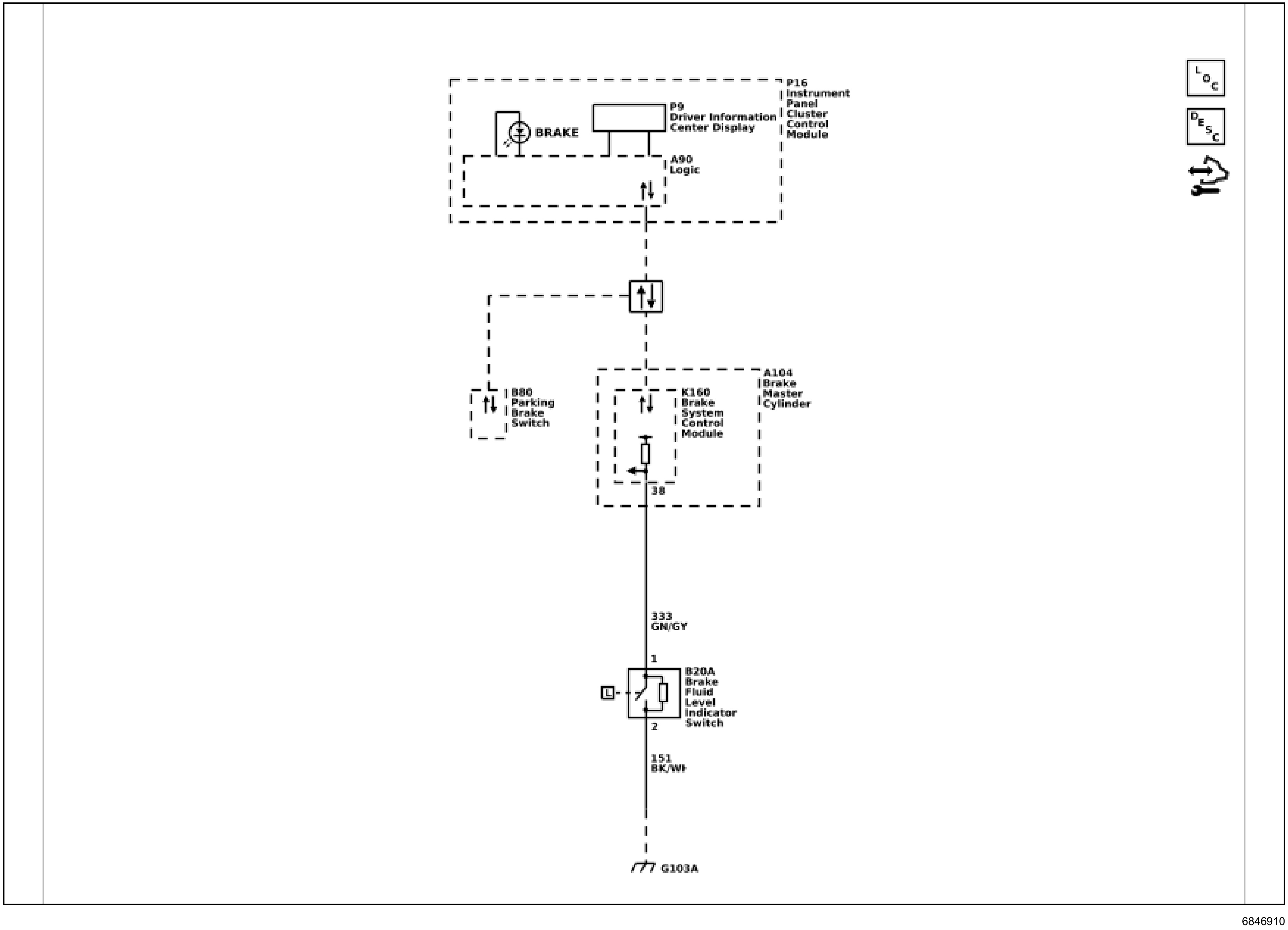
Grinding Noise
Common occurrence for rear brakes and some front disc brakes during initial brake applications after the vehicle has been parked overnight. Caused by light corrosion forming on the metal brake component friction surfaces during vehicle non-use. Typically disappears after the first few brake applications.

Groan Noise
A groan type noise may be heard during a quick stop, or when slowly moving forward from a complete stop. On vehicles equipped with antilock brake systems (ABS), a groan or moan noise may occur during heavy brake application or on road surfaces with compromised traction such as loose gravel, or on wet or icy roads. This is a normal function of ABS activation.

Hydraulic Brakes

Schematic and Routing Diagrams

Hydraulic Brake Schematics (Hydraulic Brakes)


P16 Instrument Panel Cluster Control Module
P9 Driver Information Center Display
BRAKE
A90 Logic
B80 Parking Brake Switch
A104 Brake Master Cylinder
K160 Brake System Control Module
38
333 GN/GY
1
B20A Brake Fluid Level Indicator Switch
L
2
151 BK/WH
G103A
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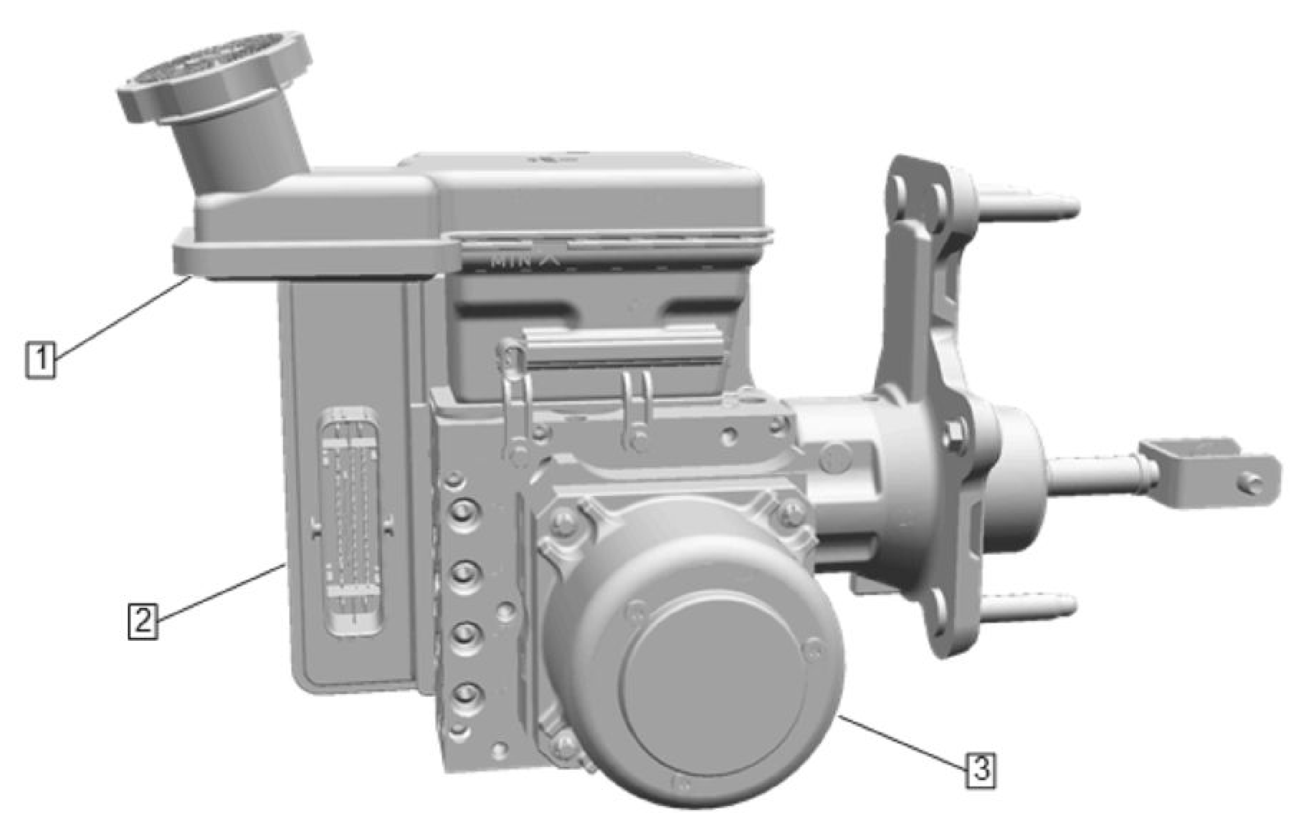
Description and Operation

Brake Assist System Description and Operation

System Component Description



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Note: The above graphic may not be an exact representation for every vehicle configuration.

The brake assist system is an electro - hydraulic brake booster that replaces a vacuum booster including its vacuum supply. The brake booster unit takes the driver applied brake demand and transforms this into an amplified brake pressure and does not rely on vacuum to function. The brake booster unit is designed to operate together with an electronic stability control module which is normally responsible for ABS, traction control and stability control.

The master cylinder and power brake booster unit consists of a brake master cylinder reservoir (1), an electronic brake booster control module (2), pedal coupling unit/pushrod, and the brake master cylinder (3) with integrated brake pressure modulator valve.

System Operation

Brake system input force is multiplied by the brake pedal and transferred by the pedal pushrod to the hydraulic brake master cylinder. Effort required to apply the brake system is reduced by the electronic brake booster.

Shutdown Test

The brake master cylinder performs a self-test 2 minutes after ignition off. The self-test consists of an internal hydraulic test of the brake master cylinder and an external hydraulic compliance test and hydraulic leak test of the brake lines and calipers. The brake master cylinder will take the appropriate actions based on the test results at the next startup. The self-test will not run again until the vehicle has been driven 0.804 Km (0.5 mile), 40.23 kph (25 mph) minimum.

Brake Assist System Description and Operation

Brake Assist Operating Mode	Description	Vehicle Braking Behavior	Vehicle Speed limited to XXX kph/mph	Red Brake Telltale	DIC	Other Displays
Full Brake Assist	• - Normal hydraulic brake assist. • - Brake pedal travel and force (pressure) measured. • - Pedal feel indicates the relation of the pedal travel to the pedal force. • - Brake system applies brake pressure to the wheels to achieve deceleration that makes driver effort comfortable.	• - Pedal feel: Normal (force to travel of brake pedal). • - Brake pedal effort to decel: Normal. • - Pedal Travel restricted to 80 mm due to pedal simulator.	No	No	None	None
Full Brake Assist with warning	• - Normal hydraulic brake assist. • - Driver warned with DIC message only of detected failure. • - There may be a small brake assist or pedal feel degradation depending on if/where the air is in the system or what component is overheated.	• - Pedal feel: Normal. • - Brake pedal effort to deceleration: Normal. • - Pedal Travel restricted to 80 mm due to pedal simulator.	No	No	Service Brake Assist	None

Brake Assist Operating Mode	Description	Vehicle Braking Behavior	Vehicle Speed limited to XXX kph/mph	Red Brake Telltale	DIC	Other Displays
Reduced Brake Assist	• - Normal hydraulic brake assist available • - Driver warned with DIC message but due to nature of failure, engineering determined more warning needed. • - Brake assist gain reduced in a noticeable fashion at low pedal travel (not alarming). • - Full braking available as pedal is depressed further.	• - Pedal feel: Normal • - Brake Pedal effort to decel: More effort required for low decel values (noticeable). Full braking capability for increased effort. • - Pedal Travel restricted to 80 mm due to pedal simulator.	No	No	Service Brake Assist	None
Reduced Brake Assist	• - Normal hydraulic brake assist on 2 wheels. • - Performed when brake system detects and isolates a leak in one of the two brake circuits.	• - Pedal feel: Normal. • - Brake pedal effort to deceleration: Same deceleration requires double the effort. Can only achieve 50% deceleration. • - Vehicle will pull slightly to the side with the Front Brake active. • - Pedal Travel restricted to 80 mm due to pedal simulator.	Yes	Yes	Brake System Failure XXX kph/mph Top Speed Low Brake Fluid (Potentially)	ABS, ESC, and Engine Telltales Service Traction and ESC DIC Vehicle Speed Limited display from ECM
Two Wheel Brake Assist	• - Normal hydraulic brake assist on 2 wheels. • - Performed when brake system detects and isolates a leak in one of the two brake circuits.	• - Pedal feel: Normal. • - Brake pedal effort to deceleration: Same deceleration requires double the effort. Can only achieve 50% deceleration. • - Vehicle will pull slightly to the side with the Front Brake active. • - Pedal Travel restricted to 80 mm due to pedal simulator.	Yes	Yes	Brake System Failure XXX kph/mph Top Speed Low Brake Fluid (Potentially)	ABS, ESC, and Engine Telltales Service Traction and ESC DIC Vehicle Speed Limited display from ECM

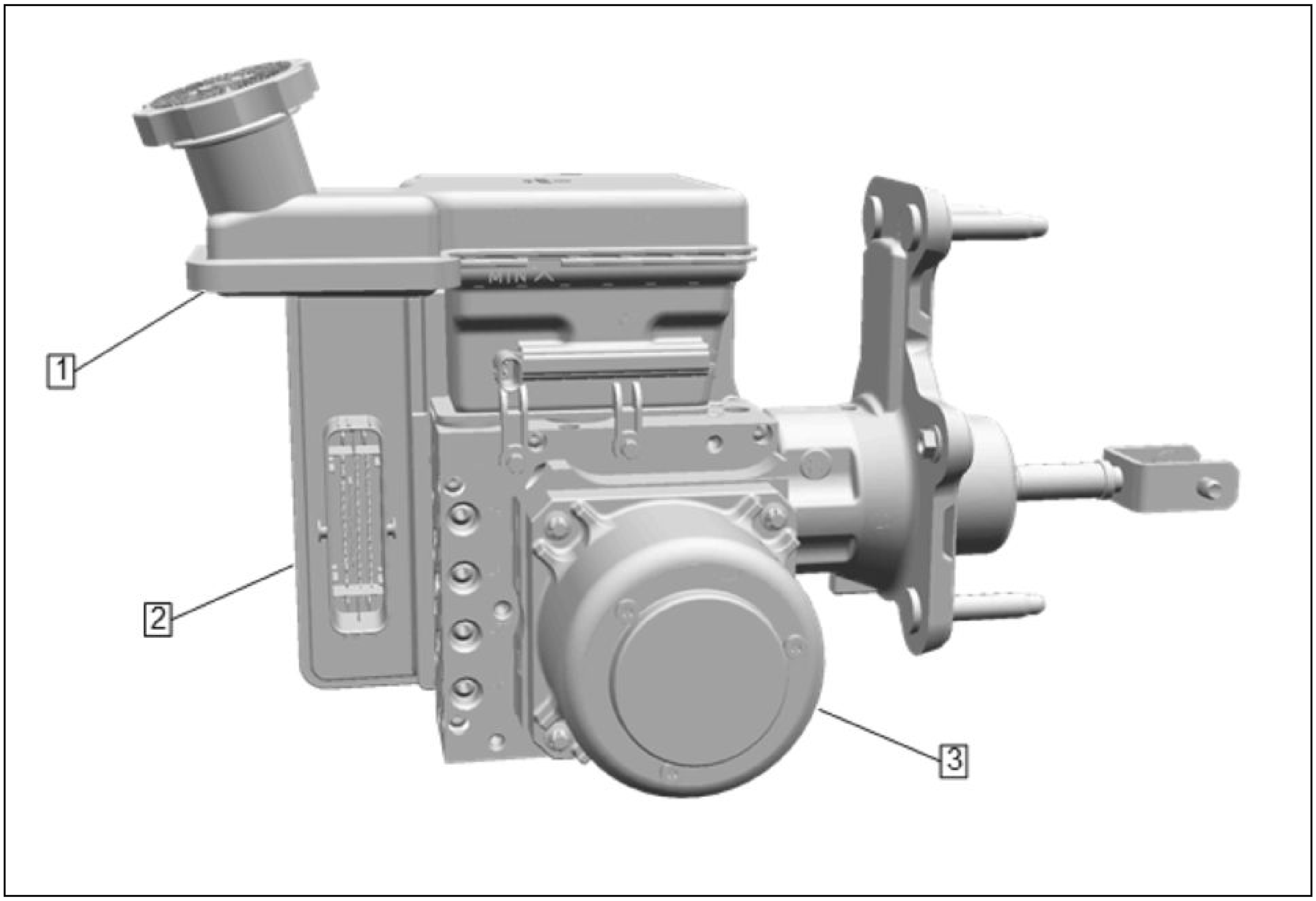
Brake Assist Operating Mode	Description	Vehicle Braking Behavior	Vehicle Speed limited to XXX kph/mph	Red Brake Telltale	DIC	Other Displays
No Brake Assist with Electric Park Brake Assist	• - Hydraulic brake assist not available. • - Brake System uses Electric Park Brake to assist driver braking.	• - Pedal feel: Slightly stiffer than normal. • - Brake pedal effort to deceleration: Onset of braking is similar but more force required to achieve same deceleration compared with Full Brake Assist. • - Minimal non linearities in deceleration due to use of Electric Park Brake. • - Pedal travel's almost to the floor with high effort.	Yes	Yes	Brake System Failure XXX kph/mph Top Speed	ABS, ESC, and Engine Telltales Service Traction and ESC DIC Vehicle Speed Limited display from ECM
No Brake Assist (Push Thru)	• - No hydraulic or Electric Park brake assist available. • - Driver pedal force distributes equal pressure to all 4 wheels	• - Pedal feel: Slightly softer than normal. • - Brake pedal effort to deceleration: Onset of braking requires more travel AND more force required to achieve same deceleration compared with No Brake Assist with Electric Park Brake Assist. • - Pedal Travel's almost to the floor with high effort.	Yes	Yes	Brake System Failure XXX kph/mph Top Speed (Not displayed for full power loss or critical micro failures)	ABS, ESC, and Engine Telltales Service Traction and ESC DIC Vehicle Speed Limited display from ECM
Two Wheel No Brake Assist (2 Wheel Push Thru)	• - Hydraulic brake assist not available. • - Brake system applies and releases Electric Park Brake proportional to driver pedal force to assist driver braking.	• - Pedal feel: Significantly softer than normal. • - Brake Pedal effort to deceleration: Onset of braking requires more travel AND more force required to achieve same deceleration compared with No Brake Assist. • - Vehicle will pull slightly to the side with the Front Brake active. • - Pedal Travel's almost to the floor with high effort.	Yes	Yes	Brake System Failure XXX kph/mph Top Speed	ABS, ESC, and Engine Telltales Service Traction and ESC DIC Vehicle Speed Limited display from ECM

Brake Assist Operating Mode	Description	Vehicle Braking Behavior	Vehicle Speed limited to XXX kph/mph	Red Brake Telltale	DIC	Other Displays
Brake Fade Detected Level 1	• - Normal hydraulic brake assist available. • - Brakes system estimates brake temps of 500 - 600 deg C. • - Driver warned with DIC display. • - Brake assist gain reduced in a noticeable fashion at low pedal travel (not alarming). • - If brake assist gain was not changed, the brake overtemp would not be as noticeable as on vacuum brake system.	• - Pedal feel: Normal • - Brake Pedal effort to deceleration: Not significantly changed • - Pedal Travel restricted to 80 mm due to pedal simulator.	No	No	Reduce Braking to Avoid Overheating	None
Brake Fade Detected Level 2	• - Same as Level 1 but brake temperature 700 - 900 deg C. • - Degradation in brake lining output may become noticeable. • - Degradation in response time may become noticeable. • - Far better performance than a vacuum system.	• - Pedal feel: Normal. • - Brake Pedal effort to deceleration: Increase in effort required based on temperature of brake which decreases brake pad output. • - Pedal Travel restricted to 80 mm due to pedal simulator.	Yes	Yes	Brakes Overheated Service Now	None

Hydraulic Brake System Description and Operation

System Component Description

The hydraulic brake system consists of the following:



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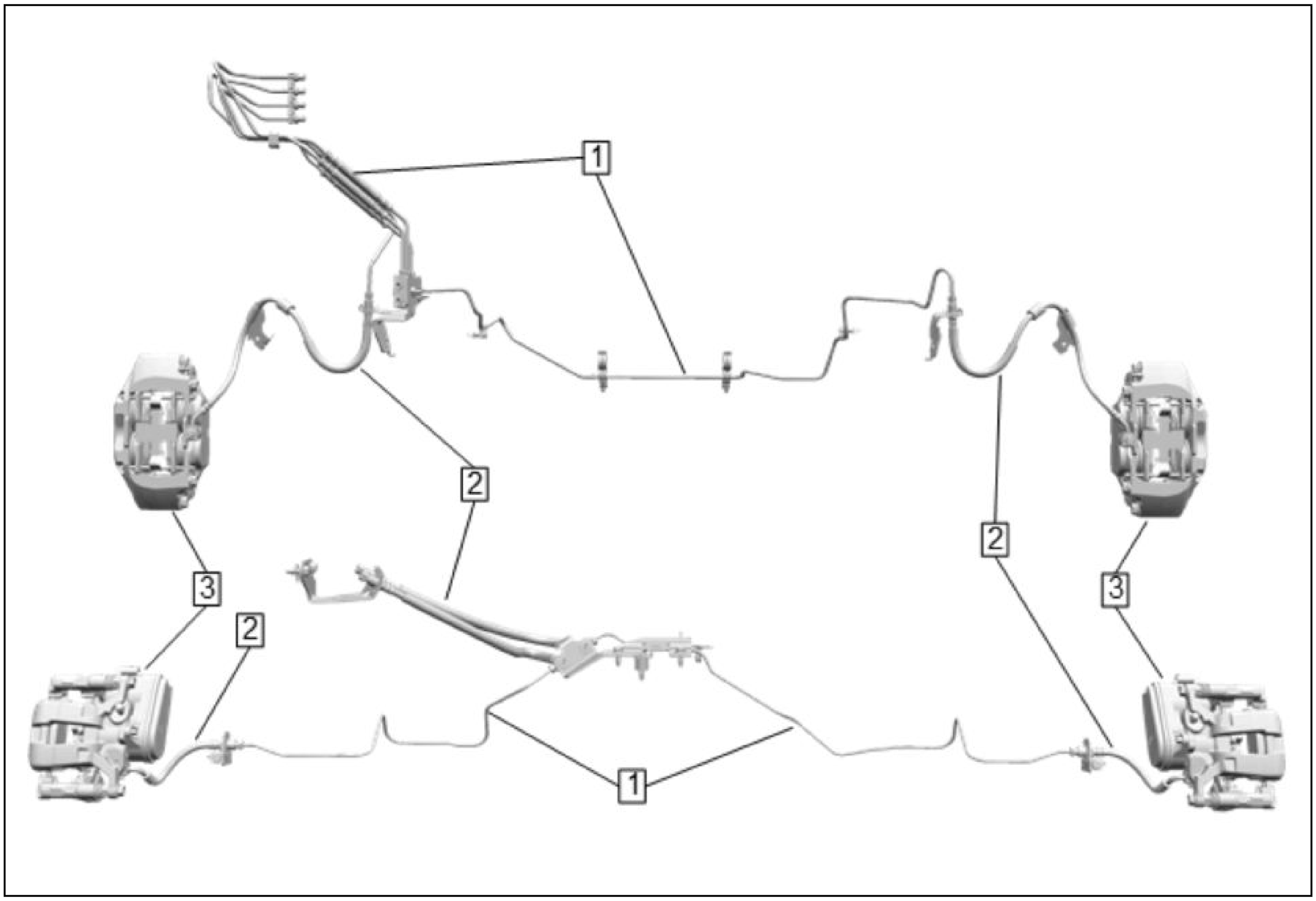
Note: The above graphic may not be an exact representation for every vehicle configuration.

Brake Master Cylinder Fluid Reservoir (1): Contains supply of brake fluid for the hydraulic brake system.

Electronic Brake Booster Control Module (2) and Brake Master Cylinder (3): The brake master cylinder and the electronic brake booster control module take the driver applied brake demand and transforms this into an amplified brake pressure. The integrated brake pressure modulator valve controls hydraulic pressure to each wheel independently and can be responsible for ABS, traction control, and stability control.



Note: The above graphic may not be an exact representation for every vehicle configuration.

Hydraulic Brake Pipes (1) and Flexible Brake Hoses (2): Carries brake fluid to and from hydraulic brake system components.

Brake Calipers (3): Converts hydraulic input pressure into mechanical output force.

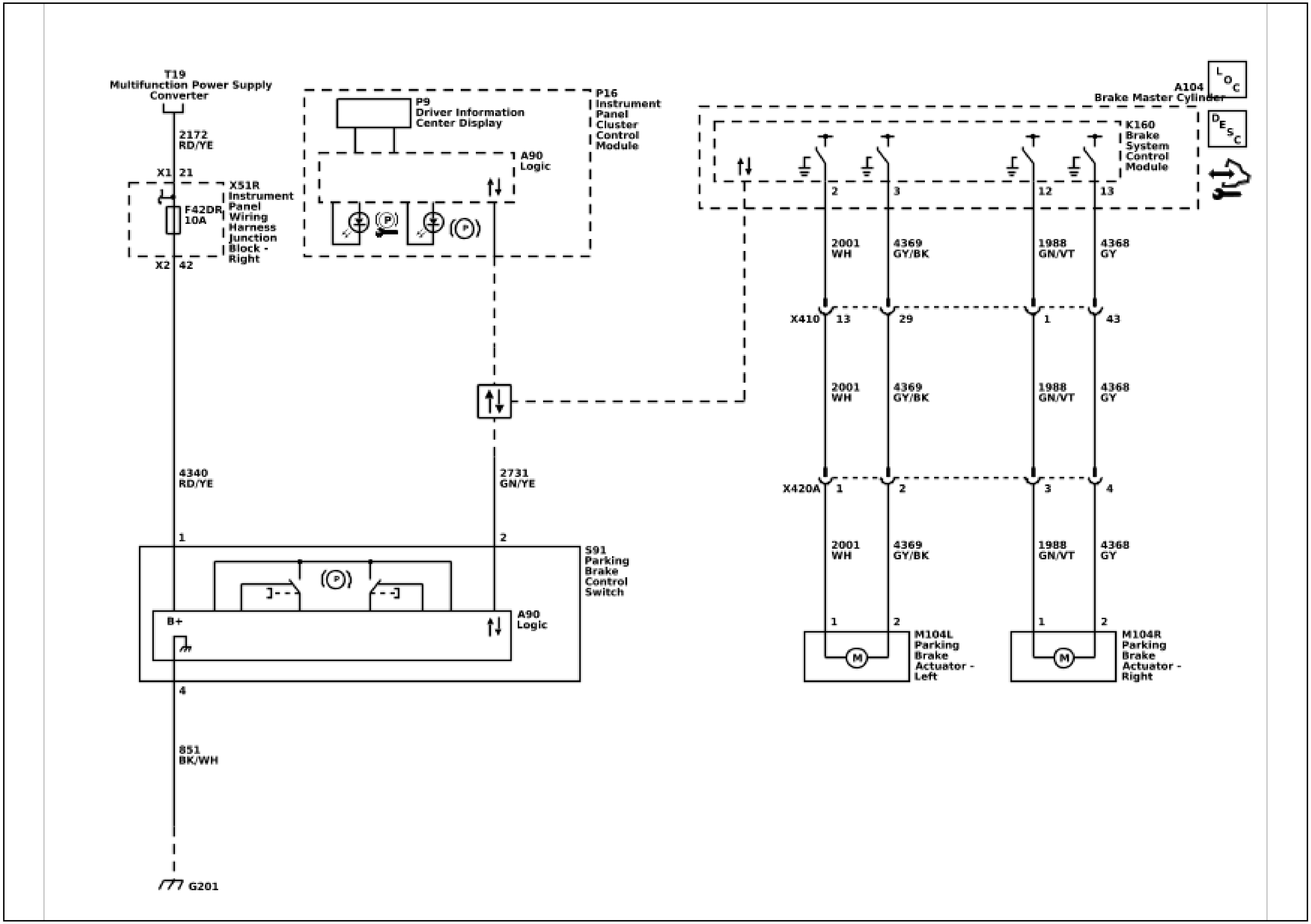
System Operation

Mechanical force is converted into hydraulic pressure by the master cylinder, regulated to meet braking system demands by the pressure balance control system, and delivered to the hydraulic brake wheel circuits by the pipes and flexible hoses. The wheel apply components then convert the hydraulic pressure back into mechanical force which presses linings against rotating brake system components.

Park Brake

Schematic and Routing Diagrams

Park Brake System Schematics (Park Brake System Schematics)


T19
Multifunction Power Supply
Converter
2172
RD/YE
X1 21
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
F42DR
10A
X2 42
4340
RD/YE
1
P9
Driver Information
Center Display
P16
Instrument
Panel
Cluster
Control
Module
A90
Logic
2731
GN/YE
2
S91
Parking
Brake
Control
Switch
A90
Logic
B+
4
851
BK/WH
G201
A104
Brake Master Cylinder
K160
Brake
System
Control
Module
2
3
12
13
2001
WH
4369
GY/BK
1988
GN/VT
4368
GY
X410
13
29
1
43
X420A
1
2
3
4
M104L
Parking
Brake
Actuator -
Left
M104R
Parking
Brake
Actuator -
Right
M
P
LOC
DESC

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Section 3

Diagnostic Overview, Starting Point, and Programming

Programming and Setup 3-4
Diagnostic Information and Procedures 3-4
Control Module References 3-4
Repair Instructions 3-8
A11 Radio: Programming and Setup 3-8
A26 Heater and Air Conditioning User Interface Control - Front: Programming and Setup 3-11
B174W Front View Camera - Windshield: Programming and Setup 3-11
B218L Side Obstacle Detection Control Module - Left: Programming and Setup 3-13
B218R Side Obstacle Detection Control Module - Right: Programming and Setup 3-14
B233B Forward Range Radar Sensor - Long Range: Programming and Setup 3-14
B233LF Short Range Radar Sensor - Left Front: Programming and Setup 3-15
B233LR Short Range Radar Sensor - Left Rear: Programming and Setup 3-16
B233RF Short Range Radar Sensor - Right Front: Programming and Setup 3-17
B233RR Short Range Radar Sensor - Right Rear: Programming and Setup 3-17
B233SL Short Range Radar Rear Side Sensor - Left: Programming and Setup 3-18
B233SR Short Range Radar Rear Side Sensor - Right: Programming and Setup 3-19
K4 Assist Step Control Module: Programming and Setup 3-20
K9 Body Control Module: Programming and Setup 3-21
K19 Suspension Control Module: Programming and Setup 3-24
K20 Engine Control Module: Programming and Setup 3-25
K29FV Front Seat Heater Vent Control Module: Programming and Setup 3-27
K36 Restraints Control Module: Programming and Setup 3-27
K38 Chassis Control Module: Programming and Setup 3-28
K40D Driver Seat Adjuster Memory Module: Programming and Setup 3-29
K40P Passenger Seat Adjuster Memory Module: Programming and Setup 3-30
K43 Power Steering Control Module: Programming and Setup 3-31
K56 Serial Data Gateway Module: Programming and Setup 3-31
K56U Special Purpose Vehicle Module: Programming and Setup 3-34
K60 Column Lock Module: Programming and Setup 3-34
K61 Sunroof Control Module: Programming and Setup 3-35
K67 Trailer Brake Control Module: Programming and Setup 3-36
K68 Trailer Lighting Control Module: Programming and Setup 3-36
K69 Transfer Case Control Module: Programming and Setup 3-36
K71 Transmission Control Module: Programming and Setup 3-37
K73 Telematic Control Module: Programming and Setup 3-38
K85P Restraints Occupant Classification System Module - Passenger: Programming and Setup 3-40

K99 Steering Column Control Module: Programming and Setup 3-41
K115 Reductant Control Module: Programming and Setup 3-41
K124 Image Processing Module: Programming and Setup (without UKL) 3-42
K124 Image Processing Module: Programming and Setup (with UKL) 3-43
K157 Video Processing Module: Programming and Setup 3-44
K160 Brake System Control Module: Programming and Setup 3-46
K179 Automated Driving Mapping Module: Programming and Setup 3-48
K180 Driver Monitoring System Control Module: Programming and Setup 3-50
K182 Parking Assist Control Module: Programming and Setup (UD5 without 00Z or UD7 without 00Y) 3-50
K182 Parking Assist Control Module: Programming and Setup (UD5 with 00Z or UD7 with 00Y) 3-51
K194 Rear Gate Module: Programming and Setup 3-51
K212 Gear Shift Control Module: Programming and Setup 3-52
K219 Lighting Control Module: Programming and Setup 3-53
P16 Instrument Panel Cluster Control Module: Programming and Setup 3-54
T1 Accessory AC and DC Power Control Module: Programming and Setup 3-57
T3 Audio Amplifier: Programming and Setup 3-57
T22 Wireless Accessory Charging Module: Programming and Setup 3-57
K111 Fuel Pump Power Control Module: Programming and Setup 3-58
Serial Data Authentication Configuration 3-59
Service Programming System (SPS) 3-60
Q77 Transmission Control Solenoid Valve Characterization Programming (8 Speed Transmission) 3-61
Q77 Transmission Control Solenoid Valve Characterization Programming (10 Speed Transmission) 3-62
Vehicle Wide Programming and Setup 3-62
Description and Operation **3-73**
Over The Air Description and Operation 3-73
Special Tools and Equipment **3-75**
Special Tools 3-75
Vehicle Diagnostic Information **3-77**
Specifications **3-77**
A11 Radio: Scan Tool Information 3-77
A26 Heater and Air Conditioning User Interface Control - Front: Scan Tool Information 3-80
B174W Front View Camera - Windshield: Scan Tool Information (with UGN) 3-81
B174W Front View Camera - Windshield: Scan Tool Information (without UGN) 3-81
B218L Side Obstacle Detection Control Module - Left: Scan Tool Information 3-82
B218R Side Obstacle Detection Control Module - Right: Scan Tool Information 3-82
B233B Forward Range Radar Sensor - Long Range: Scan Tool Information 3-83
B233LF Short Range Radar Sensor - Left Front: Scan Tool Information 3-84
B233LR Short Range Radar Sensor - Left Rear: Scan Tool Information 3-84
B233RF Short Range Radar Sensor - Right Front: Scan Tool Information 3-85
B233RR Short Range Radar Sensor - Right Rear: Scan Tool Information 3-86
B233SL Short Range Radar Rear Side Sensor - Left: Scan Tool Information 3-86
B233SR Short Range Radar Rear Side Sensor - Right: Scan Tool Information 3-87
K4 Assist Step Control Module: Scan Tool Information 3-88
K19 Suspension Control Module: Scan Tool Information 3-89
K219 Lighting Control Module: Scan Tool Information 3-90
K29FV Front Seat Heater Vent Control Module: Scan Tool Information 3-92

K36 Restraints Control Module: Scan Tool Information 3-93
K38 Chassis Control Module: Scan Tool Information 3-96
K40D Driver Seat Adjuster Memory Module: Scan Tool Information 3-103
K40P Passenger Seat Adjuster Memory Module: Scan Tool Information 3-107
K43 Power Steering Control Module: Scan Tool Information 3-109
K60 Column Lock Module: Scan Tool Information 3-111
K68 Trailer Lighting Control Module: Scan Tool Information 3-111
K69 Transfer Case Control Module: Scan Tool Information 3-112
K71 Transmission Control Module: Scan Tool Information (8L80 (MFC)) 3-117
K71 Transmission Control Module: Scan Tool Information (10L80 (MHS, MHT, MI2, MQB, MQC)) 3-125
K73 Telematic Control Module: Scan Tool Information 3-133
K85P Restraints Occupant Classification System Module - Passenger: Scan Tool Information 3-134
K124 Image Processing Module: Scan Tool Information (UGN) 3-135
K124 Image Processing Module: Scan Tool Information (UKL) 3-140
K160 Brake System Control Module: Scan Tool Information 3-143
K179 Automated Driving Mapping Module: Scan Tool Information 3-149
K180 Driver Monitoring System Control Module: Scan Tool Information 3-150
K182 Parking Assist Control Module: Scan Tool Information 3-150
K194 Rear Gate Module: Scan Tool Information 3-154
P16 Instrument Panel Cluster Control Module: Scan Tool Information 3-155
T3 Audio Amplifier: Scan Tool Information 3-156
T22 Wireless Accessory Charging Module: Scan Tool Information 3-157
Diagnostic Information and Procedures 3-158
Strategy Based Diagnosis 3-158
Diagnostic Procedure Instructions 3-160
Diagnostic System Check Instructions 3-162
Diagnostic Starting Point - Vehicle 3-167
Diagnostic System Check - Vehicle 3-167
DTC Status Information 3-171
Powertrain Diagnostic Trouble Code (DTC) Type Definitions 3-172
Diagnostic Trouble Code (DTC) List - Vehicle 3-173
Symptom Byte List 3-248
Symptoms - Vehicle 3-257
Engine Does Not Crank 3-258
Engine Cranks But Does Not Run 3-259
Inspection/Maintenance System Check 3-259
Diagnostic Repair Verification 3-259
Proactive Alerts List 3-259
Description and Operation 3-259
Proactive Alerts Description and Operation 3-259

Diagnostic Overview, Starting Point, and Programming

Programming and Setup

Diagnostic Information and Procedures

Control Module References

Reference Information

- [Link target (target-id 148085-) not found]
- *Diagnostic System Check - Vehicle 3-167*
- *Diagnostic Trouble Code (DTC) List - Vehicle 3-173*
- *Symptoms - Vehicle 3-257*

Control Module References

Code	Control Module/Scan Tool Information	Schematic	Repair Instruction	Programming and Setup
A11	*A11 Radio: Scan Tool Information 3-77*	*Radio/Navigation System Schematics (IOR) 5-3* *Radio/Navigation System Schematics (IOK) 5-8*	[Link target (target-id 46758-) not found]	*A11 Radio: Programming and Setup 3-8*
A26	*A26 Heater and Air Conditioning User Interface Control - Front: Scan Tool Information 3-80*	*HVAC Schematics (CJ2) 7-3*	[Link target (target-id 265846-) not found]	*A26 Heater and Air Conditioning User Interface Control - Front: Programming and Setup 3-11*
B174W	*B174W Front View Camera - Windshield: Scan Tool Information (without UGN) 3-81* *B174W Front View Camera - Windshield: Scan Tool Information (with UGN) 3-81*	*Driver Assistance Systems Schematics (-UKL) 10-4* *Driver Assistance Systems Schematics (UKL) 10-9*	[Link target (target-id 283748-) not found]	*B174W Front View Camera - Windshield: Programming and Setup 3-11*
B218L/R	*B218L Side Obstacle Detection Control Module - Left: Scan Tool Information 3-82* *B218R Side Obstacle Detection Control Module - Right: Scan Tool Information 3-82*	*Driver Assistance Systems Schematics (-UKL) 10-4* *Driver Assistance Systems Schematics (UKL) 10-9*	[Link target (target-id 283745-) not found]	*B218L Side Obstacle Detection Control Module - Left: Programming and Setup 3-13* *B218R Side Obstacle Detection Control Module - Right: Programming and Setup 3-14*
B233B	*B233B Forward Range Radar Sensor - Long Range: Scan Tool Information 3-83*	*Driver Assistance Systems Schematics (-UKL) 10-4* *Driver Assistance Systems Schematics (UKL) 10-9*	[Link target (target-id 283757-) not found]	*B233B Forward Range Radar Sensor - Long Range: Programming and Setup 3-14*
B233LF/RF	*B233LF Short Range Radar Sensor - Left Front: Scan Tool Information 3-84* *B233RF Short Range Radar Sensor - Right Front: Scan Tool Information 3-85*	*Driver Assistance Systems Schematics (-UKL) 10-4* *Driver Assistance Systems Schematics (UKL) 10-9*	[Link target (target-id 309279-) not found]	*B233LF Short Range Radar Sensor - Left Front: Programming and Setup 3-15* *B233RF Short Range Radar Sensor - Right Front: Programming and Setup 3-17*

Code	Control Module/Scan Tool Information	Schematic	Repair Instruction	Programming and Setup
B233LR/RR	*B233LR Short Range Radar Sensor - Left Rear: Scan Tool Information 3-84* *B233RR Short Range Radar Sensor - Right Rear: Scan Tool Information 3-86*	*Driver Assistance Systems Schematics (-UKL) 10-4* *Driver Assistance Systems Schematics (UKL) 10-9*	[Link target (target-id 320874-) not found]	*B233LR Short Range Radar Sensor - Left Rear: Programming and Setup 3-16* *B233RR Short Range Radar Sensor - Right Rear: Programming and Setup 3-17*
B233SL/SR	*B233SL Short Range Radar Rear Side Sensor - Left: Scan Tool Information 3-86* *B233SR Short Range Radar Rear Side Sensor - Right: Scan Tool Information 3-87*	*Driver Assistance Systems Schematics (-UKL) 10-4* *Driver Assistance Systems Schematics (UKL) 10-9*	[Link target (target-id 320874-) not found]	*B233SL Short Range Radar Rear Side Sensor - Left: Programming and Setup 3-18* *B233SR Short Range Radar Rear Side Sensor - Right: Programming and Setup 3-19*
K4	*K4 Assist Step Control Module: Scan Tool Information 3-88*	[Link target (target-id 145954-) not found]	[Link target (target-id 258421-) not found]	*K4 Assist Step Control Module: Programming and Setup 3-20*
K9	Body Control Module	*Body Control System Schematics 8-23*	[Link target (target-id 148090-) not found]	*K9 Body Control Module: Programming and Setup 3-21*
K19	*K19 Suspension Control Module: Scan Tool Information 3-89*	[Link target (target-id 156654-) not found]	[Link target (target-id 56243-) not found]	*K19 Suspension Control Module: Programming and Setup 3-24*
K20	Engine Control Module	• *Engine Controls Schematics (L3B) 6-34* – 2.7L (L3B) engine • *Engine Controls Schematics (LZ0) 6-12* – 3.0L (LZ0) Diesel engine • *Engine Controls Schematics (L84 / L87) 6-57* – 5.3L (L84) or 6.2L (L87) engine	[Link target (target-id 305929-) not found] – 2.7L (L3B) engine [Link target (target-id 307247-) not found] – 3.0L (LZ0) Diesel engine [Link target (target-id 227993-) not found] – 5.3L (L84) or 6.2L (L87) engine	*K20 Engine Control Module: Programming and Setup 3-25*
K29FV	*K29FV Front Seat Heater Vent Control Module: Scan Tool Information 3-92*	*Heated/Cooled Seat Schematics 11-24*	[Link target (target-id 271038-) not found]	*K29FV Front Seat Heater Vent Control Module: Programming and Setup 3-27*
K36	*K36 Restraints Control Module: Scan Tool Information 3-93*	*SIR Schematics 10-62*	[Link target (target-id 57768-) not found]	*K36 Restraints Control Module: Programming and Setup 3-27*
K38	*K38 Chassis Control Module: Scan Tool Information 3-96*	*Differential Lock Schematics 4-3*	[Link target (target-id 345039-) not found]	*K38 Chassis Control Module: Programming and Setup 3-28*
K40	• *K40D Driver Seat Adjuster Memory Module: Scan Tool Information 3-103* • *K40P Passenger Seat Adjuster Memory Module: Scan Tool Information 3-107*	• *Driver Seat Schematics 11-3* • *Passenger Seat Schematics 11-9*	[Link target (target-id 168604-) not found]	• *K40D Driver Seat Adjuster Memory Module: Programming and Setup 3-29* • *K40P Passenger Seat Adjuster Memory Module: Programming and Setup 3-30*
K43	*K43 Power Steering Control Module: Scan Tool Information 3-109*	*Power Steering Schematics 12-3*	[Link target (target-id 119400-) not found]	*K43 Power Steering Control Module: Programming and Setup 3-31*

Code	Control Module/Scan Tool Information	Schematic	Repair Instruction	Programming and Setup
K56	Serial Data Gateway Module	*Data Communication Schematics 8-3*	[Link target (target-id 148099-) not found]	*K56 Serial Data Gateway Module: Programming and Setup 3-31*
K56U	Special Purpose Vehicle Module	*Data Communication Schematics 8-3*	[Link target (target-id 351765-) not found]	*K56U Special Purpose Vehicle Module: Programming and Setup 3-34*
K60	*K60 Column Lock Module: Scan Tool Information 3-111*	*Column Lock Schematics 12-8*	[Link target (target-id 129581-) not found]	*K60 Column Lock Module: Programming and Setup 3-34*
K61	Sunroof Control Module	*Sunroof Schematics 9-3*	[Link target (target-id 69635-) not found]	*K61 Sunroof Control Module: Programming and Setup 3-35*
K67	Trailer Brake Control Module	*Trailering Systems Schematics 1-48*	[Link target (target-id 327489-) not found]	*K67 Trailer Brake Control Module: Programming and Setup 3-36*
K68	*K68 Trailer Lighting Control Module: Scan Tool Information 3-111*	*Trailering Systems Schematics 1-48*	[Link target (target-id 327487-) not found]	*K68 Trailer Lighting Control Module: Programming and Setup 3-36*
K69	*K69 Transfer Case Control Module: Scan Tool Information 3-112*	• *Transfer Case Control Schematics (NP0) 13-8* – MP 3015 (NP0) transfer case • *Transfer Case Control Schematics (NQH) 13-22* – MP 3025 (NQH) transfer case	[Link target (target-id 192307-) not found] – MP 3015 (NP0) transfer case [Link target (target-id 162319-) not found] – MP 3025 (NQH) transfer case	*K69 Transfer Case Control Module: Programming and Setup 3-36*
K71	*K71 Transmission Control Module: Scan Tool Information (8L80 (MFC)) 3-117* *K71 Transmission Control Module: Scan Tool Information (10L80 (MHS, MHT, MI2, MQB, MQC)) 3-125*	• [Link target (target-id 260603-) not found] – 8L80 (MFC) transmission • [Link target (target-id 278645-) not found] – 10L80 (MHS, MHT, MI2, MQB, MQC) transmission	[Link target (target-id 260335-) not found] – 8L80 (MFC) transmission [Link target (target-id 284331-) not found] – 10L80 (MHS, MHT, MI2, MQB, MQC) transmission	*K71 Transmission Control Module: Programming and Setup 3-37*
K73	*K73 Telematic Control Module: Scan Tool Information 3-133*	*OnStar/Telematics Schematics 5-19*	[Link target (target-id 328020-) not found]	*K73 Telematic Control Module: Programming and Setup 3-38*
K85P	*K85P Restraints Occupant Classification System Module - Passenger: Scan Tool Information 3-134*	*SIR Schematics 10-62*	[Link target (target-id 188211-) not found]	*K85P Restraints Occupant Classification System Module - Passenger: Programming and Setup 3-40*
K99	Steering Column Tilt Wheel and Telescope Control Module	*Tilt/Telescoping Steering Column Schematics 12-9*	[Link target (target-id 59054-) not found]	*K99 Steering Column Control Module: Programming and Setup 3-41*
K111	Fuel Pump Power Control Module	• *Engine Controls Schematics (L3B) 6-34* – 2.7L (L3B) engine • *Engine Controls Schematics (LZ0) 6-12* – 3.0L (LZ0) Diesel engine • *Engine Controls Schematics (L84 / L87) 6-57* – 5.3L (L84) or 6.2L (L87) engine	[Link target (target-id 305911-) not found] – 2.7L (L3B) engine [Link target (target-id 307189-) not found] – 3.0L (LZ0) Diesel engine [Link target (target-id 228095-) not found] – 5.3L (L84) or 6.2L (L87) engine	*K111 Fuel Pump Power Control Module: Programming and Setup 3-58*

Code	Control Module/Scan Tool Information	Schematic	Repair Instruction	Programming and Setup
K115	Reductant Control Module	*Engine Controls Schematics (LZ0) 6-12* – 3.0L (LZ0) Diesel engine	[Link target (target-id 307748-) not found]	*K115 Reductant Control Module: Programming and Setup 3-41*
K124	*K124 Image Processing Module: Scan Tool Information (UGN) 3-135* *K124 Image Processing Module: Scan Tool Information (UKL) 3-140*	*Driver Assistance Systems Schematics (-UKL) 10-4* *Driver Assistance Systems Schematics (UKL) 10-9*	[Link target (target-id 335121-) not found]	*K124 Image Processing Module: Programming and Setup (without UKL) 3-42* *K124 Image Processing Module: Programming and Setup (with UKL) 3-43*
K157	Video Processing Module	*Image Display Camera Schematics 5-52*	[Link target (target-id 283882-) not found]	*K157 Video Processing Module: Programming and Setup 3-44*
K160	*K160 Brake System Control Module: Scan Tool Information 3-143*	*Antilock Brake System Schematics 2-3*	[Link target (target-id 324093-) not found]	*K160 Brake System Control Module: Programming and Setup 3-46*
K179	*K179 Automated Driving Mapping Module: Scan Tool Information 3-149*	*Driver Assistance Systems Schematics (-UKL) 10-4* *Driver Assistance Systems Schematics (UKL) 10-9*	[Link target (target-id 300023-) not found]	*K179 Automated Driving Mapping Module: Programming and Setup 3-48*
K180	*K180 Driver Monitoring System Control Module: Scan Tool Information 3-150*	*Driver Monitoring Schematics (UKL) 10-30*	[Link target (target-id 293110-) not found]	*K180 Driver Monitoring System Control Module: Programming and Setup 3-50*
K182	*K182 Parking Assist Control Module: Scan Tool Information 3-150*	*Parking Assistance Systems Schematics 10-36*	[Link target (target-id 283577-) not found]	*K182 Parking Assist Control Module: Programming and Setup (UD5 without 00Z or UD7 without 00Y) 3-50* *K182 Parking Assist Control Module: Programming and Setup (UD5 with 00Z or UD7 with 00Y) 3-51*
K194	*K194 Rear Gate Module: Scan Tool Information 3-154*	*Endgate Schematics 1-68*	[Link target (target-id 162445-) not found]	*K194 Rear Gate Module: Programming and Setup 3-51*
K212	Gear Shift Control Module	*Electronic Transmission Range Selector Schematics (MHS / MHT / MI2 / MQB / MQC) 13-3*	[Link target (target-id 335605-) not found]	*K212 Gear Shift Control Module: Programming and Setup 3-52*
K219	*K219 Lighting Control Module: Scan Tool Information 3-90*	*Exterior Lights Schematics 1-21*	[Link target (target-id 321424-) not found]	*K219 Lighting Control Module: Programming and Setup 3-53*
P16	*P16 Instrument Panel Cluster Control Module: Scan Tool Information 3-155*	*Instrument Cluster Schematics 5-38*	[Link target (target-id 50650-) not found]	*P16 Instrument Panel Cluster Control Module: Programming and Setup 3-54*
T1	Accessory AC and DC Power Control Module	*Cigar Lighter/Power Outlet Schematics 8-915*	[Link target (target-id 121154-) not found]	*T1 Accessory AC and DC Power Control Module: Programming and Setup 3-57*
T3	*T3 Audio Amplifier: Scan Tool Information 3-156*	*Radio/Navigation System Schematics (IOR) 5-3* *Radio/Navigation System Schematics (IOK) 5-8*	[Link target (target-id 46705-) not found]	*T3 Audio Amplifier: Programming and Setup 3-57*
T22	*T22 Wireless Accessory Charging Module: Scan Tool Information 3-157*	*Cigar Lighter/Power Outlet Schematics 8-915*	[Link target (target-id 224804-) not found]	*T22 Wireless Accessory Charging Module: Programming and Setup 3-57*

Repair Instructions

A11 Radio: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle’s power mode.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Diagnostic Aids

- Check for Preliminary information or Technical Service bulletins before programming.
- During programming you may be required to select multiple calibrations dependent upon vehicle equipment. Have the vehicle build/RPO information available during the following procedure to ensure the correct calibrations are selected.
- If the control module calibration is only being updated, USB programming may not be required, depending on the current software level, or the release of updates. If USB programming may not be required when replacing/reprogramming the control module. If USB files for the application are not available via SPS, or have not been received from General Motors in another manner, the USB process will not need to be performed unless instructed otherwise in a service document or publication.
- Begin with the vehicle in the vehicle OFF power mode. The Service Programming System will power mode the vehicle.
- The vehicle can be moved to an alternate location when performing the USB portion of the programming steps which could allow the possibility of working on another vehicle while the USB programming event is taking place.
- When transferring a large file (>1GB) from the Techline Connect server to the PC then to a USB stick, below are some useful tips:
  - A wired connection to the network is the quickest, most stable way to download the file.
  - Wireless connections can be used, however slower connection speeds may increase the likelihood of errors to occur during file download.
  - Once the file is downloaded to the PC, it will reside in cashe unless the cashe is cleared. Any additional USB sticks made from that PC will be copied from cashe and take a much shorter time compared to downloading from the server.
  - Never take a USB stick directly to a vehicle for updating without starting a Techline Connect session for that particular VIN. If software is already on the stick, Techline Connect will take only seconds to confirm software on the stick is the latest and correct for that vehicle. Failure to perform this step will result in no warranty claim code indicating a USB programming event was completed.
  - If equipped with an SD Card slot, the SD card must be installed and functioning correctly for USB programming to be successful.

Reference Information

Special Tools

- USB type A or type C flash drive (whichever applicable) .
- USB 2.0 & above with FAT32 format (USB 3.0 & 3.1 is highly recommended)
- Minimum size 16GB (Most USB flash drives larger than 32GB do not support FAT32 format)
- EL-52100 Multiple Diagnostic Interface 2 (MDI 2)

For equivalent regional tools, refer to *Special Tools 3-75*.

Reprogram Control Module

To program an existing control module, perform the following procedure:

Note: The vehicle must remain in PARK and the driver’s door closed during the programming procedure.

1. Ignition/vehicle OFF

2. Access the Service Programming System (SPS) and follow the on-screen instructions.

Note: If the radio displays “calibrate device, one or more devices need to be calibrated" in SPS program the radio selecting replace and program.

3. On the SPS Supported Controllers screen, select A11 Radio – Programming and then follow the on-screen instructions.
4. Before proceeding with USB programming check for any Info Sys OTA updates under Settings>Updates on the vehicles infotainment screen. If an update is available, it is more efficient to install the OTA update if it will install successfully. If the OTA will not install and USB programming is necessary then before attempting USB programming you should first decline the update by selecting Details and then the Decline Update option, followed by confirming the Decline Update. If an Info Sys OTA update is not available, proceed with USB programming.

Note:

- If equipped with an SD Card slot, the SD card must be installed and functioning correctly for USB programming to be successful.
- If using a pre-configured USB drive supplied by General Motors, proceed to step 6.

5. Connect a USB drive to the computer.
6. Access the Service Programming System (SPS) and follow the on-screen instructions.
7. On the SPS Supported Controllers screen, select A11 Radio – USB Copy/ USB File Transfer.

Note:

- If USB programming is unavailable, or if the selected software description is the following proceed to step 6: *STOP. If you are seeing this text, the controller already has the latest software available. If you try to proceed further, SPS will generate an error.*.
- Software currently loaded on the USB Drive will be verified and if files are incorrect they will be deleted and correct files will be loaded. If files residing on the USB Drive are correct for the vehicle being serviced, the Techline terminal will not delete those files and allow the drive to be re-used.

8. Upon completion of the file transfer, remove the USB drive from the computer.
9. Connect the USB drive to the USB port in the vehicle.
10. Ignition ON, infotainment system ON.

Note: The Radio will not allow the installation of the same software version via USB. If the same software is detected the installation process will not start.

11. The infotainment system will recognize that update files are available. Follow the infotainment display on-screen instructions and select Update when prompted. Programming will take several minutes.

Note: Once the update is initiated, there is no need to monitor the progress.

Note: If no instructions immediately appear on the infotainment display, select the following menu options:

- Home
- Settings
- System
- Updates

12. Upon completion of programming, remove the USB drive. Follow the infotainment display on-screen instructions.
13. Clear DTCs.
14. Perform the Manufacturer Enable Counter (MEC) reset – Access the Global Diagnostic System 2 (GDS 2) and identify the vehicle
15. On the GDS 2 screen select Module Diagnostics – Radio (select appropriate RPO) – Configuration/ reset functions – Reset Manufacturer Enable Counter and follow the on–screen instructions.

Note: You may receive a message stating the Reset Manufacturer Enable Counter (MEC) procedure is not required if the MEC counter is already at 0.

16. Ignition OFF, Retained Accessory Power (RAP) OFF, remove the key fob from range of the vehicle, and let the vehicle sit for five minutes. Retest system operation to verify the repair.

Replace and Program Control Module

To program a replacement control module, perform the following procedure:

Note: The vehicle must remain in PARK and the driver’s door closed during the programming procedure.

1. Ignition/vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select A11 Radio – Programming and then follow the on-screen instructions.

Note:

- If equipped with an SD Card slot, the SD card must be installed and functioning correctly for USB programming to be successful.
- If using a pre-configured USB drive supplied by General Motors, proceed to step 5.

4. Connect a USB drive to the computer.
5. Access the Service Programming System (SPS) and follow the on-screen instructions.

6. On the SPS Supported Controllers screen, select A11 Radio – USB Copy/ USB File Transfer.

Note:

- If USB programming is unavailable, or if the selected software description is the following proceed to step 5: *STOP. If you are seeing this text, the controller already has the latest software available. If you try to proceed further, SPS will generate an error.*.
- Software currently loaded on the USB Drive will be verified and if files are incorrect they will be deleted and correct files will be loaded. If files residing on the USB Drive are correct for the vehicle being serviced, the Techline terminal will not delete those files and allow the drive to be re-used.

7. Upon completion of the file transfer, remove the USB drive from the computer.
8. Connect the USB drive to the USB port in the vehicle.
9. Ignition ON, infotainment system ON.

Note: The Radio will not allow the installation of the same software version via USB. If the same software is detected the installation process will not start.

10. The infotainment system will recognize that update files are available. Follow the infotainment display on-screen instructions and select Update when prompted. Programming will take several minutes.

Note: Once the update is initiated, there is no need to monitor the progress.

Note: If no instructions immediately appear on the infotainment display, select the following menu options:

- Home
- Settings
- System
- Updates

11. Upon completion of programming, remove the USB drive. Follow the infotainment display on-screen instructions.
12. Clear DTCs.
13. Perform the Manufacturer Enable Counter (MEC) reset – Access the Global Diagnostic System 2 (GDS 2) and identify the vehicle
14. On the GDS 2 screen select Module Diagnostics – Radio (select appropriate RPO) – Configuration/ reset functions – Reset Manufacturer Enable Counter and follow the on–screen instructions.

Note: You may receive a message stating the Reset Manufacturer Enable Counter (MEC) procedure is not required if the MEC counter is already at 0.

15. Ignition OFF, Retained Accessory Power (RAP) OFF, remove the key fob from range of the vehicle, and let the vehicle sit for five minutes. Retest system operation to verify the repair.

XM Activation (If Equipped)

Important: On the radio being replaced, record the XM ID from the radio parts label or before removal tune to XM channel 0. This will be used during the call to XM radio to deactivate the receiver that has been removed from the vehicle.

1. Turn the replacement radio ON, tune to the XM channel 0, and record the radio ID. The radio ID will be needed for activation of the receiver.
2. Contact SiriusXM Dealer Support at (800) 852–9696 to activate the new receiver.
3. Park the vehicle outside in an area with an unobstructed view of the southern sky.
4. Leave the vehicle outside with the ignition switch in the ACC position and the radio on for 30 minutes to activate XM service.
5. Once activated, the radio will receive the remaining XM channels.

Unsuccessful Programming Recovery

Note:

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the control module.

Note: All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:

- Removing all fuses supplying battery voltage and ignition voltage to the control module.

- Disconnecting all harness connectors from the control module.
- Performing a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .

3. Reconnect all battery voltage and ignition voltage sources to the control module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the control module, data link connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the control module.
8. Verify the control module can be programmed.

⇒ **If the control module can not be programmed**

8.1. Ignition ON/Vehicle in Service Mode for 1 min.

8.2. Ignition/Vehicle OFF.

8.3. Access SPS and follow the on-screen instructions for the control module.

Note: If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

8.4. Verify the control module can be programmed.

⇒ If the control module can not be programmed, replace the control module.

⇓ If the control module can be programmed

8.5. Clear DTCs.

⇓ **If the control module can be programmed**

9. Clear DTCs.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for control module replacement, programming, and setup.

A26 Heater and Air Conditioning User Interface Control - Front: Programming and Setup

Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: *Diagnostic System Check - Vehicle 3-167*
- Review the description of Strategy Based Diagnosis: *Strategy Based Diagnosis 3-158*

Note:

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn Off or disable systems that may put a load on the vehicle's battery. For example, interior lights, daytime running lights, HVAC, and radio.
- During the programming procedure, follow the Service Programming System (SPS) prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to No.

Programming an Existing or New Control Module

This control module does not require SPS programming or any setup procedures.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: *Diagnostic Repair Verification 3-259*

For control module replacement, programming, and setup refer to: *Control Module References 3-4*

B174W Front View Camera - Windshield: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.
- Anytime the B174W Frontview Camera - Windshield is removed from its mount, it must follow the Frontview Camera Module Learn procedure.

Following Replacement of Windshield

The B174W Frontview Camera - Windshield must be calibrated, refer to [Link target (target-id 297673-) not found] .

Replace and Program Frontview Camera Module or Reprogram Frontview Camera Module (without UGN)

Note: Due to continuous improvements, the on screen selections may vary from instructions below.

To program a replacement or an existing B174W Frontview Camera - Windshield , perform the following procedure:

1. Ignition/Vehicle OFF
2. Connect the *EL-52100 MDI 2*
   Multiple Diagnostic Interface 2 to the computer using a USB cable. Wireless or Bluetooth connections may cause an interruption in the data transfer.
3. Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select B174W Frontview Camera - Windshield – Programming and follow the on-screen instructions.
6. On the SPS Supported Controllers screen, select B174W Frontview Camera - Windshield – Setup **(if this option is available)** and follow the on-screen instructions.
7. Clear DTCs.
8. Following B174W Frontview Camera - Windshield replacement and reprogramming, the module must be calibrated. Refer to [Link target (target-id 297673-) not found] .

Replace and Program Frontview Camera Module or Reprogram Frontview Camera Module (with UGN)

To program a replacement or an existing B174W Frontview Camera - Windshield , perform the following procedure:

1. Ignition/Vehicle OFF
2. Connect the *EL-52100 MDI 2*
   Multiple Diagnostic Interface 2 to the computer using a USB cable. Wireless or Bluetooth connections may cause an interruption in the data transfer.
3. Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select B174W Frontview Camera - Windshield – Programming and follow the on-screen instructions.
6. On the SPS Supported Controllers screen, select B174W Frontview Camera - Windshield – Setup **(if this option is available)** and follow the on-screen instructions.

Note: After programming is performed, it is normal to have DTC B101E 4B set until calibration is complete.

If reprogramming an existing module that was previously calibrated, calibration is not required. The module retains its calibration settings during reprogramming. If a new module was programmed the module alignment must be calibrated. Using a scantool, initiate the learn procedure for B174W Frontview Camera - Windshield . The scan tool must remain connected and on the calibration screen during the entire process.

Refer to [Link target (target-id 297673-) not found] .

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

Note: Unsuccessful programming attempts may be caused by a weak, slow, or unstable WiFi connection. Connecting computer to facility network via wired connection may resolve module programming issues.

1. DO NOT turn the ignition OFF. Ensure that all B174W Frontview Camera - Windshield , DLC and programming tool connections are secure and the TIS terminal operating software is up to date.
2. Attempt to reprogram the B174W Frontview Camera - Windshield .
3. If the B174W Frontview Camera - Windshield can still not be programmed, turn the ignition OFF for at least one minute.
4. Turn the ignition ON and attempt to reprogram the B174W Frontview Camera - Windshield . The B174W Frontview Camera - Windshield should program.
   - ⇒ If the B174W Frontview Camera - Windshield still cannot be programmed, replace the B174W Frontview Camera - Windshield .

B218L Side Obstacle Detection Control Module - Left: Programming and Setup

Note:

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the ECU is not properly configured with the correct calibration software, the ECU will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or ECU damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Reference Information

Special Tools
EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to *Special Tools 3-75*.

Replace and Program ECU or Reprogram ECU

To program a replacement or an existing ECU, perform the following procedure:

Note:

- Due to continuous improvements, the on screen selections may vary from instructions below.
- Some systems only have one programmable Side Object Sensor Module.

1. Ignition/Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select B218 Side Object Sensor Module then select B218R Right Side Object Sensor Module or B218L Left Side Object Detection.
4. On the SPS Select Function / Sequence screen, select Sequential Programming or Programming
5. Clear DTCs.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. DO NOT turn the ignition OFF. Ensure that all ECU, DLC and programming tool connections are secure and the TIS terminal operating software is up to date.
2. Attempt to reprogram the ECU.
3. If the ECU can still not be programmed, turn the ignition OFF for at least one minute.
4. Turn the ignition ON and attempt to reprogram the ECU. The ECU should program.
   - ⇒ If the ECU still cannot be programmed, replace the ECU.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for Control Module replacement, programming and setup

B218R Side Obstacle Detection Control Module - Right: Programming and Setup

Note:

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the ECU is not properly configured with the correct calibration software, the ECU will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or ECU damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Reference Information

Special Tools
EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to Special Tools 3-75.

Replace and Program ECU or Reprogram ECU

To program a replacement or an existing ECU, perform the following procedure:

Note:

- Due to continuous improvements, the on screen selections may vary from instructions below.
- Some systems only have one programmable Side Object Sensor Module.

1. Ignition/Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select B218 Side Object Sensor Module then select B218R Right Side Object Sensor Module or B218L Left Side Object Detection.
4. On the SPS Select Function / Sequence screen, select Sequential Programming or Programming
5. Clear DTCs.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. DO NOT turn the ignition OFF. Ensure that all ECU, DLC and programming tool connections are secure and the TIS terminal operating software is up to date.
2. Attempt to reprogram the ECU.
3. If the ECU can still not be programmed, turn the ignition OFF for at least one minute.
4. Turn the ignition ON and attempt to reprogram the ECU. The ECU should program.
   - ⇒ If the ECU still cannot be programmed, replace the ECU.

Repair Instructions

Perform the Diagnostic Repair Verification 3-259 after completing the repair.

Control Module References 3-4 for Control Module replacement, programming and setup

B233B Forward Range Radar Sensor - Long Range: Programming and Setup

Note:

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the Long Range Radar Sensor Module is not properly configured with the correct calibration software, the Long Range Radar Sensor Module will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming or programming failure, Long Range Radar Sensor Module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.

- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Reprogram Radar Sensor Module - Long Range

To reprogram an existing Long Range Radar Sensor Module, perform the following procedure:

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select B233B Radar Sensor Module - Long Range – Programming and follow the on-screen instructions.
4. Ignition OFF and all vehicle systems OFF. It may take up to 2 minutes for all vehicle systems to power down.

Replace and Program Radar Sensor Module - Long Range

To program a replacement Long Range Radar Sensor Module, perform the following procedure:

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select B233B Radar Sensor Module - Long Range – Programming and follow the on-screen instructions.
4. Ignition OFF and all vehicle systems OFF. It may take up to 2 minutes for all vehicle systems to power down.
5. Following programming, the module alignment must be calibrated.

   Refer to [Link target (target-id 283687-) not found] .

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

   2.1. Ignition OFF for one minute, ignition ON.

   2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

   2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for control module replacement, programming and setup.

B233LF Short Range Radar Sensor - Left Front: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Diagnostic Aids

Note: This programming document applies to the B233 Radar Sensor Module – Short Range. For B218 Side Object Sensor Module (if equipped) refer to Side Object Sensor Programming and Setup.

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Ignition/Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.

3. On the SPS Supported Controllers screen, select B233 Radar Sensor Module – Short Range - Programming and follow the on-screen instructions.
4. Ignition/vehicle ON. Run Clear Short Range Radar Sensor Vehicle Position located in the scan tool (GDS2) under Configuration/Reset Functions in the B233 Short Range Radar Sensor.
5. Ignition/Vehicle OFF
6. Ignition/Vehicle ON
7. Clear DTCs.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

   2.1. Ignition OFF for one minute, ignition ON.

   2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

   2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for Control Module replacement, programming and setup

B233LR Short Range Radar Sensor - Left Rear: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

Diagnostic Aids

Note: This programming document applies to the B233 Radar Sensor Module – Short Range. For B218 Side Object Sensor Module (if equipped) refer to Side Object Sensor Programming and Setup.

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select B233 Radar Sensor Module – Short Range - Programming and follow the on-screen instructions.
4. Ignition/vehicle ON. Run Clear Short Range Radar Sensor Vehicle Position located in the scan tool (GDS2) under Configuration/Reset Functions in the B233 Short Range Radar Sensor.
5. Ignition/Vehicle OFF.
6. Ignition/Vehicle ON.
7. Clear DTCs.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition/Vehicle ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

   2.1. Ignition OFF for one minute, ignition ON.

   2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for Control Module replacement, programming and setup

B233RF Short Range Radar Sensor - Right Front: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

Diagnostic Aids

Note: This programming document applies to the B233 Radar Sensor Module – Short Range. For B218 Side Object Sensor Module (if equipped) refer to Side Object Sensor Programming and Setup.

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Ignition/Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select B233 Radar Sensor Module – Short Range - Programming and follow the on-screen instructions.
4. Ignition/vehicle ON. Run Clear Short Range Radar Sensor Vehicle Position located in the scan tool (GDS2) under Configuration/Reset Functions in the B233 Short Range Radar Sensor.
5. Ignition/Vehicle OFF
6. Ignition/Vehicle ON
7. Clear DTCs.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

2.1. Ignition OFF for one minute, ignition ON.

2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for Control Module replacement, programming and setup

B233RR Short Range Radar Sensor - Right Rear: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain

system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.

- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Diagnostic Aids

Note: This programming document applies to the B233 Radar Sensor Module – Short Range. For B218 Side Object Sensor Module (if equipped) refer to Side Object Sensor Programming and Setup.

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select B233 Radar Sensor Module – Short Range - Programming and follow the on-screen instructions.
4. Ignition/vehicle ON. Run Clear Short Range Radar Sensor Vehicle Position located in the scan tool (GDS2) under Configuration/Reset Functions in the B233 Short Range Radar Sensor.
5. Ignition/Vehicle OFF.
6. Ignition/Vehicle ON.
7. Clear DTCs.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition/Vehicle ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

    2.1. Ignition OFF for one minute, ignition ON.

    2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

    2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for Control Module replacement, programming and setup

B233SL Short Range Radar Rear Side Sensor - Left: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Diagnostic Aids

Note: This programming document applies to the B233 Radar Sensor Module – Short Range. For B218 Side Object Sensor Module (if equipped) refer to Side Object Sensor Programming and Setup.

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.

3. On the SPS Supported Controllers screen, select B233 Radar Sensor Module – Short Range - Programming and follow the on-screen instructions.
4. Ignition/vehicle ON. Run Clear Short Range Radar Sensor Vehicle Position located in the scan tool (GDS2) under Configuration/Reset Functions in the B233 Short Range Radar Sensor.
5. Ignition/Vehicle OFF.
6. Ignition/Vehicle ON.
7. Clear DTCs.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition/Vehicle ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

   2.1. Ignition OFF for one minute, ignition ON.

   2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

   2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for Control Module replacement, programming and setup

B233SR Short Range Radar Rear Side Sensor - Right: Programming and Setup

Note:
- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

Diagnostic Aids

Note: This programming document applies to the B233 Radar Sensor Module – Short Range. For B218 Side Object Sensor Module (if equipped) refer to Side Object Sensor Programming and Setup.

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select B233 Radar Sensor Module – Short Range - Programming and follow the on-screen instructions.
4. Ignition/vehicle ON. Run Clear Short Range Radar Sensor Vehicle Position located in the scan tool (GDS2) under Configuration/Reset Functions in the B233 Short Range Radar Sensor.
5. Ignition/Vehicle OFF.
6. Ignition/Vehicle ON.
7. Clear DTCs.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition/Vehicle ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

   2.1. Ignition OFF for one minute, ignition ON.

   2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for Control Module replacement, programming and setup

K4 Assist Step Control Module: Programming and Setup

Note:

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the ECU is not properly configured with the correct calibration software, the ECU will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or ECU damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, , etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Assist Step Learn

If service was performed in which the assist steps were put into the service position, it is necessary to perform the Self Test learn. Refer to: [Link target (target-id 328895-) not found]

Programming a New Control Module

1. Ignition/Vehicle OFF. Ensure that the key fob is inside the vehicle an not moved for the duration of the programming to prevent an inadvertent power mode change during programming. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and / or the setup step will fail or be incomplete.
    1.1. Disconnect Wi-Fi dongle from MDI 2. Install EL-52100 (MDI 2) using wired USB Connection from MDI 2 to computer / laptop. Using the EL-49755 (MDI) will result in a programming failure.
    1.2. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12V system during SPS programming events.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, under Select Controller, select K4 Assist Step Control Module.
4. On the SPS Supported Controllers screen, under Select Function / Sequence, select Programming and follow the on-screen instructions.

Note: If the Setup step fails and DTC U1962 sets in the K4 Assist Step Control Module, perform the Serial Data Authentication Configuration procedure and then repeat the Setup step again. Refer to: *Serial Data Authentication Configuration 3-59*

5. On the SPS Supported Controllers screen, under Select Function / Sequence, select Setup and follow the on-screen instructions.
6. At the end of programming, choose the “Clear DTCs” function on the SPS screen.

Programming an Existing Control Module

To program an existing K4 Assist Step Control Module, perform the following procedure.

1. Ignition/Vehicle OFF. Ensure that the key fob is inside the vehicle an not moved for the duration of the programming to prevent an inadvertent power mode change during programming. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and / or the setup step will fail or be incomplete.

   1.1. Disconnect Wi-Fi dongle from MDI 2. Install EL-52100 (MDI 2) using wired USB Connection from MDI 2 to computer / laptop. Using the EL-49755 (MDI) will result in a programming failure.
   1.2. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12V system during SPS programming events.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, under Select Controller, select K4 Assist Step Control Module.
4. On the SPS Supported Controllers screen, under Select Function / Sequence, select Programming and follow the on-screen instructions.
5. At the end of programming, choose the “Clear DTCs” function on the SPS screen.

Unsuccessful Programming Recovery

Note:
- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the K4 Assist Step Control Module. All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:
   - Removing all fuses supplying battery voltage and ignition voltage to the control module.
   - Disconnecting all harness connectors from the control module.
   - Performing a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .
3. Reconnect all battery voltage and ignition voltage sources to the K4 Assist Step Control Module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the K4 Assist Step Control Module, X84 Data Link Connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the K4 Assist Step Control Module.
8. Verify the K4 Assist Step Control Module can be programmed.

⇒ **If the control module cannot be reprogrammed**

   8.1. Ignition OFF for one minute, ignition ON.
   8.2. Ignition ON/Vehicle OFF.
   8.3. Access SPS and follow the on-screen instructions for the K4 Assist Step Control Module.

Note: If programming is still not successful after the second programming attempt, check the following:
- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.
- For optimal consistency during the reprogramming session, we recommend connecting the computer/ laptop to a hardwired Ethernet cable, as the large software file size may affect stability.

   8.5. Verify the K4 Assist Step Control Module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the K4 Assist Step Control Module.

⇓ If the K4 Assist Step Control Module can be reprogrammed

   8.6. At the end of programming, choose the “Clear DTCs” function on the SPS screen.

⇓ **If the control module can be reprogrammed**

9. At the end of programming, choose the “Clear DTCs” function on the SPS screen.

K9 Body Control Module: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicle's battery such as interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle’s power mode.
- To prevent programming failure due to unintended wireless drops, it is recommended that a wired MDI 2 connection be used when programming the control module.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

Reference Information

Special Tools

- *EL-52545*
  Tire Pressure Monitor Sensor and RF Diagnostic Tool or *EL-50448*
  Tire Pressure Monitor Sensor Activation Tool
- *EL-52100* Multiple Diagnostic Interface 2 (MDI 2)

For equivalent regional tools, refer to *Special Tools 3-75*.

Programming a New Control Module

To program a replacement K9 Body Control Module (BCM), perform the following procedure:

Note:

- Verify all control modules are connected and communicating before attempting to program the control module.
- Begin with the vehicle in vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and/or the setup step will fail or be incomplete.
2. Disconnect Wi-Fi dongle if it is currently connected to *EL-52100* Multiple Diagnostic Interface 2 (MDI 2). Install EL-52100 (MDI 2) using wired USB Connection from MDI 2 to computer and verify it is working properly. Using the EL-47955 (MDI) will result in a programming failure.
3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.

Note: If unable to power mode vehicle for Brake Pedal Position Learn procedure during programming process, the driver door must be opened/closed continuously until the vehicle enters power mode.

5. On the SPS Supported Controllers screen, select K9 Body Control Module - Programming and follow the on-screen instructions.
6. Place the keyless entry transmitter in the programming pocket prior to proceeding with the next step. All additional transmitters must be at least 3 m (9.8 ft) away from the vehicle. Refer to the Remote Keyless Entry (RKE) System Operation document in the owner manual for the exact pocket location. This document is located in the Keys, Doors, and Windows > Keys and Locks category.

Note:

- To prevent errors or immobilizer learn failure, the vehicle must be in Park (for automatic transmission) or Neutral with park brake applied (for manual transmission).
- If DTC B1987 set immediately after programming a replacement K9 Body Control Module, the Immobilizer Learn procedure was not properly completed. The Immobilizer Learn procedure needs to be performed again.

- The Immobilizer Learn process may take between 10-12 min and progress will appear to have stopped during this process. This is a normal security timer response and a restart should not be performed.

7. On the SPS Supported Controllers screen, select Z1 Immobilizer Learn. On the next screen, select Body Control Module IMMO Learn with Existing Transponder or Remote Key and follow the on-screen instructions. When Immobilizer Learn is complete, press the Unlock button on the keyless entry transmitter to allow the keyless entry transmitter to exit the Immobilizer Learn mode.

Note:

- When performing the Tire Pressure Monitor Sensor Learn during K9 Body Control Module setup, the *EL-52545*
  Tire Pressure Monitor Sensor and RF Diagnostic Tool must be used to activate each tire pressure sensor.
- If the Setup step fails and DTC U1962 is set in the K9 Body Control Module, perform the Serial Data Authentication Configuration procedure and then repeat the Setup step again. Refer to: *Serial Data Authentication Configuration 3-59*.

8. On the SPS Supported Controllers screen, select K9 Body Control Module - Setup and follow the on-screen instructions.
9. Check the driver information center display for additional messages regarding further calibration instructions. If there are no additional driver information center instructions present, programming is complete.
10. Clear DTCs.

Programming an Existing Control Module

To program an existing K9 Body Control Module, perform the following procedure:

Note:

- Verify all control modules are connected and communicating before attempting to program the control module.
- Begin with the vehicle in vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
2. Disconnect Wi-Fi dongle if it is currently connected to *EL-52100* Multiple Diagnostic Interface 2 (MDI 2). Install EL-52100 (MDI 2) using wired USB Connection from MDI 2 to computer and verify it is working properly. Using the EL-47955 (MDI) will result in a programming failure.
3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select K9 Body Control Module - Programming and follow the on-screen instructions.
6. Check the driver information center display for additional messages regarding further calibration instructions. If there are no additional driver information center instructions present, programming is complete.
7. Clear DTCs.

Unsuccessful Programming Recovery

Note:

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the K9 Body Control Module.
   All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:
   - Removing all fuses supplying battery voltage and ignition voltage to the control module.
   - Disconnecting all harness connectors from the control module.
   - Performing a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .
3. Reconnect all battery voltage and ignition voltage sources to the K9 Body Control Module.
4. Close down the current session of Techline Connect and reopen a new session.

5. Verify the K9 Body Control Module, X84 Data Link Connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the K9 Body Control Module.
8. Verify the K9 Body Control Module can be programmed.

⇒ **If the K9 Body Control Module can not be programmed**

8.1. Ignition ON/Vehicle in Service Mode for 1 min.

8.2. Ignition/Vehicle OFF.

8.3. Access SPS and follow the on-screen instructions for the K9 Body Control Module.

Note: If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.
- For optimal consistency during the reprogramming session, we recommend connecting the computer/ laptop to a hardwired Ethernet cable, as the large software file size may affect stability.

8.4. Verify the K9 Body Control Module can be programmed.

⇒ If the K9 Body Control Module can not be programmed, replace the K9 Body Control Module.

⇓ If the K9 Body Control Module can be programmed

8.5. Clear DTCs.

⇓ **If the K9 Body Control Module can be programmed**

9. Clear DTCs.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: *Diagnostic Repair Verification 3-259*.

For control module replacement, programming, and setup, refer to: *Control Module References 3-4*.

K19 Suspension Control Module: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Replace and Program Control Module

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K19 Suspension Control Module - Programming and follow the on-screen instructions.
3. Clear DTCs.
4. With a scan tool, perform the suspension system calibration procedure, if applicable.

Reprogram Control Module

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K19 Suspension Control Module - Programming and follow the on-screen instructions.
3. Clear DTCs.
4. With a scan tool, perform the suspension system calibration procedure, if applicable.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

    2.1. Ignition OFF for one minute, ignition ON.

    2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

    2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for Control Module replacement, programming and setup

K20 Engine Control Module: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector (DLC). If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to Incomplete.
- Note the engine oil life remaining percentage.
- If over 14k GVW, program the engine serial number with the scan tool.
- If unable to complete programming or have questions contact Techlline 1–800–828–6860

Replace and Program Control Module

Note:

- The Prepare Control Module for Removal function can only be performed when communication with the old control module is still possible.
- Instances may occur where data is not transferred during the Prepare Control Module for Removal Function

1. Ignition » On / Vehicle » In Service Mode
2. Perform the scan tool function: Create Report
    - Air Cleaner Life Remaining— If equipped
    - Engine Oil Life Remaining
    - Fuel Filter Life Remaining— If applicable
    - Fuel Injector Flow Characteristic Identification — If applicable
3. Access the Service Programming System and follow the on-screen instructions for the control module: K20 Engine Control Module
4. Select— Prepare Control Module for Removal— If applicable
5. Ignition/Vehicle & All vehicle systems » Off
6. Replace the component: K20 Engine Control Module
7. Ignition » On / Vehicle » In Service Mode

Note:

- If both controller options below are listed, select K20 Engine and K71 Transmission Control Modules.
- Refer to: *Control Module References 3-4*— K71 Control Module Programing
- If the programming is not successful Refer to: *Control Module References 3-4*— K56 Control Module Programing

8. Perform the SPS function:
    - K20 Engine and K71 Transmission Control Modules — Follow the on-screen instructions.
    - K20 Engine Control Module— Follow the on-screen instructions.

9. Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.
10. Perform the SPS function: Immobilizer Learn— If equipped .

    Refer to: [Link target (target-id 158692-) not found]

Note: If both controller options below are listed, select K20 Engine Control Module.

11. Perform the SPS function: K20 Engine Control ModuleSetup— Configuration

    Perform any adjustment, programming or setup procedures that are required when a component or module is removed or replaced. Follow the on-screen instructions.
12. Perform the scan tool learn/reset function:
    - Air Cleaner Monitor Setup— If equipped
    - Barometric Pressure Sensor Reset— If equipped
    - Engine Oil Life Remaining
    - Fuel Filter Life Remaining— If applicable
    - Fuel Pressure Regulator Learn— If applicable
    - Fuel Rail Pressure Relief Valve Learned Values Reset— If applicable
    - Fuel Injector Flow Characteristic Identification — If equipped
    - Intake System Learned Values Reset— If equipped
    - Throttle Body Idle Air Flow Compensation Reset
    - Turbocharger Wastegate Learn— If equipped
    - Turbocharger/Supercharger Boost Control Initial Position Learn— If applicable
13. Perform the scan tool function: Clear DTCs
14. Ignition/Vehicle & All vehicle systems » Off
15. Ignition » On / Vehicle » In Service Mode
16. Select: K71 Transmission Control Module
17. Perform the scan tool configuration/reset function: Transmission Service Fast Learn— If available
18. Perform the scan tool function: Clear DTCs
19. Ignition/Vehicle & All vehicle systems » Off
20. Operate the vehicle within the conditions of the customer's concern.

Reprogram Control Module

1. Access the Service Programming System and follow the on-screen instructions for the control module: K20 Engine Control Module
2. Ignition » On / Vehicle » In Service Mode

Note:

- If both controller options below are listed, select K20 Engine and K71 Transmission Control Modules.
- Refer to: *Control Module References 3-4*— K71 Control Module Programing

3. Perform the SPS function:
    - K20 Engine and K71 Transmission Control Modules — Follow the on-screen instructions.
    - K20 Engine Control Module— Follow the on-screen instructions.
4. Perform the scan tool function: Clear DTCs
5. Perform the scan tool learn/reset function:
    - Barometric Pressure Sensor Reset— If equipped
    - Fuel Pressure Regulator Learn— If equipped
    - Fuel Rail Pressure Relief Valve Learned Values Reset— If equipped
    - Intake System Learned Values Reset— If equipped
    - Throttle Body Idle Air Flow Compensation Reset
    - Turbocharger Wastegate Learn— If equipped
    - Turbocharger/Supercharger Boost Control Initial Position Learn— If equipped
6. Perform the scan tool function: Clear DTCs
7. Ignition/Vehicle & All vehicle systems » Off
8. Ignition » On / Vehicle » In Service Mode
9. Select: K71 Transmission Control Module
10. Perform the scan tool configuration/reset function: Transmission Service Fast Learn— If available
11. Perform the scan tool function: Clear DTCs
12. Ignition/Vehicle & All vehicle systems » Off
13. Operate the vehicle within the conditions of the customer's concern.

Unsuccessful Programming Recovery

If programming a control module is not successful, perform the following procedure:

1. Verify the control module, data link connector and programming tool connections are secure and the tool software is up to date.
2. Ignition » On / Vehicle » In Service Mode
3. Access the Service Programming System and follow the on-screen instructions for the control module: K20 Engine Control Module

Note: If both controller options below are listed, select K20 Engine and K71 Transmission Control Modules.

4. Perform the SPS function:
    - K20 Engine and K71 Transmission Control Modules — Follow the on-screen instructions.

- K20 Engine Control Module— Follow the on-screen instructions.

5. Perform the scan tool function: Clear DTCs
6. Ignition/Vehicle » Off — For greater than 1 min
7. Ignition » On / Vehicle » In Service Mode
8. Verify the control module programming is successful.

⇒ **If the programming is not successful**

8.1. Ignition/Vehicle » Off — For greater than 1 min

8.2. Ignition » On / Vehicle » In Service Mode

Note: If both controller options below are listed, select K20 Engine and K71 Transmission Control Modules.

8.3. Perform the SPS function:

- K20 Engine and K71 Transmission Control Modules — Follow the on-screen instructions.
- K20 Engine Control Module— Follow the on-screen instructions.

⇒ If the programming is not successful Replace the appropriate component: K20 Engine Control Module orK71 Transmission Control Module

⇓ If the programming is successful

8.4. All OK.

⇓ **If the programming is successful**

9. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for control module replacement, programming and setup.

K29FV Front Seat Heater Vent Control Module: Programming and Setup

This device does not require programming or setup.

K36 Restraints Control Module: Programming and Setup

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle 3-167* prior to using this diagnostic procedure.
- Review the description of *Strategy Based Diagnosis 3-158*

Note:

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicle's battery such as interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle’s power mode.
- To prevent programming failure due to unintended wireless drops, it is recommended that a wired MDI 2 connection be used when programming the control module.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

Reference Information

Special Tools

EL-52100 Multiple Diagnostic Interface 2 (MDI 2)

Programming an Existing or New Control Module

To program an existing or new control module, perform the following procedure:

Note:

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle and verify it is working properly. Using the EL-47955 (MDI) will result in a programming failure.
- Verify all control modules are connected and communicating before attempting to program the K36 Restraints Control Module.
- Verify the key fob is inside the vehicle. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step

will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and/or the setup step will fail or be incomplete.

1. Place the vehicle on level ground (the vehicle must be level or the IMU setup may fail)
2. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
3. Access the Service Programming System (SPS) and follow the on-screen instructions for the K36 Restraints Control Module.
4. Perform the SPS function: **Programming** and follow the on-screen instructions.
5. Perform the SPS function: **Setup** and follow the on-screen instructions.
6. Clear DTCs.

Unsuccessful Programming Recovery

Note:

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the control module.

Note: All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:

- Removing all fuses supplying battery voltage and ignition voltage to the control module.
- Disconnecting all harness connectors from the control module.
- Performing a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .

3. Reconnect all battery voltage and ignition voltage sources to the control module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the control module, data link connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the control module.
8. Verify the control module can be programmed.

⇒ **If the control module can not be programmed**

   8.1. Ignition ON/Vehicle in Service Mode for 1 min.

   8.2. Ignition/Vehicle OFF.

   8.3. Access SPS and follow the on-screen instructions for the control module.

Note: If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

   8.4. Verify the control module can be programmed.

⇒ If the control module can not be programmed, replace the control module.

⇓ If the control module can be programmed

   8.5. Clear DTCs.

⇓ **If the control module can be programmed**

9. Clear DTCs.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for control module replacement, programming, and setup.

K38 Chassis Control Module: Programming and Setup

Note:

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the control module is not properly configured with the correct calibration software, the control module will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected form the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K38 Chassis Control Module - Programming and follow the on-screen instructions.
3. Clear DTCs.
4. With a scan tool, perform the Suspension Sensor Trim Height Calibration, if applicable.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

   2.1. Ignition OFF for one minute, ignition ON.

   2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

   2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for Control Module replacement, programming and setup.

K40D Driver Seat Adjuster Memory Module: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K40D Driver Seat Adjuster Memory Module - Programming and follow the on-screen instructions.
3. Clear DTCs.
4. Move the seat to a central, middle range position, then perform the memory store operation for memory “1”, “2”, and “Exit” or “3” if equipped. Refer to the Owner Manual for storing memory seat positions.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

   2.1. Disconnect the battery.

   2.2. Wait 1 minute, reconnect the battery.

   2.3. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

   2.4. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for Control Module replacement, programming and setup

K40P Passenger Seat Adjuster Memory Module: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K40P Passenger Seat Adjuster Memory Module - Programming and follow the on-screen instructions.
3. Clear DTCs.
4. Move the seat to a central, middle range position, then perform the memory store operation for memory “1”, “2”, and “Exit” or “3” if equipped. Refer to the Owner Manual for storing memory seat positions.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

   2.1. Disconnect the battery.

   2.2. Wait 1 minute, reconnect the battery.

   2.3. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

2.4. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for Control Module replacement, programming and setup

K43 Power Steering Control Module: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

Diagnostic Aids

The Electric Power Steering Control Module is part of the power steering assist motor assembly and is electronically paired with the steering gear's sensors.

Replace and Program or Reprogramming Control Module

To program a replacement control module, perform the following procedure:

1. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K43 Power Steering Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select K43 Power Steering Control Module - Setup and follow the on-screen instructions.
5. If the Setup fails, check for DTC U1962. If this DTC is set, perform the Serial Data Authentication Configuration procedure. Then repeat the Setup step.
6. Clear DTCs.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition/Vehicle ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

2.1. Ignition/Vehicle OFF for one minute, Ignition/Vehicle ON.

2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for control module replacement, programming and setup

K56 Serial Data Gateway Module: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicle's battery such as interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle’s power mode.
- To prevent programming failure due to unintended wireless drops, it is recommended that a wired MDI 2 connection be used when programming the control module.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

Reference Information

Special Tools
EL-52100 Multiple Diagnostic Interface 2 (MDI 2)

Programming a New Control Module

To program a replacement K56 Serial Data Gateway Module, perform the following procedure:

Note:

- Verify all control modules are connected and communicating before attempting to program the K56 Serial Data Gateway Module.
- Verify the key fob is inside the vehicle. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and/or the setup step will fail or be incomplete.
- Begin with the vehicle in vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
2. Disconnect Wi-Fi dongle if it is currently connected to *EL-52100* Multiple Diagnostic Interface 2 (MDI 2). Install EL-52100 (MDI 2) using wired USB Connection from MDI 2 to computer and verify it is working properly. Using the EL-47955 (MDI) will result in a programming failure.
3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select K56 Serial Data Gateway Module - Programming and follow the on-screen instructions.

Note: If the Setup step fails and DTC U1962 is set in the K56 Serial Data Gateway Module, perform the Serial Data Authentication Configuration procedure and then repeat the Setup step again. Refer to: *Serial Data Authentication Configuration 3-59*.

6. On the SPS Supported Controllers screen, select K56 Serial Data Gateway Module - Setup and follow the on-screen instructions.

Note: If an error message indicates that a module is missing after the Setup procedure is complete, diagnose that module to make sure that it’s connected and communicating and then perform the Programming and Setup procedures again.

7. Clear DTCs.

Programming an Existing Control Module

To program an existing K56 Serial Data Gateway Module, perform the following procedure:

Note:

- Verify all control modules are connected and communicating before attempting to program the K56 Serial Data Gateway Module.
- Begin with the vehicle in vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration

of the programming to prevent an inadvertent power mode change during programming.

2. Disconnect Wi-Fi dongle if it is currently connected to *EL-52100* Multiple Diagnostic Interface 2 (MDI 2). Install EL-52100 (MDI 2) using wired USB Connection from MDI 2 to computer and verify it is working properly. Using the EL-47955 (MDI) will result in a programming failure.
3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select K56 Serial Data Gateway Module - Programming and follow the on-screen instructions.
6. Clear DTCs.

Unsuccessful Programming Recovery

Note:
- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the K56 Serial Data Gateway Module. All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:
    - Removing all fuses supplying battery voltage and ignition voltage to the control module.
    - Disconnecting all harness connectors from the control module.
    - Performing a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .
3. Reconnect all battery voltage and ignition voltage sources to the K56 Serial Data Gateway Module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the K56 Serial Data Gateway Module, X84 Data Link Connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the K56 Serial Data Gateway Module.
8. Verify the K56 Serial Data Gateway Module can be programmed.

⇒ **If the K56 Serial Data Gateway Module can not be programmed**

8.1. Ignition ON/Vehicle in Service Mode for 1 min.

8.2. Ignition/Vehicle OFF.

8.3. Access SPS and follow the on-screen instructions for the K56 Serial Data Gateway Module.

Note: If programming is still not successful after the second programming attempt, check the following:
- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

8.4. Verify the K56 Serial Data Gateway Module can be programmed.

⇒ If the K56 Serial Data Gateway Module can not be programmed, replace the K56 Serial Data Gateway Module.

⇓ If the K56 Serial Data Gateway Module can be programmed

8.5. Clear DTCs.

⇓ **If the K56 Serial Data Gateway Module can be programmed**

9. Clear DTCs.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: *Diagnostic Repair Verification 3-259*.

For control module replacement, programming, and setup, refer to: *Control Module References 3-4*.

K56U Special Purpose Vehicle Module: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected form the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, Refer to*https://www.gmupfitter.com/*Then proceed to the following procedures:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K56U Special Vehicle Purpose Module - Programming and follow the on-screen instructions.
3. Clear DTCs.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

   2.1. Ignition OFF for one minute, ignition ON.

   2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

   2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for control module replacement, programming and setup.

K60 Column Lock Module: Programming and Setup

Note:

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the control module is not properly configured with the correct calibration software, the control module will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Replace and Program Column Lock Control Module

To program a replacement column lock control module, perform the following procedure:

Note: Before reprogramming, to ensure that the column lock password from the BCM is learned: turn ignition ON and then OFF, close all doors, and wait 5 minutes.

1. Ignition ON.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. If available, on the SPS Supported Controllers screen, select K60 Column Lock Control Module – Prepare Control Module For Removal and follow the on-screen instructions.

Note: The Prepare Control Module for Removal function can only be performed when communication with the old control module is still possible

4. Replace the Column Lock Module. Refer to: *Control Module References 3-4*
5. Ignition ON for 10 seconds, ignition OFF.
6. Close all doors and wait 5 minutes.
7. Ignition ON.
8. On the SPS Supported Controllers screen, select K60 Column Lock Control Module – Programming and follow the on-screen instructions.
9. Clear DTCs.

Reprogram Column Lock Control Module

Note: Before reprogramming, to ensure that the steering column lock password from the BCM is learned: turn ignition ON and then OFF, close all doors, and wait 5 minutes.

To reprogram an existing column lock control module, perform the following procedure:

1. Ignition ON for 10 seconds, ignition OFF.
2. Close all doors and wait 5 minutes.
3. Ignition ON.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select K60 Column Lock Control Module – Programming and follow the on-screen instructions.
6. Clear DTCs.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

   2.1. Ignition OFF for one minute, ignition ON.

   2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

   2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for control module replacement, programming and setup

K61 Sunroof Control Module: Programming and Setup

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle 3-167* prior to using this diagnostic procedure.
- Review the description of *Strategy Based Diagnosis 3-158*

Note:

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.

- Turn OFF or disable systems that may put a load on the vehicle's battery such as interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle’s power mode.
- To prevent programming failure due to unintended wireless drops, it is recommended that a wired MDI 2 connection be used when programming the control module.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

Reference Information

Special Tools
EL-52100 Multiple Diagnostic Interface 2 (MDI 2)

Programming an Existing or New Control Module

This control module does not require SPS programming or any setup procedures.

Please refer to: [Link target (target-id 130156-) not found] for programming and setup.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for control module replacement, programming, and setup.

K67 Trailer Brake Control Module: Programming and Setup

Replace and Program ECU or Reprogram ECU

This ECU does not require SPS programming or any setup procedures.

K68 Trailer Lighting Control Module: Programming and Setup

The K68 Trailer Lamp Control Module does not require programming, but does require serial data authentication. Refer to: *Serial Data Authentication Configuration 3-59*.

K69 Transfer Case Control Module: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn Off or disable systems that may put a load on the vehicle's battery. For example, interior lights, daytime running lights, HVAC, and radio.
- During the programming procedure, follow the Service Programming System (SPS) prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

Programming an Existing or New Control Module

To program an existing or new control module, perform the following procedure:

1. Access SPS and follow the on-screen instructions for the control module: K69 Transfer Case Control Module
2. Perform the SPS function: K69 Transfer Case Control Module — Prepare Control Module for Removal
3. Perform the SPS function: K69 Transfer Case Control Module — Programming
4. Select Serial Data Authentication Configuration button (located to the left of the SPS supported controllers list or to the bottom right of the Techline Connect) and follow the on-screen instructions.
5. Perform the SPS function: K69 Transfer Case Control Module — Setup
6. Clear DTCs.
7. Perform the scan tool function: Range Actuator Learn

   Refer to: [Link target (target-id 304015-) not found]

Unsuccessful Programming Recovery

If programming a control module is not successful, perform the following procedure:

1. Verify the control module, data link connector and programming tool connections are secure and the tool software is up to date.
2. Perform the SPS function: K69 Transfer Case Control Module — Programming

   Verify the control module programming is successful.

⇒ **If the programming is not successful**

   2.1. Disconnect the battery.

   2.2. Wait 60 s before proceeding to the next step.

   2.3. Connect the battery.

   2.4. Perform the SPS function: K69 Transfer Case Control Module — Programming

⇒ If the programming is not successful » Replace the component: K69 Transfer Case Control Module

⇓ If the programming is successful

   2.5. Select Serial Data Authentication Configuration button (located to the left of the SPS supported controllers list or to the bottom right of the Techline Connect) and follow the on-screen instructions.

   2.6. Perform the SPS function: K69 Transfer Case Control Module — Setup

⇒ If the programming is not successful » Replace the component: A16 Transfer Case Four Wheel Drive Actuator

   Perform the SPS function: K69 Transfer Case Control Module — Setup

⇓ If the procedure was successful

   2.7. Perform the scan tool function: Range Actuator Learn

   Refer to: [Link target (target-id 304015-) not found]

   2.8. All OK.

⇓ **If the programming is successful**

3. Select Serial Data Authentication Configuration button (located to the left of the SPS supported controllers list or to the bottom right of the Techline Connect) and follow the on-screen instructions.
4. Perform the SPS function: K69 Transfer Case Control Module — Setup
5. Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.
6. Perform the scan tool function: Range Actuator Learn

   Refer to: [Link target (target-id 304015-) not found]

7. All OK.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: *Diagnostic Repair Verification 3-259*

For control module replacement, programming, and setup refer to: *Control Module References 3-4*

K71 Transmission Control Module: Programming and Setup

Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: *Diagnostic System Check - Vehicle 3-167*
- Review the description of Strategy Based Diagnosis: *Strategy Based Diagnosis 3-158*

Note:

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn Off or disable systems that may put a load on the vehicle's battery. For example, interior lights, daytime running lights, HVAC, and radio.
- During the programming procedure, follow the Service Programming System (SPS) prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

Programming an Existing or New Control Module

1. Ignition » On / Vehicle » In Service Mode

Note:

- If both controller options below are listed, select K20/K71 Engine and Transmission Control Modules.
- If the programming is not successful Refer to: *Control Module References 3-4*— K56 Control Module Programing

2. Perform the SPS function:
    - K20/K71 Engine and Transmission Control Modules and follow the on-screen instructions.
    - K71 Transmission Control Module and follow on-screen instructions.
    - 2.1. Select» Programming
    - 2.2. Select» MCVM Operations— If applicable
    - 2.3. Ignition/Vehicle » Off — For greater than 2 min
    - 2.4. Select» Setup— Follow the on-screen instructions.
3. Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.
4. Perform the scan tool configuration/reset function: Transmission Service Fast Learn— If available
5. All OK.

Unsuccessful Programming Recovery

Note:

- If programming is still not successful after the second programming attempt, check the following:
- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

1. Verify the control module, data link connector and programming tool connections are secure and the tool software is up to date.
2. Ignition » On / Vehicle » In Service Mode
3. Perform one of the following SPS Programming functions:

Note: If both controller options below are listed, select K20/K71 Engine and Transmission Control Modules.

- K20/K71 Engine and Transmission Control Modules and follow the on-screen instructions.
- K71 Transmission Control Module and follow on-screen instructions.

4. Verify the control module programming is successful.

⇒ If the programming is not successful » Replace the component: K71 Transmission Control Module

⇓ If the programming is successful

- 4.1. Select» MCVM Operations— If applicable
- 4.2. Ignition/Vehicle » Off — For greater than 2 min
- 4.3. Select» Setup— Follow the on-screen instructions.

  If setup is not an available option — Perform the appropriate learn/reset procedure with the scan tool

⇓ **If the programming is successful**

5. Select» MCVM Operations— If applicable
6. Ignition/Vehicle » Off — For greater than 2 min
7. Select» Setup— Follow the on-screen instructions.

   If setup is not an available option — Perform the appropriate learn/reset procedure with the scan tool
8. Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.
9. Perform the scan tool configuration/reset function: Transmission Service Fast Learn— If available
10. All OK.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: *Diagnostic Repair Verification 3-259*

For control module replacement, programming, and setup refer to: *Control Module References 3-4*

K73 Telematic Control Module: Programming and Setup

Note:

- DO NOT reprogram a control module due to “UNKNOWN” displayed in “Current # “ on the programming screen. “UNKNOWN” will be displayed due to only a utility file being programmed and will not display a current part number.
- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt

programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.

- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle’s power mode.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Diagnostic Aids

- It is critical to use the service replacement K73 Telematic Control Module only in the vehicle for which it was ordered.
- Failure to perform the following procedures will result in a red LED, DTC(s) being set, and limited or incomplete OnStar® services.
- An OnStar® button press to the OnStar® call center is required to complete the module replacement procedure.
- To fully activate an OnStar® module, both the setup and activation request procedures must be completed on all vehicles with and without an active OnStar® subscription to insure the unit has been setup properly for the vehicle it has been installed into and also to update the OnStar® with the correct unit information.
- To initialize the Turn-by-Turn feature (if equipped), the vehicle must first be driven In open sky condition at speeds greater than 10 mph (16 kph) or more for a minimum of 5 miles (8 km), and perform at least 2 left and 2 right 90 degree turns coming to complete stops prior to each turn.
- On vehicles up fitted with TTY capabilities, it is necessary to perform a power cycle of the OnStar® Interface Module (OTIM) and toggle the TTY mode after completing the Communication Interface Module installation and setup procedures.

Reference Information

Special Tools

- EL-52100 Multiple Diagnostic Interface 2 (MDI 2)

For equivalent regional tools, refer to *Special Tools 3-75*.

Replace and Program Control Module

To program a replacement control module, perform the following procedure:

Note: Begin with the vehicle in the vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. In the SPS Supported Controllers screen, select K73 Telematic Control Module Programming and Service Activation and follow the on-screen instructions.
4. Clear DTCs.
5. Inform the customer to press the OnStar® Blue Button to call OnStar® and inform the advisor the module has been replaced and the system needs to be activated if subscription is active.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

Note: Begin with the vehicle in the vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF
2. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
3. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

  3.1. Ignition OFF for one minute.

  3.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

  3.3. All OK.

⇓ **If the control module can be reprogrammed**

4. All OK.

K85P Restraints Occupant Classification System Module - Passenger: Programming and Setup

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle 3-167* prior to using this diagnostic procedure.
- Review the description of *Strategy Based Diagnosis 3-158*

Note:

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicle's battery such as interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle’s power mode.
- To prevent programming failure due to unintended wireless drops, it is recommended that a wired MDI 2 connection be used when programming the control module.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

Reference Information

Special Tools

EL-52100 Multiple Diagnostic Interface 2 (MDI 2)

Programming an Existing or New Control Module

To program an existing or new control module, perform the following procedure:

Note:

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle and verify it is working properly. Using the EL-47955 (MDI) will result in a programming failure.
- Verify all control modules are connected and communicating before attempting to program the K85P Restraints Occupant Classification System Module.
- Verify the key fob is inside the vehicle. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and/or the setup step will fail or be incomplete.
- Before ROCSM Programing and Setup can be conducted, the front passenger seat must be completely empty of all items. The presence of any liquid or items on the front passenger seat will affect the calibration and operation of the ROCSM.
- DTC U3000.99 will set if the re-zero system test is performed with:
  - An aftermarket seat heater located too close to the sensor mat
  - A scan tool, laptop or other electronic device is in the seat.
  - The seat is damp or wet
  - An object or person is in the seat

1. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
2. Verify that the temperature is between 32°F (0°C) to 100°F (38 °C).
3. Verify the seat is completely dry.
4. Empty the front outboard passenger seat.
5. Verify that all SIR and ROCSM components, connectors, and connector position assurances are properly connected and mounted.
6. Access the Service Programming System (SPS) and follow the on-screen instructions for the K85P Restraints Occupant Classification System Module.
7. Perform the SPS function: **Programming** and follow the on-screen instructions.
8. Perform the SPS function: **Setup** and follow the on-screen instructions.
9. Clear DTCs.

Unsuccessful Programming Recovery

Note:

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the control module.

Note: All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:

- Removing all fuses supplying battery voltage and ignition voltage to the control module.
- Disconnecting all harness connectors from the control module.
- Performing a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .

3. Reconnect all battery voltage and ignition voltage sources to the control module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the control module, data link connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the control module.
8. Verify the control module can be programmed.

⇒ **If the control module can not be programmed**

   8.1. Ignition ON/Vehicle in Service Mode for 1 min.

   8.2. Ignition/Vehicle OFF.

   8.3. Access SPS and follow the on-screen instructions for the control module.

Note: If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

   8.4. Verify the control module can be programmed.

⇒ If the control module can not be programmed, replace the control module.

⇓ If the control module can be programmed

   8.5. Clear DTCs.

⇓ **If the control module can be programmed**

9. Clear DTCs.

Repair Instructions

For module replacement, refer to: [Link target (target-id 188211-) not found]

K99 Steering Column Control Module: Programming and Setup

When replacing the steering column tilt wheel and telescope control module, steering column tilt motor, or steering column telescope motor, the steering column tilt wheel and telescope control module learn procedure must be followed. Refer to [Link target (target-id 225575-) not found] steering column tilt wheel and telescope control module learn procedure.

K115 Reductant Control Module: Programming and Setup

Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: *Diagnostic System Check - Vehicle 3-167*
- Review the description of Strategy Based Diagnosis: *Strategy Based Diagnosis 3-158*

Note:

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking,

over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.

- Turn Off or disable systems that may put a load on the vehicle's battery. For example, interior lights, daytime running lights, HVAC, and radio.
- During the programming procedure, follow the Service Programming System (SPS) prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

Programming an Existing or New Control Module

To program an existing or new control module, perform the following procedure:

1. Ignition » On / Vehicle » In Service Mode
2. Access SPS and follow the on-screen instructions for the control module: K115 Reductant Control Module

Unsuccessful Programming Recovery

If programming a control module is not successful, perform the following procedure:

1. Verify the control module, data link connector and programming tool connections are secure and the tool software is up to date.
2. Ignition » On / Vehicle » In Service Mode
3. Access SPS and follow the on-screen instructions for the control module: K115 Reductant Control Module

   Verify the control module programming is successful.

⇒ **If the programming is not successful**

   3.1. Ignition/Vehicle » Off — For greater than 1 min

   3.2. Ignition » On / Vehicle » In Service Mode

   3.3. Access SPS and follow the on-screen instructions for the control module: K115 Reductant Control Module

⇒ If the programming is not successful » Replace the component: K115 Reductant Control Module

⇓ If the programming is successful

   3.4. All OK.

⇓ **If the programming is successful**

4. All OK.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: *Diagnostic Repair Verification 3-259*

For control module replacement, programming, and setup refer to: *Control Module References 3-4*

K124 Image Processing Module: Programming and Setup (without UKL)

Note:

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the image processing module is not properly configured with the correct calibration software, the image processing module will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming or programming failure, image processing module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Replace and Program K124 Image Processing Module or Reprogram K124 Image Processing Module

Note: Due to continuous improvements, the on screen selections may vary from instructions below.

To program a replacement or an existing K124 Image Processing Module, perform the following procedure:

1. Ignition/Vehicle OFF
2. Connect the *EL-52100 MDI 2* Multiple Diagnostic Interface 2 to the computer

using a USB cable. Wireless or Bluetooth connections may cause an interruption in the data transfer.

3. Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select K124 Image Processing Module – Programming and follow the on-screen instructions.
6. Clear DTCs.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

Note: Unsuccessful programming attempts may be caused by a weak, slow, or unstable WiFi connection. Connecting computer to facility network via wired connection may resolve module programming issues.

1. Ignition ON. Ensure the image processing module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the K124 Image Processing Module can be reprogrammed.

⇒ **If the K124 Image Processing Module cannot be reprogrammed**

  2.1. Ignition OFF for one minute, ignition ON.

  2.2. Verify the K124 Image Processing Module can be reprogrammed.

⇒ If the image processing module cannot be reprogrammed, replace the K124 Image Processing Module.

⇓ If the K124 Image Processing Module can be reprogrammed.

  2.3. All OK.

⇓ **If the K124 Image Processing Module can be reprogrammed**

3. All OK.

K124 Image Processing Module: Programming and Setup (with UKL)

Note:

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the image processing module is not properly configured with the correct calibration software, the image processing module will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming or programming failure, image processing module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Diagnostic Aids

There one K124 Image Processing Module with two internal processors with UKL. Both processors must be at the same level of software. To ensure this, programming processors individually is prohibited. For more information refer to: *Super Cruise Description and Operation 10-26*

Reprogram Image Processing Module

Note: Due to continuous improvements, the on screen selections may vary from instructions below.

To reprogram an existing K124 Image Processing Module, perform the following procedure:

1. Ignition/Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K124 Image Processing Module – Programming and follow the on-screen instructions.
4. Clear DTCs.

Replace and Program Image Processing Module

Note: Due to continuous improvements, the on screen selections may vary from instructions below.

To program a replacement K12 Image Processing Module, perform the following procedure:

1. Ignition/Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K124 Image Processing Module – Programming and follow the on-screen instructions.
4. Perform the Vehicle Dynamic Sensor Offset Calibration. Refer to: [Link target (target-id 330157-) not found]
5. Clear DTCs.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the Image Processing Module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the K124 Image Processing Module can be reprogrammed.

⇒ **If the K124 Image Processing Module cannot be reprogrammed**

   2.1. Ignition OFF for one minute, ignition ON.

   2.2. Verify the appropriate K124 Image Processing Module can be reprogrammed.

⇒ If the image processing module cannot be reprogrammed, replace the appropriate K124 Image Processing Module.

⇓ If the K124 Image Processing Module can be reprogrammed.

   2.3. All OK.

⇓ **If the K124 Image Processing Module can be reprogrammed**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for Control Module replacement, programming and setup

K157 Video Processing Module: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. DO NOT use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle's power mode.
- During programming, it may be necessary to remove specific fuse(s). To prevent programming failure, ensure SPS on-screen instructions are followed for proper fuse removal when necessary.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.
- To prevent programming failure due to unintended wireless drops, it is recommended that a wired MDI connection be used when programming the control module.

Reference Information

Special Tools
EL-52100 Multiple Diagnostic Interface 2 (MDI 2)

Replace and Program Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K157 Video Processing Control Module - Programming and follow the on-screen instructions.
4. Clear DTCs.
5. Calibrate Vehicle Processing Control Module. Refer to: [Link target (target-id 327188-) not found]

Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K157 Video Processing Control Module - Programming and follow the on-screen instructions.
4. Clear DTCs.
5. Calibrate Vehicle Processing Control Module. Refer to: [Link target (target-id 327188-) not found]

Unsuccessful Programming Recovery

Note:

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the control module. All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:
   - Removing all fuses supplying battery voltage and ignition voltage to the control module.
   - Disconnecting all harness connectors from the control module.

   Warning: Always ensure the Battery Maintenance Mode is inactive before disconnecting the low voltage 12 volt battery (or batteries). This mode can be active with the ignition off, regardless of whether the vehicle charging cord is plugged in or not. When this mode is active, the on-board high voltage battery charger(s) will energize the 12 volt battery cables and charge the 12 volt battery (or batteries). Disconnecting any battery cables while this mode is active may result in an electrical shock or a burn from hot battery cable leads.

   - Check the 12 volt battery voltage with a digital multimeter before disconnecting any battery cables leads. If the voltage is 13.5 volts or above, the Battery Maintenance Mode is active. The technician must wait for the T18 battery charger to deactivate before disconnecting the battery negative cable. For more information refer to Charging System Description and Operation 6-149 . With Battery Maintenance Mode inactive, perform a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .
3. Reconnect all battery voltage and ignition voltage sources to the control module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the control module, data link connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the control module.
8. Verify the control module can be programmed.

⇒ **If the control module can not be programmed**

   8.1. Ignition ON/Vehicle in Service Mode for 1 min.

   8.2. Ignition/Vehicle OFF.

   8.3. Access SPS and follow the on-screen instructions for the control module.

Note: If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

   8.4. Verify the control module can be programmed.

⇒ If the control module can not be programmed, replace the control module.

⇓ If the control module can be programmed

   8.5. Clear DTCs.

⇓ **If the control module can be programmed**

9. Clear DTCs.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for control module replacement, programming and setup

K160 Brake System Control Module: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Replace and Program Control Module (K160 Brake System Control Module with or without A104 Brake Master Cylinder)

To program a replacement control module with or without brake master cylinder, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. If equipped with Brake Pad Life Monitor (JBP), on the SPS Supported Controllers screen, select K160 Brake System Control Module - Prepare Module for Removal and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K160 Brake System Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select K160 Brake System Control Module - Setup and follow the on-screen instructions.
5. If setup is successful, clear DTCs and go to step 8

Note: Do not perform the Brake System Plunger Pressure Rise Starting Point learn procedure at this time.

6. If any of the Configuration/Reset procedures are unsuccessful, perform the appropriate GDS2 Configuration/Reset procedure:
   - Brake Pressure Sensor Calibration
   - Brake Pedal Travel Sensor Learn
   - Brake System Plunger Motor Position Sensor Learn
   - Park Brake Calibration Command
7. If the Setup Procedures did not complete and a Device Control Limits Exceeded message is displayed refer to [Link target (target-id 316903-) not found]
8. Perform the Hydraulic Brake System Bleeding procedure refer to [Link target (target-id 50160-) not found]
9. Clear DTCs.
10. If ABS, Traction Control and/or Stabilitrak indicators or Brake Related Messages are ON after performing programming and setup, do the following:
    - 10.1. Disconnect the scan tool from the X84 Data Link Connector.
    - 10.2. Ignition/Vehicle OFF, all access doors closed, all vehicle systems OFF, and all keys at least 3 m (9.8 ft) away from the vehicle. It may take up to 10 min to power down.
    - 10.3. Ignition ON/Vehicle In Service Mode, verify ABS, Traction Control and/or Stabilitrak indicators or Brake Messsages are Off. If not, repeat the above step to make sure the vehicle is in sleep mode.
    - 10.4. Clear DTCs.

Reprogram Control Module (K160 Brake System Control Module)

To reprogram an existing control module, perform the following procedure:

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.

3. On the SPS Supported Controllers screen, select K160 Brake System Control Module - Programming and follow the on-screen instructions.
4. If the programming procedure did not complete and a Device Control Limits Exceeded message is displayed refer to [Link target (target-id 316903-) not found]
5. Clear DTCs.
6. If ABS, Traction Control and/or Stabilitrak indicators or Brake Related Messages are ON after performing programming, do the following:
    6.1. Disconnect the scan tool from the X84 Data Link Connector.
    6.2. Ignition/Vehicle OFF, all access doors closed, all vehicle systems OFF, and all keys at least 3 m (9.8 ft) away from the vehicle. It may take up to 10 min to power down.
    6.3. Ignition ON/Vehicle In Service Mode, verify ABS, Traction Control and/or Stabilitrak indicators or Brake Messsages are Off. If not, repeat the above step to make sure the vehicle is in sleep mode.
    6.4. Clear DTCs.

Unsuccessful Programming Recovery

Note:
- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the control module. All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:
    - Removing all fuses supplying battery voltage and ignition voltage to the control module.
    - Disconnecting all harness connectors from the control module.

Warning: Always ensure the Battery Maintenance Mode is inactive before disconnecting the low voltage 12 volt battery (or batteries). This mode can be active with the ignition off, regardless of whether the vehicle charging cord is plugged in or not. When this mode is active, the on-board high voltage battery charger(s) will energize the 12 volt battery cables and charge the 12 volt battery (or batteries). Disconnecting any battery cables while this mode is active may result in an electrical shock or a burn from hot battery cable leads.

    - Check the 12 volt battery voltage with a digital multimeter before disconnecting any battery cables leads. If the voltage is 13.5V or above, the Battery Maintenance Mode is active. The technician must wait for the T18 battery charger to deactivate before disconnecting the battery negative cable. For more information refer to Charging System Description and Operation 6-149 . With Battery Maintenance Mode inactive, perform a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .

3. Reconnect all battery voltage and ignition voltage sources to the control module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the control module, data link connector, and programming tool connections are secure and the tool software is up to date.
6. Access the Service Programming System (SPS) and follow the on-screen instructions for the control module.
7. Verify the control module can be programmed.

⇒ **If the control module can not be programmed**

    7.1. Ignition ON/Vehicle in Service Mode for 1 min.
    7.2. Ignition/Vehicle OFF.
    7.3. Access SPS and follow the on-screen instructions for the control module.

Note: If programming is still not successful after the second programming attempt, check the following:
- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

    7.4. Verify the control module can be programmed.

⇒ If the control module can not be programmed, replace the control module.

⇓ If the control module can be programmed

7.5. Clear DTCs.

⇓ **If the control module can be programmed**

8. Clear DTCs.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for Control Module replacement, programming and setup

K179 Automated Driving Mapping Module: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicle's battery such as interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle’s power mode.
- To prevent programming failure due to unintended wireless drops, it is recommended that a wired MDI 2 connection be used when programming the control module.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to No.

Reference Information

Special Tools

EL-52100 Multiple Diagnostic Interface 2 (MDI 2)

An MDI2 is the only approved scan tool for this procedure

For equivalent regional tools, refer to *Special Tools 3-75*.

Programming an Existing or New Control Module

To program an existing control module, perform the following procedure:

Note:

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle and verify it is working properly. Using the EL-47955 (MDI) will result in a programming failure.
- Verify all control modules are connected and communicating before attempting to program the K179 Automated Driving Mapping Module.
- Verify the key fob is inside the vehicle. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and/or the setup step will fail or be incomplete.

1. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
2. Disconnect Wi-Fi dongle from MDI2.
   Install *EL-52100* (MDI 2) using wired USB Connection from MDI 2 to PC.
3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select K179 Automated Driving Mapping Module - Programming and follow the on-screen instructions.

Note: The Serial Data Authentication Configuration button is located in the following location:

- To the left side of the SPS Supported Controllers screen in the TIS system.
- In the lower right corner of the SPS Supported Controllers screen in the Techline Connect system.

6. On the SPS Supported Controllers screen, select Serial Data Authentication Configuration button and follow the on-screen instructions.
7. Ignition/Vehicle OFF, all access doors closed, all vehicle systems OFF, and all keys at least 3 m (9.8 ft) away from vehicle. Disconnect the scan tool from the vehicle. It may take up to 10 min for all vehicle systems to power down.
8. Ignition ON/Vehicle In Service Mode.
9. Using a scan tool, clear DTCs.

Unsuccessful Programming Recovery

Note:

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the control module. All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:
   - Removing all fuses supplying battery voltage and ignition voltage to the control module.
   - Disconnecting all harness connectors from the control module.
   - Performing a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .
3. Reconnect all battery voltage and ignition voltage sources to the control module.
4. Close down the current session of Techline Connect and reopen a new session.

Note: Verify there are no aftermarket devices tied into the DLC Harness Inspect for T-Harness in the DLC harness.

5. Verify the control module, data link connector, and programming tool connections are secure and the tool software is up to date.
6. Verify there are no concerns with the Ethernet enable circuit (DLC terminal 8), Terminal pin tension or wiring
7. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
8. Ensure the Automated Driving Mapping Module is communicating over Ethernet properly. Refer to Scan Tool Does Not Communicate with Vehicle.
9. Access the Service Programming System (SPS) and follow the on-screen instructions for the control module.
10. Verify the control module can be programmed.

⇒ **If the control module can not be programmed**

10.1. Ignition ON/Vehicle in Service Mode for 1 min.

10.2. Ignition/Vehicle OFF.

10.3. Access SPS and follow the on-screen instructions for the control module.

Note: If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

10.4. Verify the control module can be programmed.

⇒ If the control module can not be programmed, replace the control module.

⇓ If the control module can be programmed

10.5. Clear DTCs.

⇓ **If the control module can be programmed**

11. Clear DTCs.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for Control Module replacement, programming and setup

K180 Driver Monitoring System Control Module: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Reference Information

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to Special Tools 3-75.

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Ignition/Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K180 Driver Monitoring System Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select K180 Driver Monitoring System Control Module - Setup (If Applicable) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select K180 Driver Monitoring System Control Module - Configuration (If Applicable) and follow the on-screen instructions.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

  2.1. Ignition OFF for one minute, ignition ON.

  2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

  2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for Control Module replacement, programming and setup

K182 Parking Assist Control Module: Programming and Setup (UD5 without 00Z or UD7 without 00Y)

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Replace and Program Control Module

To program a replacement control module, perform the following procedure:

1. Ignition/Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, under Select Controller, select K182 Parking Assist Control Module.
4. On the SPS Supported Controllers screen, under Select Function / Sequence, select Programming and follow on screen instructions.
5. Clear DTCs.

Reprogram Control Module

Do not reprogram the parking assist control module, unless directed by a service procedure, or a service bulletin.

To reprogram an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, under Select Controller, select K182 Parking Assist Control Module.
3. On the SPS Supported Controllers screen, under Select Function / Sequence, select Programming and follow on screen instructions.
4. Clear DTCs.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the K182 Parking Assist Control Module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the parking assist control module can be reprogrammed.

⇒ **If the K182 Parking Assist Control Module cannot be reprogrammed**

   2.1. Ignition OFF for one minute, ignition ON.

   2.2. Verify the parking assist control module can be reprogrammed.

⇒ If the K182 Parking Assist Control Module cannot be reprogrammed, replace the parking assist control module.

⇓ If the K182 Parking Assist Control Module can be reprogrammed.

   2.3. All OK.

⇓ **If the K182 Parking Assist Control Module can be reprogrammed**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for control module replacement, programming and setup

K182 Parking Assist Control Module: Programming and Setup (UD5 with 00Z or UD7 with 00Y)

Note: When performing #N222375790-09: Customer Satisfaction Program - Park Assist Retrofit - (Nov 1, 2023) refer to K182 Parking Assist Control Module: Programming and Setup (UD7 without 00Y) in SI.

This device does not require programming or setup.

K194 Rear Gate Module: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Replace and Program Control Module

Note: The endgate must be completely closed and latched, if the endgate is open or ajar during programming, the power endgate system may become inoperative without any DTCs indicated

To program a replacement control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K194 Rear Gate Module - Programming and follow the on-screen instructions.
3. At the end of programming, choose the “Clear All DTCs” function on the SPS screen.

Reprogram Control Module

Note: The endgate must be completely closed and latched, if the endgate is open or ajar during programming, the power endgate system may become inoperative without any DTCs indicated

To reprogram an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K194 Rear Gate Module - Programming and follow the on-screen instructions.
3. At the end of programming, choose the “Clear All DTCs” function on the SPS screen.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for rear gate module replacement, programming and setup

K212 Gear Shift Control Module: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

Replace and Program Control Module or Reprogram Control Module

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K212 Gear Shift Control Module - Programming and follow the on-screen instructions.
3. Clear DTCs.
4. If DTCs U1962 and U1972 set, perform Serial Data Authentication Configuration procedure: *Serial Data Authentication Configuration 3-59*.
5. All OK.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

   2.1. Ignition OFF for one minute, ignition ON.

   2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

   2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for Control Module replacement, programming and setup

K219 Lighting Control Module: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Replace and Program Control Module

To program a replacement control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, under Select Controller, select K219 Lighting Control Module.
3. On the SPS Supported Controllers screen, under Select Function / Sequence, select Programming and follow on screen instructions.
4. On the SPS Supported Controllers screen, under Select Function / Sequence, select Setup and follow the on-screen instructions.
5. Clear All DTCs.

Reprogram Control Module

Do not reprogram the lighting control module, unless directed by a service procedure, or a service bulletin.

To reprogram an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, under Select Controller, select K219 Lighting Control Module.
3. On the SPS Supported Controllers screen, under Select Function / Sequence, select Programming and follow on screen instructions.
4. Clear All DTCs.

Unsuccessful Programming Recovery

Note:

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming Systems and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the control module. All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:
    - Removing all fuses supplying battery voltage and ignition voltage to the control module.
    - Disconnecting all harness connectors from the control module.

Warning: Always ensure the Battery Maintenance Mode is inactive before disconnecting the low voltage 12 volt battery (or batteries). This mode can be active with the ignition off, regardless of whether the vehicle charging cord is plugged in or not. When this mode is active, the on-board high voltage battery charger(s) will energize the 12 volt

battery cables and charge the 12 volt battery (or batteries). Disconnecting any battery cables while this mode is active may result in an electrical shock or a burn from hot battery cable leads.

- Check the 12 V battery voltage with a digital multimeter before disconnecting any battery cables leads. If the voltage is 13.5 V or above, the Battery Maintenance Mode is active. The technician must wait for the T18 Battery Charger to deactivate before disconnecting the battery negative cable. For more information, refer to *Charging System Description and Operation 6-149* . With Battery Maintenance Mode inactive, perform a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .

3. Reconnect all Battery voltage and Ignition voltage sources to the Control Module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the control module, data link connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the K219 Lighting Control Module.
8. Verify the control module can be programmed.

⇒ **If the control module can not be programmed**

8.1. Ignition ON/Vehicle in Service Mode for 1 min.

8.2. Ignition/Vehicle OFF.

8.3. Access SPS and follow the on-screen instructions for the K219 Lighting Control Module.

Note: If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

8.4. Verify the control module can be programmed.

⇒ If the control module can not be programmed, replace the K219 Lighting Control Module.

⇓ If the control module can be programmed

8.5. Clear DTCs.

⇓ **If the control module can be programmed**

9. Clear DTCs.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for control module replacement, programming and setup

P16 Instrument Panel Cluster Control Module: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or Control Module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), and HVAC.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.
- To prevent programming failure due to unintended wireless drops, It is recommended that a wired MDI connection be used when reprogramming the Instrument Cluster.

Reference Information

Special Tools

EL-52100 Multiple Diagnostic Interface 2 (MDI 2)

Diagnostic Aids

The programming steps in the Service Programming System (SPS) screens may not be in functional order. Be sure to follow the programming steps in the order listed below.

A successful Serial Data Authentication Configuration must occur prior to proceeding with the P16 Instrument Cluster – Setup, proceeding without a successful Serial Data Authentication Configuration will corrupt the P16 Instrument Cluster – Setup.

Replace and Program Control Module (UDC or UDD)

To program a replacement or an existing Control Module, perform the following procedure:

1. Ignition ON/Vehicle in Service Mode.
2. Disconnect Wi-Fi dongle from MDI 2.
   Install *EL-52100* (MDI 2) using wired USB Connection from MDI 2 to PC.
3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12 V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. Ignition/Vehicle OFF.
6. On the SPS Supported Controllers screen, select P16 Instrument Cluster – Programming and follow the on-screen instructions.

Note: If the Setup step fails and the Programming step is successful, perform the Serial Data Authentication Configuration procedure and then repeat the Setup step. Refer to: *Serial Data Authentication Configuration 3-59*

7. On the SPS Supported Controllers screen, select P16 Instrument Cluster – Setup and follow the on-screen instructions.
8. Clear DTCs.

Replace and Program Control Module (UDV or UHS)

To program a replacement or an existing Control Module, perform the following procedure:

1. Ignition ON/Vehicle in Service Mode.

Note: Ensure programming of this module is performed using the EL-52100 (MDI 2). Using the EL-47955 (MDI) will result in a programming failure.

2. Disconnect Wi-Fi dongle from MDI 2.
   Install *EL-52100* (MDI 2) using wired USB Connection from MDI 2 to PC.
3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12 V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. Ignition/Vehicle OFF.

Note: In the event that an SPS selection screen appears and selecting Hardware ID is required, this refers to the new Instrument Panel Cluster Control Module hardware Bootloader part number which can be viewed in GDS2

6. On the SPS Supported Controllers screen, select P16 Instrument Cluster – Graphics Programming and follow the on-screen instructions.
7. On the SPS Supported Controllers screen, select P16 Instrument Cluster – Programming and follow the on-screen instructions.

Note: If the Setup step fails and the Programming step is successful, perform the Serial Data Authentication Configuration procedure and then repeat the Setup step. Refer to: *Serial Data Authentication Configuration 3-59*

8. On the SPS Supported Controllers screen, select P16 Instrument Cluster – Setup and follow the on-screen instructions.

Note: If Ethernet programming fails, ensure Instrument Cluster is communicating over Ethernet properly. Refer to [Link target (target-id 300812-) not found]

9. Clear DTCs.

Reprogram Control Module (UDC or UDD)

To program a replacement or an existing Control Module, perform the following procedure:

1. Ignition ON/Vehicle in Service Mode.

Note: Ensure programming of this module is performed using the EL-52100 (MDI 2). Using the EL-47955 (MDI) will result in a programming failure.

2. Disconnect Wi-Fi dongle from MDI 2.
   Install *EL-52100* (MDI 2) using wired USB Connection from MDI 2 to PC.
3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12 V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. Ignition/Vehicle OFF.
6. On the SPS Supported Controllers screen, select P16 Instrument Cluster – Programming and follow the on-screen instructions.
7. Clear DTCs.

Reprogram Control Module (UDV or UHS)

To program a replacement or an existing Control Module, perform the following procedure:

1. Ignition ON/Vehicle in Service Mode.

Note: Ensure programming of this module is performed using the EL-52100 (MDI 2). Using the EL-47955 (MDI) will result in a programming failure.

2. Disconnect Wi-Fi dongle from MDI 2.
   Install *EL-52100* (MDI 2) using wired USB Connection from MDI 2 to PC.
3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12 V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. Ignition/Vehicle OFF.
6. On the SPS Supported Controllers screen, select P16 Instrument Cluster – Graphics Programming and follow the on-screen instructions.
7. On the SPS Supported Controllers screen, select P16 Instrument Cluster – Programming and follow the on-screen instructions.

Note: If Ethernet programming fails, ensure Instrument Cluster is communicating over Ethernet properly. Refer to [Link target (target-id 300812-) not found]

8. Clear DTCs.

Unsuccessful Programming Recovery

Note:

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the control module. All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:
   - Removing all fuses supplying battery voltage and ignition voltage to the control module.
   - Disconnecting all harness connectors from the control module.

Warning: Always ensure the Battery Maintenance Mode is inactive before disconnecting the low voltage 12 volt battery (or batteries). This mode can be active with the ignition off, regardless of whether the vehicle charging cord is plugged in or not. When this mode is active, the on-board high voltage battery charger(s) will energize the 12 volt battery cables and charge the 12 volt battery (or batteries). Disconnecting any battery cables while this mode is active may result in an electrical shock or a burn from hot battery cable leads.

   - Check the 12 volt battery voltage with a digital multimeter before disconnecting any battery cables leads. If the voltage is 13.5 volts or above, the Battery Maintenance Mode is active. The technician must wait for the T18 battery charger to deactivate before disconnecting the battery negative cable. For more information refer to *Charging System Description and Operation 6-149* . With Battery Maintenance Mode inactive, perform a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .

3. Reconnect all battery voltage and ignition voltage sources to the control module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the control module, data link connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the control module.
8. Verify the control module can be programmed.

⇒ **If the control module can not be programmed**

   8.1. Ignition ON/Vehicle in Service Mode for 1 min.

   8.2. Ignition/Vehicle OFF.

   8.3. Access SPS and follow the on-screen instructions for the control module.

Note: If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.
- For optimal consistency during the reprogramming session, we recommend connecting the PC to a hardwired Ethernet cable, as the large software file size may affect stability.

  8.4. Verify the control module can be programmed.

⇒ If the control module can not be programmed, replace the control module.

⇓ If the control module can be programmed

  8.5. Clear DTCs.

⇓ **If the control module can be programmed**

9. Clear DTCs.

T1 Accessory AC and DC Power Control Module: Programming and Setup

This device does not require programming or setup.

T3 Audio Amplifier: Programming and Setup

Note:

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the ECU is not properly configured with the correct calibration software, the ECU will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or ECU damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, , etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Diagnostic Aids

During programming you may be required to select multiple calibrations dependent upon vehicle equipment. Have the vehicle build/RPO information available during the following procedure to ensure the correct calibrations are selected.

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Ignition OFF, Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select T3 Audio Amplifier – Programming and follow the on-screen instructions.
4. Clear DTCs.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

  2.1. Ignition OFF for one minute, ignition ON.

  2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

  2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

T22 Wireless Accessory Charging Module: Programming and Setup

Note:

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption

during programming, programming failure or control module damage may occur.

- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Replace and Program Control Module

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select T22 Wireless Accessory Charging Module - Programming and follow the on-screen instructions.
3. Clear DTCs.

Reprogram Control Module

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select T22 Wireless Accessory Charging Module - Programming and follow the on-screen instructions.
3. Clear DTCs.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

   2.1. Ignition OFF for one minute, ignition ON.

   2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

   2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

Repair Instructions

Perform the *Diagnostic Repair Verification 3-259* after completing the repair.

Control Module References 3-4 for Control Module replacement, programming and setup

K111 Fuel Pump Power Control Module: Programming and Setup

This control module does not require SPS programming but does require the following setup procedures after a new control module is installed:

Setup for Component Replacement — Fuel Pump Driver Control Module Configuration/ Fuel Pump Power Control Module Configuration

1. Ignition » On / Vehicle » In Service Mode — For 2 min
2. Ignition/Vehicle » Off — For 2 min
3. Ignition » On / Vehicle » In Service Mode
4. Perform the following action: Clear the DTCs.
5. Start Engine
6. Verify DTC P1005 is not set

⇒ **If the DTC sets**

   6.1. Perform the following action: Clear the DTCs.

   6.2. Ignition/Vehicle » Off — For 2 min

   6.3. Start Engine

   6.4. Verify the DTC does not set.

⇒ If the DTC sets» Repeat the procedure starting at step 1

⇒ If the DTC is not set » Configuration— Complete

⇓ **If the DTC is not set**

7. Configuration— Complete

Serial Data Authentication Configuration

General Information

Serial Data Authentication Configuration ensures secure communication between control modules over different channels by encrypting sensitive data. Secret keys are written to the control modules, allowing messages on the bus to be encrypted.

- During the process, control module data is retrieved from the vehicle to generate unique cryptographic keys.
- These keys are then written to each control module, allowing secure communication between control modules.
- In the case of control module replacement, re-running the configuration is required to introduce the new control module to the network; otherwise, communication will fail due to unrecognized messages.

Reference Information

Special Tools
EL-52100 Multiple Diagnostic Interface 2 (MDI 2)

Serial Data Authentication Configuration

Note: Before attempting to perform the Serial Data Authentication Configuration procedure,

- Make sure all CAN control modules are connected and communicating.
- Diagnose the following communication DTCs first: DTC U0073-U007E, U0100-U02FF, U1100-U12FF, U1600-U17FF, U1977, U1978, U2200-U23FF, and U2400-U25FF.
- Diagnose the following programming DTCs: U3000 51, U3000 52, U3000 53, U3000 56, and U3000 57.
- If DTC U1962 is stored only as a history DTC and not retrieved as a current DTC, do not perform the Serial Data Authentication Configuration procedure.
- DO NOT perform the Serial Data Authentication Configuration procedure unless directed to by a service procedure or a service bulletin.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Check the 12 V battery with a digital multimeter and ensure the voltage is above 12.5 V. When required, install a battery maintainer or power supply that provides a steady and stable voltage. DO NOT use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.

1. Ignition/Vehicle OFF, keep the key inside the vehicle.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.

Note: The Serial Data Authentication Configuration button is located in the lower right corner of the SPS Supported Controllers screen in the Techline Connect system.

3. On the SPS Supported Controllers screen, select Serial Data Authentication Configuration button and follow the on-screen instructions.
4. Ignition/Vehicle OFF, disconnect the scan tool from the vehicle, all access doors closed, all vehicle systems OFF, and all keys at least 3 m (9.8 ft) away from vehicle. Allow the vehicle to go into sleep mode.
5. Ignition ON/Vehicle In Service Mode.
6. Using a scan tool, clear DTCs.

Troubleshooting

Serial Data Authentication Configuration can fail for several reasons. After confirming all control modules are fully programmed and that no underlying issues exist, follow these steps to attempt a successful configuration:

1. Verify X84 Data Link Connector (DLC) Connection: Ensure the X84 Data Link Connector is securely attached to the vehicle.
2. Use a Direct MDI 2 Connection: Connect the scan tool directly to the computer via a wired connection instead of using wireless connection (Techline Connect may need to be reset to change the connection type).
3. Disconnect the 12 V Battery: Reset the vehicle systems by disconnecting the 12 V battery negative cable for 1 min. For electric vehicles, check the 12 V battery voltage with a digital multimeter before disconnecting any battery cables leads. If the voltage is 13.5 V or above, the Battery Maintenance Mode is active. The technician must wait for the T18 Battery Charger to deactivate before disconnecting the battery negative cable. Follow the appropriate steps in the Battery Negative Cable Disconnection and Connection procedure located under the Starting, Charging, and Low Voltage Energy Storage category.

4. Perform the Serial Data Authentication Configuration procedure. If the procedure still fails, inspect the X84 Data Link Connector for contamination, corrosion, and terminal tension and inspect the wiring between the X84 Data Link Connector and K56 Serial Data Gateway Module for any faults.

In the case of a Serial Data Authentication Configuration failure, the SPS error window should point to which control module is failing:

- Function: “Key Provisioning” refers to Serial Data Authentication Configuration.
- Sub Function: refers to which step in the process failed.
- ECU: refers to the failing control module if that is the case.

If the Sub Function column in SPS error window points to a “Configure Link” error, run through the trouble shooting steps 1-4 above.

If no SPS error window is displayed, but the SPS screen indicates that Serial Data Authentication Configuration has Failed, run through the trouble shooting steps 1-4 above.

Service Programming System (SPS)

For step-by-step control module programming instructions, please refer to the techline information system (TIS) terminal.

Review the information below to ensure proper programming protocol.

Note:

- DO NOT program a control module unless you are directed by a service procedure or you are directed by a General Motors service bulletin. Programming a control module at any other time will not permanently correct a customers concern.
- It is essential that the TIS terminal, MDI/MDI2, and/or Scan Tool, is equipped with the latest software before performing service programming.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Some modules will require additional programming/setup events to be performed before or after programming.
- Some vehicles may require the use of a CANDi or MDI/MDI2 module for programming.
- Review the appropriate service information for these procedures.
- DTCs may set during programming. Clear DTCs after programming is complete.
- Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

Ensure the following conditions are met before programming a control module:

1. Vehicle system voltage:
   - There is not a charging system concern. All charging system concerns must be repaired before programming a control module.
   - Battery voltage is greater than 12 volts but less than 16 volts. The battery must be fully charged before programming the control module.
   - Turn OFF or disable any system that may put a load on the vehicles battery, such as the following components:
     - Interior lights
     - Exterior lights including daytime running lights (DRL)—Applying the parking brake, on most vehicles, disables the DRL system
     - Heating, ventilation, and air conditioning (HVAC) systems
     - Engine cooling fans
     - Radio, etc.
2. The ignition switch must be in the proper position. SPS prompts you to turn ON the ignition, with the engine OFF. DO NOT change the position of the ignition switch during the programming procedure, unless instructed to do so.
3. Make certain all tool connections are secure, including the following components and circuits:
   - Scan Tool
     - The RS-232 communication cable port
     - The connection at the data link connector (DLC)
     - The voltage supply circuits
   - MDI/MDI2
     - The USB, Ethernet or Wireless communication port
     - The connection at the data link connector (DLC)
4. DO NOT disturb the tool harnesses while programming. If an interruption occurs during the programming procedure, programming failure or control module damage may occur.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. DO NOT turn the ignition OFF. Ensure that all control module and DLC connections are secure and the TIS terminal operating software is up to date.
2. Attempt to reprogram the control module.
3. If the control module can still not be programmed, turn the ignition OFF for at least one minute.
4. Turn the ignition ON and attempt to reprogram the control module. The control module should program.
   - ⇒ If the control module still cannot be programmed, replace the control module.

After successfully programming the control module, ensure that all post programming procedures are performed; refer to *Control Module References 3-4* for the appropriate control module Programming and Setup document for any required procedures.

Q77 Transmission Control Solenoid Valve Characterization Programming (8 Speed Transmission)

The solenoids in this transmission require unique performance characteristic data in order to function at maximum efficiency. This data is programmed and stored in the vehicle’s transmission control module (TCM). When a transmission assembly, TCM, or solenoids are replaced during service, the performance characteristic data for the solenoids must be retrieved from a web server “cloud” repository and reprogrammed into the TCM.

Reprogramming also ensures that the characteristic data relationship is properly matched between the solenoids, valve body, and transmission.

Solenoid characterization reprogramming is performed using the TIS2Web Service Programming System (SPS).

Solenoid Reprogramming Procedure

Perform solenoid characterization reprogramming after one of the following service procedures:

Note: Select “Replace Transmission” at the MCVM Characterization selection screen.

- Replace transmission assembly

Note: Select “Replace Control Valve Solenoid Body” at the MCVM Characterization selection screen.

- Replace control valve solenoid body

Note: Select “Replace Solenoid” at the MCVM Characterization selection screen.

- Replace solenoid (currently not an available Service Procedure)

Note: Select “Refresh Characterization Data” at the MCVM Characterization selection screen.

- Replace TCM

To perform solenoid characterization after a transmission component replacement:

1. Document the new Transmission Unique Number (TUN) or Part Unique Number (PUN) as required.
   - The TUN location may be found here: [Link target (target-id 260620-) not found] . Since the TUN can be difficult to access when the transmission is installed in the vehicle, ensure you document the 16-digit TUN prior to installing the transmission in the vehicle.
   - The PUN location may be found here: [Link target (target-id 280523-) not found] . Before installing the control valve solenoid body onto the transmission, document the 16-digit PUN. If the control valve solenoid body PUN has not been saved for reference, it may be necessary to disassemble the control valve solenoid body from the transmission to clearly read the control valve solenoid body PUN.
2. Log into TIS2Web/SPS.
3. Type the vehicle identification number (VIN).
4. Perform the SPS Transmission Control Module programming event.
   - Select “Transmission Control Module - Programming” to update TCM calibrations and Solenoid Characterization data.

     OR
   - Select “Transmission Control Module - MCVM Operations” to update Solenoid Characterization data only.
5. From the “MCVM (Mechanical Characterization and Virtual Matching) Operation Selection” screen, select the applicable service procedure to be performed. You will be prompted to provide the necessary Transmission Unique Number (TUN) or Part Unique Number (PUN) when replacing a transmission part.
6. After Solenoid Characterization Reprogramming has completed, turn the ignition OFF for at least 30 seconds and then turn back ON in order to reset the controller.

At this point, the system will read the VIN from the engine control module (ECM) using the multiple diagnostic interface (MDI) and then retrieve the applicable genealogy data tree from the cloud. This data tree accesses the original characterization data so that it may be updated with the new component information. The system acquires characterization data for the given TUN/PUN via the cloud and updates the genealogy tree. The TCM is updated with the correct solenoid characterization data, and the cloud is updated with the new genealogy relationship.

Q77 Transmission Control Solenoid Valve Characterization Programming (10 Speed Transmission)

The solenoids in this transmission require unique performance characteristic data in order to function at maximum efficiency. This data is programmed and stored in the vehicle's transmission control module (TCM). When a transmission assembly, TCM, or solenoids are replaced during service, the performance characteristic data for the solenoids must be retrieved from a web server "cloud" repository and reprogrammed into the TCM.

Reprogramming also ensures that the characteristic data relationship is properly matched between the solenoids, valve body, and transmission.

Solenoid characterization reprogramming is performed using the Service Programming System (SPS).

Solenoid Reprogramming Procedure

Perform solenoid characterization reprogramming after one of the following service procedures:

Note: Select "Replace Transmission" at the MCVM Characterization selection screen.

- Replace transmission assembly

Note: Select "Replace Control Valve Solenoid Body" at the MCVM Characterization selection screen.

- Replace control valve solenoid body

Note: Select "Replace Solenoid" at the MCVM Characterization selection screen.

- Replace solenoid (currently not an available Service Procedure)

Note: Select "Refresh Characterization Data" at the MCVM Characterization selection screen.

- Replace TCM

To perform solenoid characterization after a transmission component replacement:

1. Document the new Transmission Unique Number (TUN). The TUN location may be found here: [Link target (target-id 278357-) not found] . Since the TUN can be difficult to access when the transmission is installed in the vehicle, ensure you document the 16-digit TUN prior to installing the transmission in the vehicle.
2. Use a generically available QR Code/data matrix scanner to obtain the Part Unique Number (PUN). The PUN location may be found here: [Link target (target-id 285256-) not found] . Before installing the control valve solenoid body onto the transmission, scan the data matrix.
3. Log into SPS.
4. Type the vehicle identification number (VIN).
5. Perform the SPS Transmission Control Module programming event.
   - Select "Transmission Control Module - Programming" to update TCM calibrations and Solenoid Characterization data.

     OR

   - Select "Transmission Control Module - MCVM Operations" to update Solenoid Characterization data only.
6. From the "MCVM (Mechanical Characterization and Virtual Matching) Operation Selection" screen, select the applicable service procedure to be performed. You will be prompted to provide the necessary Transmission Unique Number (TUN) when replacing a transmission part.

At this point, the system will read the VIN from the engine control module (ECM) using the multiple diagnostic interface (MDI) and then retrieve the applicable genealogy data tree from the cloud. This data tree accesses the original characterization data so that it may be updated with the new component information. The system acquires characterization data for the given TUN/PUN via the cloud and updates the genealogy tree. The TCM is updated with the correct solenoid characterization data, and the cloud is updated with the new genealogy relationship.

Vehicle Wide Programming and Setup

Important:

- If ANY module is replaced, program the single module first prior to Vehicle Wide Programming.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Before downloading the update files, be sure the computer is connected to the internet through a network cable (hardwired). DO NOT DOWNLOAD or install the files wirelessly. If there is an interruption during programming, programming failure or control module damage may occur.

- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicle's battery such as interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.

Description

Vehicle Wide Programming (VWP) is a new process to update software on GM Vehicles. It provides the ability via a single selection within Techline Connect to first identify which modules need updating and then proceed to updating affected modules (with some exceptions). The updating of modules is completed in parallel instead of forcing the technician to update one module at a time. This allows a more streamlined approach, reducing technician time and number of required steps.

Diagnostic Aids

Note: Vehicle Wide Programming will only work with a wired MDI2 connection. It is also necessary to remove any wireless dongles from the computer being used as these will not allow the Vehicle Wide Programming to be selectable. If the Vehicle Wide Programming is not selectable with a wired MDI2, confirm it shows disconnected in SPS2 and then (if needed) exit out of TLC and log-in again.

- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install a GM Authorized Programming Support Tool to maintain system voltage. Refer to www.gmdesolutions.com for further information. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Prior to starting any programming, all aftermarket devices should be removed from the DLC and USB devices disconnected from the USB ports.
- Follow the on-screen prompts regarding ignition power mode but ensure that anything that drains excessive power (exterior lights, HVAC blower motor, etc) is off.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.
- For the TLC application, service technicians need to always ensure that the power mode (ignition) is “ON” before reading the VIN from the vehicle’s VIN master module and that they do not select a VIN that is already in the TLC application memory from a previous vehicle.
- If the VIN that shows up in the TLC top center window after correctly reading the VIN from the vehicle does not match the VIN plate of the vehicle, manually type in the VIN characters from the vehicle VIN plate into the TLC top center window and use these for programming or reprogramming the subject module with the correct vehicle VIN and software and/or calibrations.
- Check for Preliminary information or Technical Service bulletins before programming.
- During programming you may be required to select multiple calibrations depending upon vehicle equipment. Have the vehicle build/RPO information (available through Investigate Vehicle History) available during the following procedure to ensure the correct calibrations are selected.

Note: Verify that the VIN displayed in the TLC left side drop down menu and the top center window match the VIN plate of the vehicle to be programmed prior to using Service Programming System 2 (SPS2) for programming or reprogramming a module.

Reference Information

Special Tools

- EL-52100 Multiple Diagnostic Interface 2 (MDI 2)

For equivalent regional tools, refer to *Special Tools 3-75*.

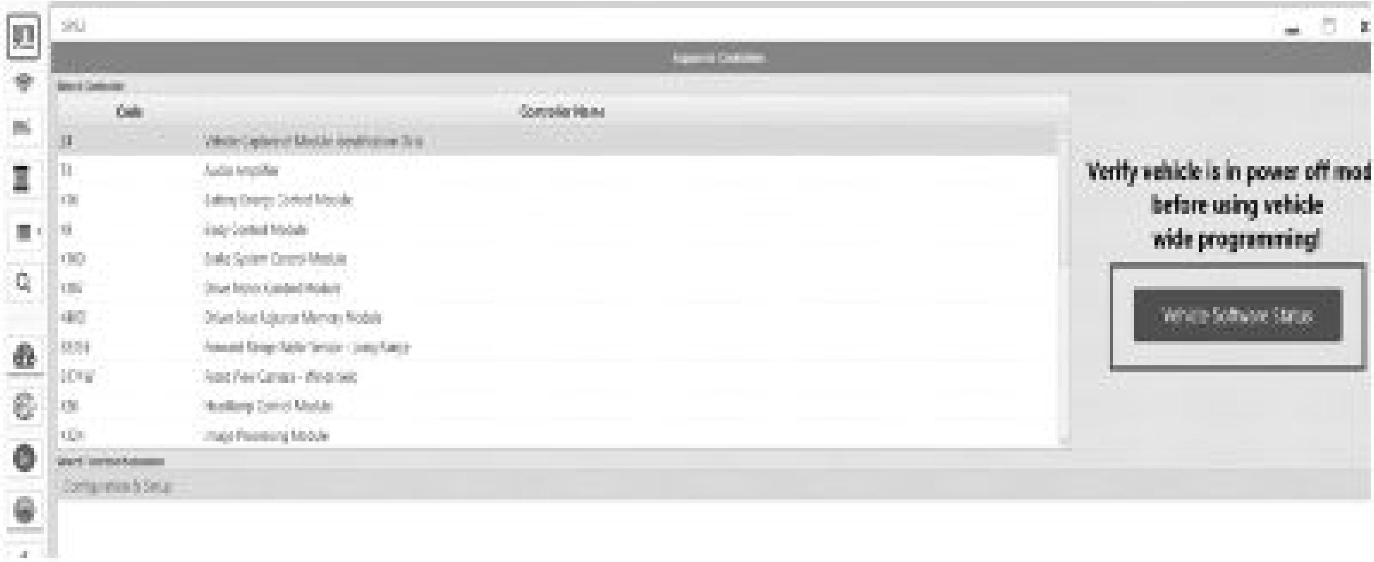
Service Procedure

Note:

- Vehicle Wide Programming will only work with a wired MDI2 connection. It is also necessary to remove any wireless dongles from the computer being used as these will not allow the Vehicle Wide Programming to be selectable. If the Vehicle Wide Programming is not selectable with a wired MDI2, confirm it shows disconnected in SPS2 and then (if needed) exit out of TLC and log-in again.
- The screenshots below are an example of module programming and may not be indicative of the specific module that is being programmed. Module

selection and VIN information have been blacked out.

1. Prior to starting any programming, all aftermarket devices should be removed from the DLC and USB devices disconnected from the USB ports. Open SPS2 and enter the job card number, then click next.
2. To begin a Vehicle Wide Programming event, click on the blue button on the right side. If unable to select, verify the wired MDI2 connection and that there are no wireless dongles in the computer as stated above.



Verify vehicle is in power off mod
before using vehicle
wide programming!

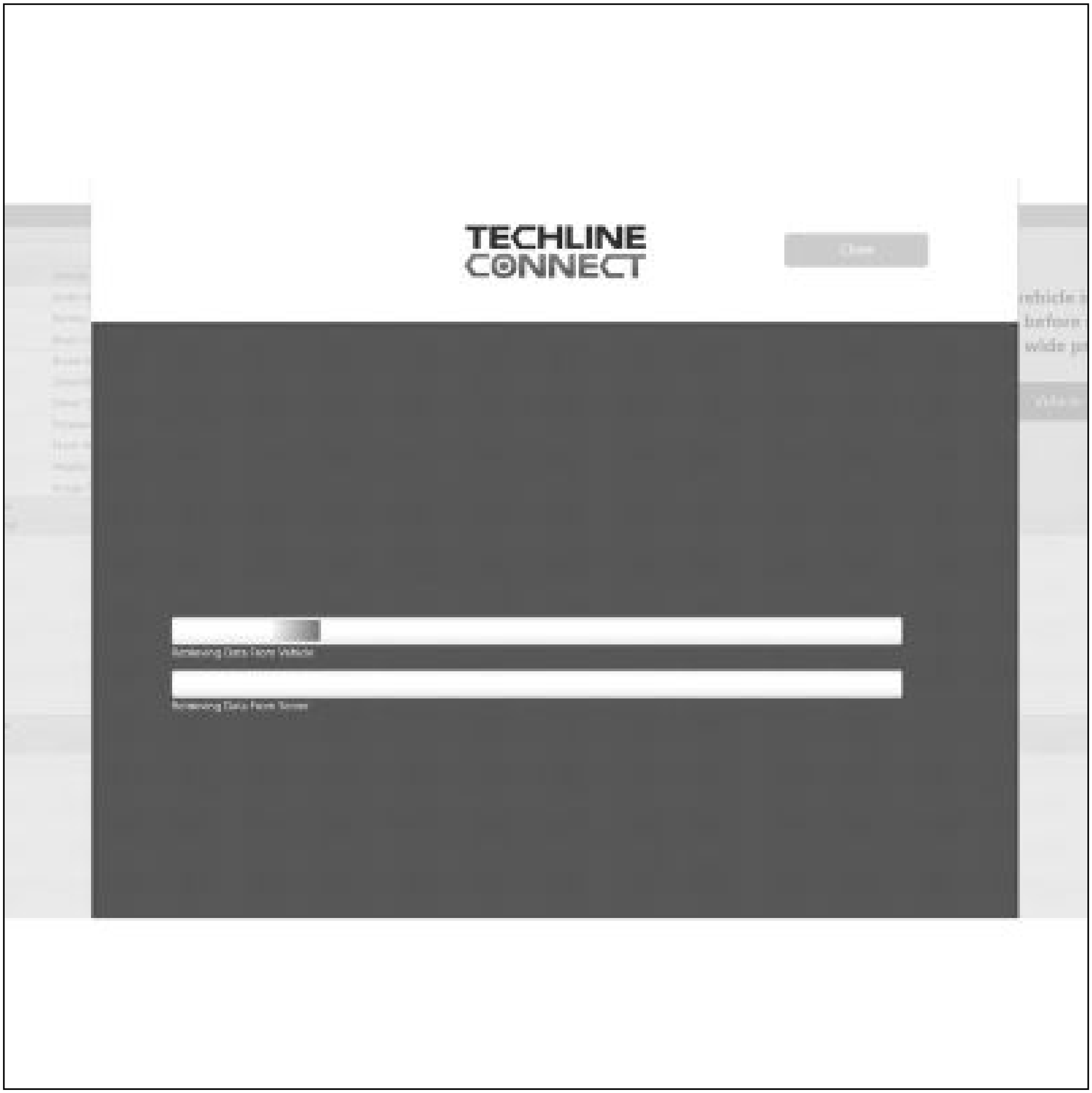
6864802

3. An SPS3 page will open, and a vehicle software status routing will begin.

TECHLINE
CONNECT

Verify vehicle is in power off mode
before using vehicle
wide programming!

6864803



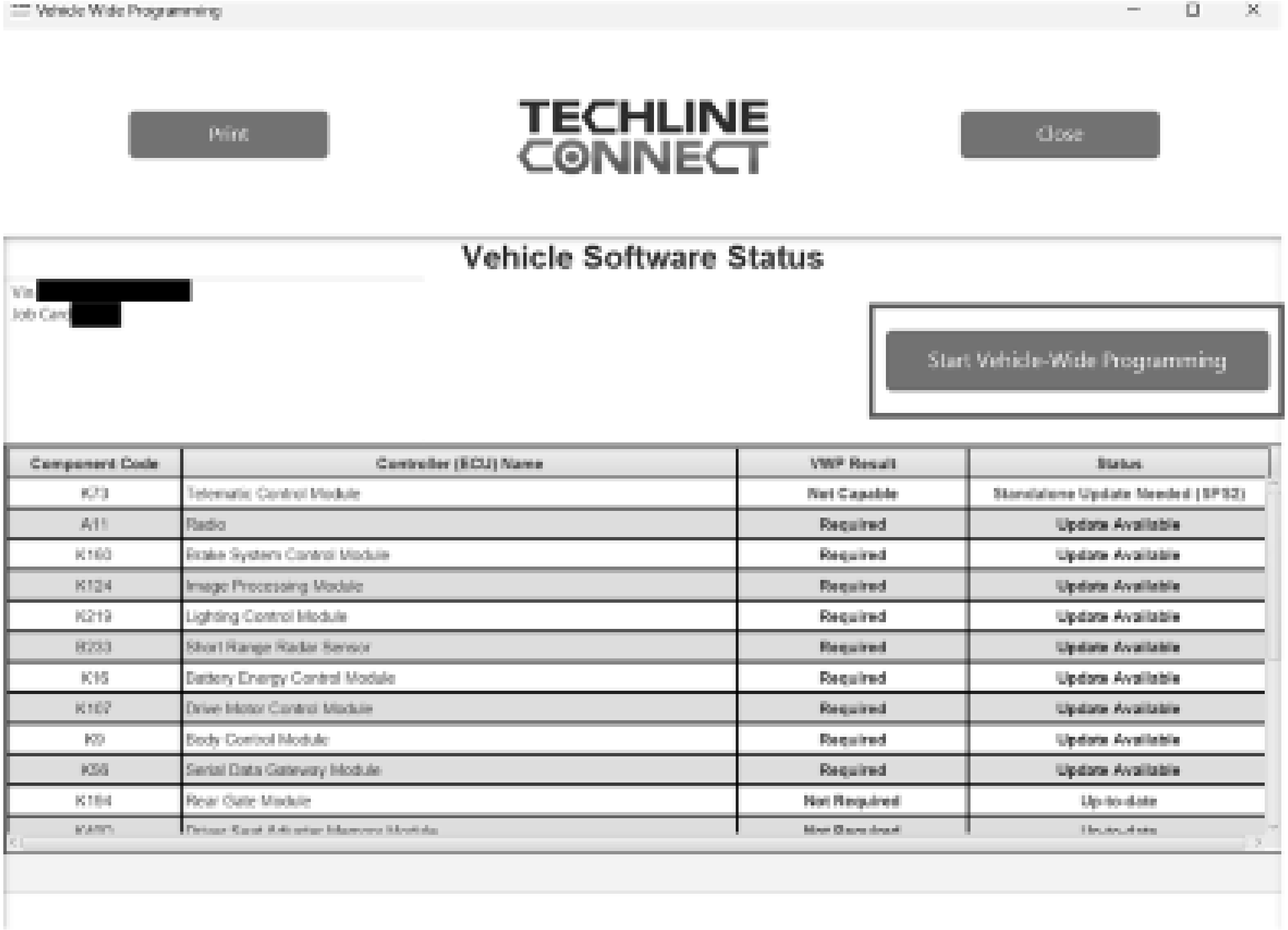
6864804

Below is a description of each Techline Connect bar.

- **Retrieving Data From Vehicle:** During this step, Techline Connect is retrieving current software information from the vehicle.
- **Retrieving Data From Sever:** Utilizing the VIN information, Techline Connect is retrieving the latest software information from General Motors.

Note: While it is saved automatically, it is recommended for the tech to print/capture anything noted as failed or out of date before exiting the screen.

4. Once complete, a Software Status Summary Screen will appear. This will list all modules that are up to date or may require manual update. It will also advise of any failures. To complete a VWP event, click on the blue button on the right side.



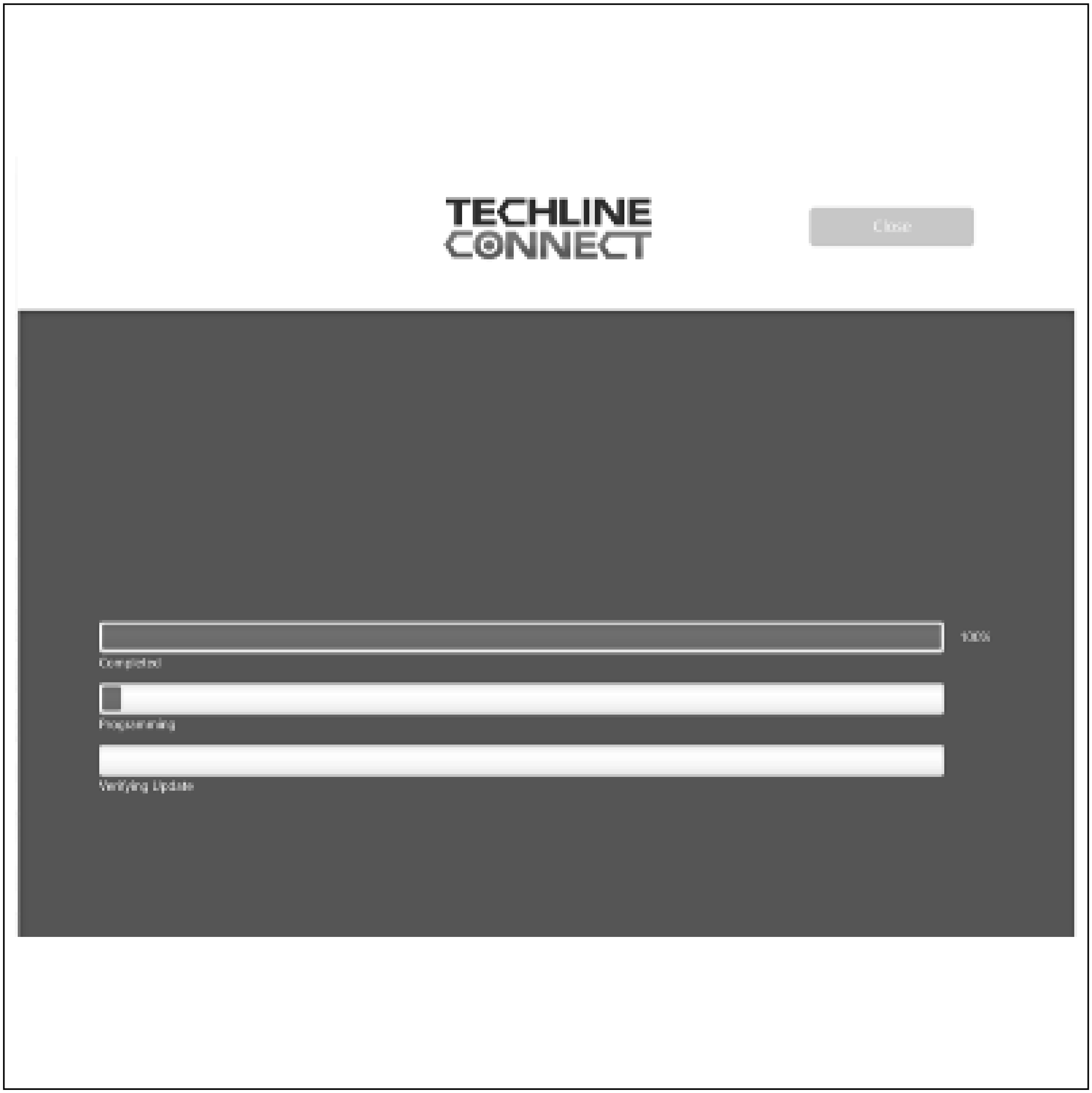
Vehicle Software Status

Vin [redacted]
Job Card [redacted]

Component Code	Controller (ECU) Name	VWP Result	Status
K73	Telematic Control Module	Not Capable	Standalone Update Needed (SPS2)
A11	Radio	Required	Update Available
K160	Brake System Control Module	Required	Update Available
K124	Image Processing Module	Required	Update Available
K219	Lighting Control Module	Required	Update Available
B233	Short Range Radar Sensor	Required	Update Available
K16	Battery Energy Control Module	Required	Update Available
K107	Drive Motor Control Module	Required	Update Available
K9	Body Control Module	Required	Update Available
K56	Serial Data Gateway Module	Required	Update Available
K184	Rear Gate Module	Not Required	Up-to-date
[illegible]	Driver Seat Adjuster Memory Module	Not Required	Up-to-date

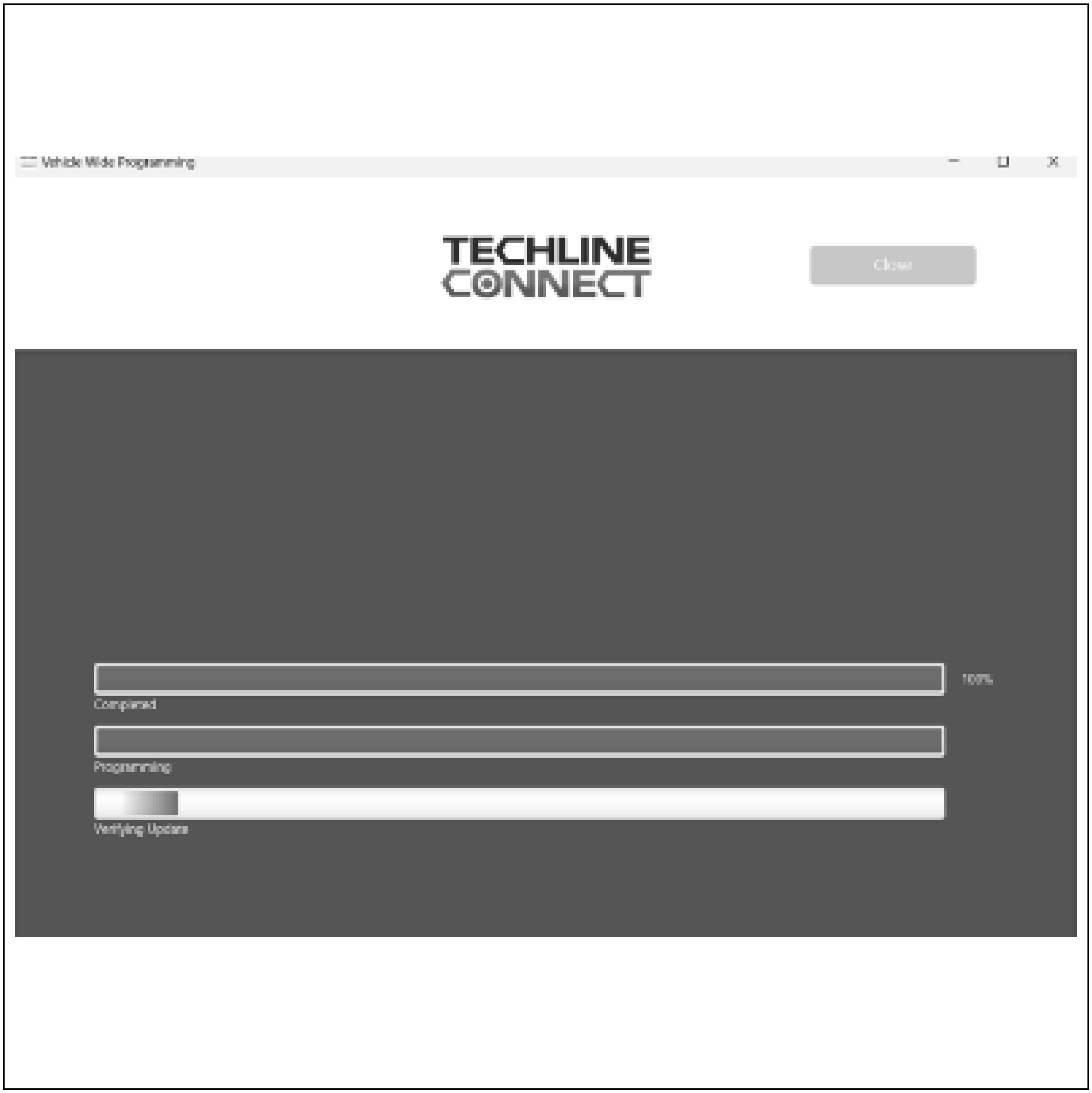
6864805

5. A VWP progress page will open and a VWP event will begin. Below is a description of each Techline Connect bar.
   - **Downloading:** Downloads required files for installation.
   - **Programming:** Installing updated software into the modules
   - **Verifying Update:** Performs final part comparison to verify programming completion.



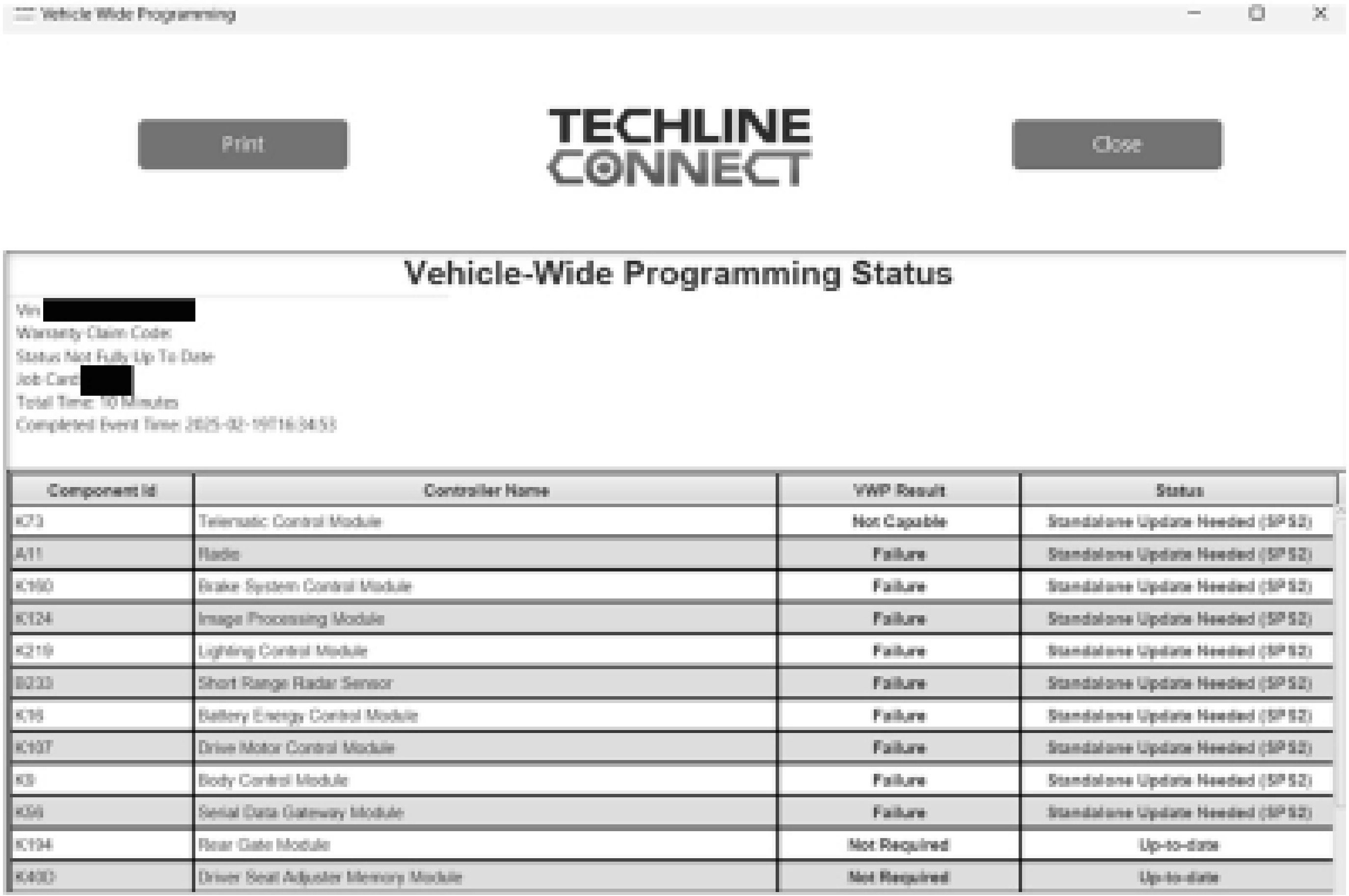
TECHLINE CONNECT
Close
100%
Completed
Programming
Verifying Update

6864806


Vehicle Wide Programming
TECHLINE CONNECT
Close
100%
Completed
Programming
Verifying Update

6864808

6. Once complete, a Vehicle-Wide Programming Summary screen will appear, and a warranty claim code will populate. This will list all modules that are up to date or may be required to be updated still. Any failures will be shown at the top highlighted in red. The summary screen will also advise of any failures. While it is saved automatically, it is recommended for the tech to print/capture anything noted as failed or out of date before exiting the screen

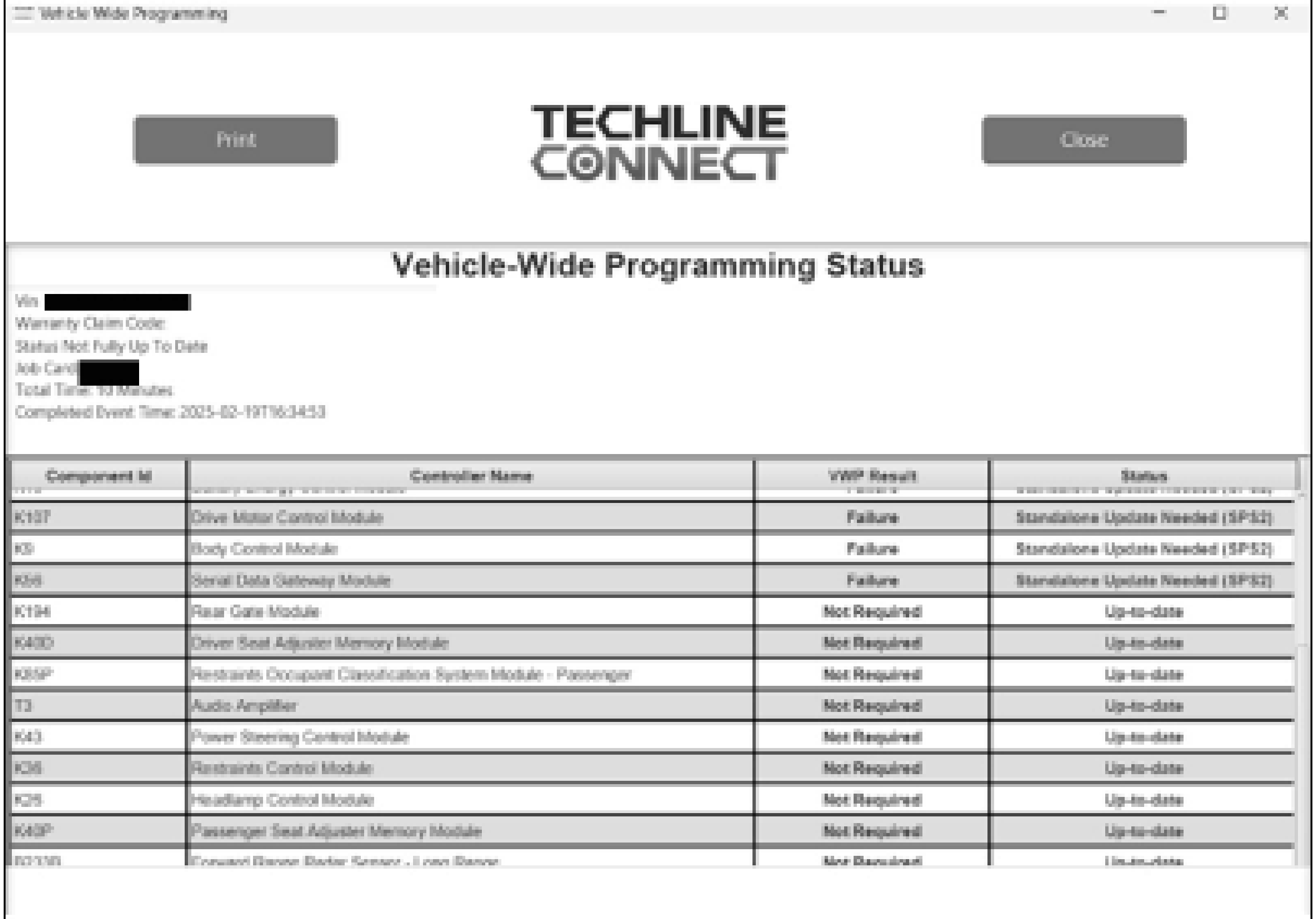


Vehicle-Wide Programming Status

Vin: [redacted]
Warranty Claim Code:
Status Not Fully Up To Date
Job Card: [redacted]
Total Time: 10 Minutes
Completed Event Time: 2025-02-19T16:34:53

Component Id	Controller Name	VWP Result	Status
K73	Telematic Control Module	Not Capable	Standalone Update Needed (SPS2)
A11	Radio	Failure	Standalone Update Needed (SPS2)
K160	Brake System Control Module	Failure	Standalone Update Needed (SPS2)
K124	Image Processing Module	Failure	Standalone Update Needed (SPS2)
K219	Lighting Control Module	Failure	Standalone Update Needed (SPS2)
B233	Short Range Radar Sensor	Failure	Standalone Update Needed (SPS2)
K16	Battery Energy Control Module	Failure	Standalone Update Needed (SPS2)
K107	Drive Motor Control Module	Failure	Standalone Update Needed (SPS2)
K9	Body Control Module	Failure	Standalone Update Needed (SPS2)
K56	Serial Data Gateway Module	Failure	Standalone Update Needed (SPS2)
K194	Rear Gate Module	Not Required	Up-to-date
K40D	Driver Seat Adjuster Memory Module	Not Required	Up-to-date

6864809



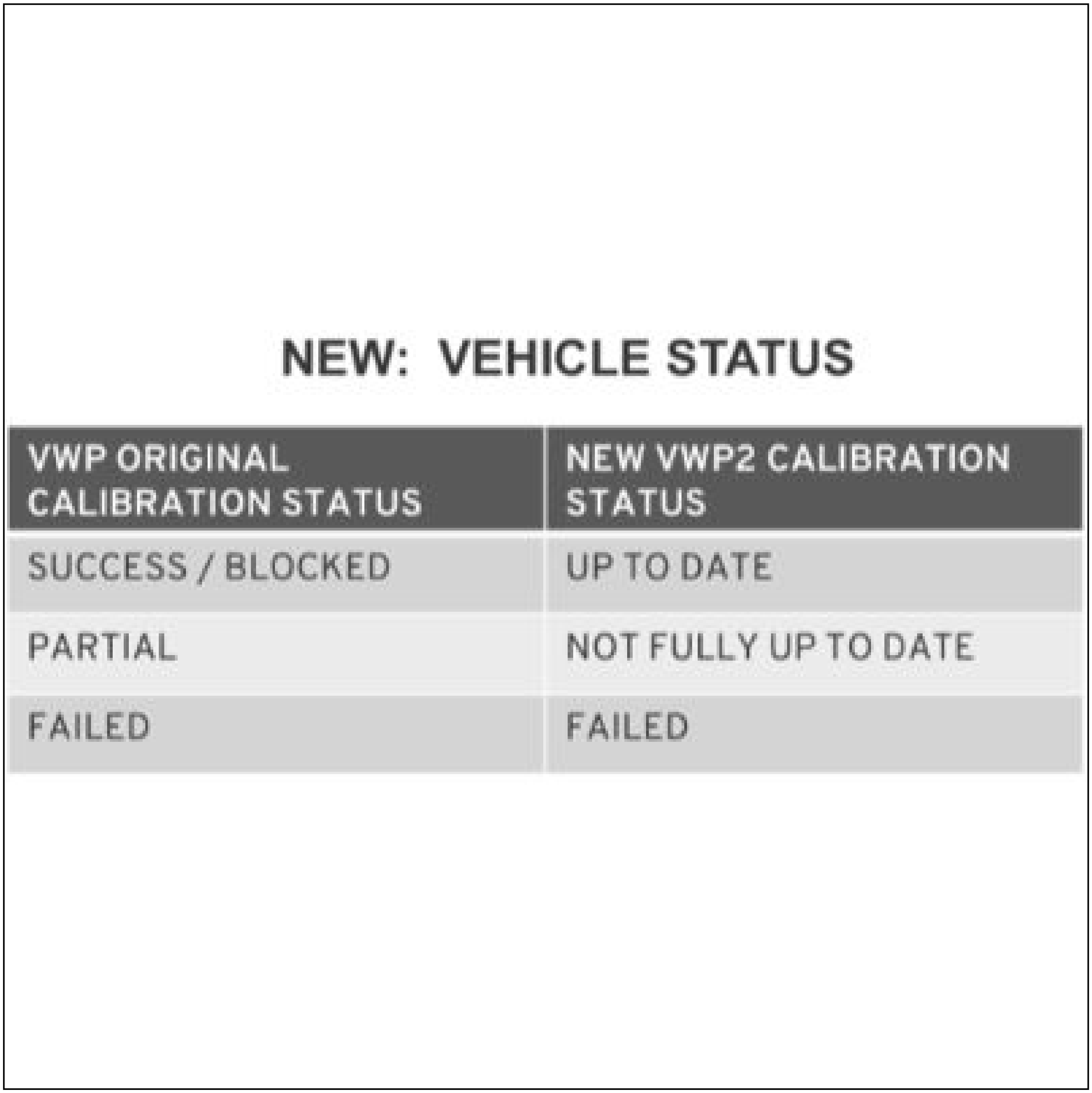
Vehicle-Wide Programming Status

Vin: [redacted]
Warranty Claim Code:
Status: Not Fully Up To Date
Job Card: [redacted]
Total Time: 10 Minutes
Completed Event Time: 2025-02-19T16:34:53

Component Id	Controller Name	VWP Result	Status
K197	Drive Motor Control Module	Failure	Standalone Update Needed (SPS2)
K9	Body Control Module	Failure	Standalone Update Needed (SPS2)
K56	Serial Data Gateway Module	Failure	Standalone Update Needed (SPS2)
K194	Rear Gate Module	Not Required	Up-to-date
K40D	Driver Seat Adjuster Memory Module	Not Required	Up-to-date
K65P	Restraints Occupant Classification System Module - Passenger	Not Required	Up-to-date
T3	Audio Amplifier	Not Required	Up-to-date
K43	Power Steering Control Module	Not Required	Up-to-date
K36	Restraints Control Module	Not Required	Up-to-date
K26	Headlamp Control Module	Not Required	Up-to-date
K40P	Passenger Seat Adjuster Memory Module	Not Required	Up-to-date
B233B	Forward Range Radar Sensor - Long Range	Not Required	Up-to-date

6864812

7. If the status is “Failed” or “Not Fully Up To Date”, please refer to “Unsuccessful Vehicle Wide Programming” section below.



NEW: VEHICLE STATUS

VWP ORIGINAL CALIBRATION STATUS	NEW VWP2 CALIBRATION STATUS
SUCCESS / BLOCKED	UP TO DATE
PARTIAL	NOT FULLY UP TO DATE
FAILED	FAILED

6864813

8. Use GDS2 to clear any DTCs after successfully programming

Note: The screenshots above are an example of module programming and may not be indicative of the specific modules that is being programmed. Module section and VIN information have been blacked out.

Important: To avoid warranty transaction rejections, you MUST record the warranty claim code provided on the Warranty Claim Code (WCC) screen shown below on the job card.

Unsuccessful Vehicle Wide Programming

Note:

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Attempt to perform Vehicle Wide Programming a second time.
2. Verify no modules have failed programming during the VWP event.

⇒ **If ANY single module fails Vehicle Wide Programming:**

   2.1. Attempt to program the applicable module again. Refer to: *Control Module References 3-4*

   2.2. If the module still cannot be programmed, contact Techline Customer Support Center (TCSC) for programming instructions.

⇒ **If ALL modules fail Vehicle Wide Programming**

If the module still cannot be programmed, contact Techline Customer Support Center (TCSC) for programming instructions.

⇓ **If all applicable modules pass Vehicle Wide Programming:**

Clear DTCs.

3. If a Vehicle Wide Programming blocked or successful Warranty Claim Code is required, Vehicle Wide Programming may be required to be performed again to receive an “Up to Date” status and obtain a Warranty Claim Code.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: *Diagnostic Repair Verification 3-259*.

Control Module References 3-4 for control module replacement, programming, and setup.

Description and Operation

Over The Air Description and Operation

Each item in the list below represents topics covered in detail below.

- Over The Air (OTA) Description
- OTA Software Download
- Installing an Update
- Deferring or Declining an Update
- Unable to Complete
- Proper Battery Charging

Over The Air (OTA) Description

The Over The Air (OTA) feature was designed to install vehicle software updates remotely. Remote software update is an in-vehicle feature that enables the installation of a software package to update certain modules without requiring service test equipment to be physically connected to the vehicle. Remote software updates will utilize a long range or short range connection from the host module to a remote IT system. There must be an active 4G LTE or WiFi connection to download and install vehicle software updates. The customer does not need an active OnStar subscription but they do need to accept the vehicle Terms and Conditions to be eligible to receive OTA vehicle software updates.

Note: Fleet vehicles must be activated as a Fleet account (not a business account) and require a separate Terms and Conditions agreement to be completed. Please see your fleet administrator for assistance with completing this agreement.

OTA software updates that are pushed to vehicles remotely continue to expand in frequency and use on GM models. Vehicles using the Global A electrical architecture can support three modules for OTA updates, such as the radio, OnStar, and Serial Data Gateway modules.

The new Vehicle Intelligence Platform (VIP) electrical architecture, introduced on some 2020 vehicles and beyond, powers a new electronic system that is capable of managing up to 4.5 terabytes of data processing power per hour, which is a fivefold increase in capability over the previous Global A electrical architecture. On vehicles using the VIP architecture, virtually all modules can support OTA updates, which means that the OTA software is not only for the infotainment system.

When an OTA update has been downloaded to a vehicle and is available to be installed, a message is displayed on the infotainment screen notifying the driver of the impending update. The message to accept and install an OTA update will not appear until the minimum values for the battery State of Charge (SOC) and Outside Ambient Temperature (OAT) are met.

OTA Software Download

An OTA update can be pushed to a vehicle while the vehicle is parked or being driven. There is an option for notification to the driver that the software update is being downloaded to the vehicle, the default setting is set to off. Battery SOC and OAT values are not checked before a download. These checks are only performed once the software update is downloaded and ready to be installed.

The OTA software download can occur in increments. Download will not be paused while the vehicle is being driven, it continues in the background. If the vehicle is turned off the download will continue for a maximum of 10 minutes. If the download did not complete it will continue on the next ignition cycle from where it stopped.

Installing an Update

Once the OTA software is downloaded, a message on the infotainment screen will display a prompt to accept the installation. The customer does not need to remain in the vehicle during the installation of the software. However, the vehicle cannot be driven during the installation and certain vehicle features may not be available. It's not required for the ignition to be ON for the installation to begin.

Installation time will vary based on the size of the update. The average installation will take approximately 15 minutes. Depending on the module, it may take longer to complete. The “Accept” message on the infotainment screen will provide an estimation of the approximate installation time. The customer may also comment that the radio appears to stay on after exiting the vehicle.

Deferring or Declining an Update

When an OTA update is downloaded, customers have the option to defer or decline the installation. The standard policy for OTA software updates is to set the customer notifications to 30 ignitions cycles. If the customer does not act upon the prompts within this counter, the update package is removed from the vehicle.

If a customer ignores the notification, the ignition cycle counter decreases by one immediately.

If the customer defers the installation by selecting the “Remind Me Later” option, the ignition cycle counter decreases by one, but it will not decrease again until after the customer-selected “Remind Me Later” period, regardless of the number of ignition cycles that occur during that period. For example, if 24 hours is selected for the next remind me time frame and 20 ignition cycles occurred, those 20 ignition cycles do not decrease the ignition cycle counter.

Note: For customer use case, standard operating procedure for campaign is to set the notifications to 30 ignitions cycles. If the Customer does not act upon the prompts within this counter, the package / invite is removed from the vehicle. In this scenario, we will wait 2 weeks and re-enroll back into the campaign. FYI: this counter can be selected from 1 to 999 ignition cycles when setting up the campaign.

If the OTA update installation is deferred by the customer, it can be installed at a later date through the Vehicle Software menu under Settings > System on the infotainment screen.

If the customer selects the “Decline Update” option, the update package is immediately removed from the vehicle. In this case, the vehicle will not be re-enrolled to receive the OTA update at a later date, unless the update is a Field Action. OTA updates will not be installed in a vehicle without a customer's consent. One exception with Constraint Consent use case there is a “May day” counter set in the vehicle, typically 10 ignition cycles. The Customer has that many ignition cycles to complete the update. Upon using all notifications, the installation will take place once this counter has expired. This use case is only for Cyber Critical recall Field Actions and requires Global Safety Field Investigations approval to utilize this use case. To date, this use case has not been used for any field actions.

Unable to Complete

There are a number of criteria that must be met in order to successfully complete the software update installation on a vehicle. The most common cause of being unable to complete an installation is the State of Charge (SOC) of the 12V battery. If the 12V battery does not meet the minimum SOC requirement of 70 percent or greater along with an Outside Ambient Temperature (OAT) greater than 14°F (-10°C), the OTA update installation will not occur. The colder the ambient air temperature is, the higher the target SOC becomes. To determine the battery SOC for VIP vehicles, go to BCM/12V Battery/Battery Sensor Module – State of Charge in GDS 2.

There may be other conditions that will affect an OTA update installation. If any of these conditions are present, a “Vehicle Conditions Not Ideal” message may display on the infotainment screen stating that conditions are not ideal to proceed with the update installation. These conditions do not indicate a failure; only that the vehicle does not meet all the criteria necessary to complete the OTA update installation.

Some customers may comment that the radio appears to stay on or is backlit after exiting the vehicle. If this occurs, it's a telltale sign that an OTA update is in progress.

If an OTA fails to update ensure there is no 3rd party dongle connected to the DLC of the vehicle. This could block an OTA from completing.

Proper Battery Charging

If a low battery SOC is preventing the OTA update installation, the 12V battery should be charged to meet the target SOC of 70 percent.

On some GM models, connecting the battery charger directly to the 12V battery posts will bypass the Battery Sensor Module, resulting in a default SOC value of 65 percent and a “Conditions Not Met” message.

Note: The Battery Sensor Module is attached directly to the battery negative terminal. It determines the battery condition by calculating the battery SOC, functions, and state of health, which is used to help determine if the 12V Stop/Start system will allow an Auto Stop when the vehicle has come to a stop. To properly charge the battery, the negative lead of the charger must be connected to chassis ground, and not directly to the negative battery post. Connecting to chassis ground allows current to flow through the Battery Sensor Module during charging as well as be monitored. The current cannot be monitored by the Battery Sensor Module if the negative lead of the charger is directly connected to the negative battery post.If a battery is improperly charged, the Battery Sensor Learn will be required to calibrate the Battery Sensor Module. With the ignition off, let the vehicle rest for a minimum of four hours without any interruptions (opening a door, using the key fob, etc.). Verify if the battery SOC is 70 percent or greater using GDS 2 before attempting to continue with an OTA update.

Special Tools and Equipment

Special Tools

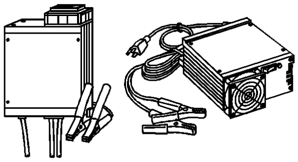
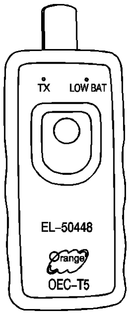
Illustration	Tool Number/ Description
 2223727	EL 49642 SPS Programming Support Tool
 2563769	EL 50448 Tire Pressure Monitor Sensor Activation Tool
5443144	EL 52100 Multi Diagnostic Interface 2 (MDI 2)

Illustration	Tool Number/ Description
5331982	EL 52545 Tire Pressure Monitor Sensor and RF Diagnostic Tool
5608151	EL 52800 Battery Charger/Tester

Vehicle Diagnostic Information

Specifications

A11 Radio: Scan Tool Information

A11 Radio: Scan Tool Information

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON			
Data Display			
• Infotainment System Status	—	Run	Indicates the status of the infotainment system.
• Rearview Camera Supply Current	—	Varies	Indicates the rearview camera supply current
• Rearview Camera Supply Voltage	—	10V	Indicates the rearview camera supply voltage..
• Control Module Temperature Sensor 1	—	Varies	This displays the temperature reading of the control module temperature sensor 1.
• Control Module Temperature Sensor 2	—	Varies	This displays the temperature reading of the control module temperature sensor 2.
• Control Module Operation Mode	—	Run	This displays the current operational mode of the control module.
• Battery Saver Mode	—	On/Off	Indicates if battery saver mode is active.
Ethernet Bus Data			
• Ethernet Bus Master Clock	—	Yes/No	Ethernet Bus Master Clock
• Rear Seat Infotainment Module to Radio Ethernet Data Received	—	Yes/No	Indicates if the radio has received data from the rear seat infotainment module.
• Telematics Control Module to Radio Ethernet Data Ready To Transmit	—	Yes/No	Indicates if the telematics control module ethernet data is ready to transmit to the radio.
• Ethernet Port 0 Receive Failure Count	—	Varies	Displays failures in counts (Rear Seat Infotainment)
• Ethernet Port 0 Transmit Failure Count	—	Varies	Displays failures in counts (Rear Seat Infotainment)
• Ethernet Port 1 Receive Failure Count	—	Varies	Displays failures in counts (Audio Amplifier)
• Ethernet Port 1 Transmit Failure Count	—	Varies	Displays failures in counts (Audio Amplifier)
• Ethernet Port 2 Receive Failure Count	—	Varies	Displays failures in counts (Central Gateway Module)
• Ethernet Port 2 Transmit Failure Count	—	Varies	Displays failures in counts (Central Gateway Module)
• Ethernet Port 3 Receive Failure Count	—	Varies	Displays failures in counts (Telematics Control Module)
• Ethernet Port 3 Transmit Failure Count	—	Varies	Displays failures in counts (Telematics Control Module)

Parameter	System State	Expected Value	Description
• Ethernet Port 4 Receive Failure Count	—	Varies	Displays failures in counts
• Ethernet Port 4 Transmit Failure Count	—	Varies	Displays failures in counts
• Ethernet Port 5 Receive Failure Count	—	Varies	Displays failures in counts
• Ethernet Port 5 Transmit Failure Count	—	Varies	Displays failures in counts
• Ethernet Port 6 Receive Failure Count	—	Varies	Displays failures in counts
• Ethernet Port 6 Transmit Failure Count	—	Varies	Displays failures in counts
• Ethernet Port 0 IP Address	—	Varies	Displays ethernet IP address
• Ethernet Port 1 IP Address	—	Varies	Displays ethernet IP address
• Ethernet Port 2 IP Address	—	Varies	Displays ethernet IP address
• Ethernet Port 3 IP Address	—	Varies	Displays ethernet IP address
• Ethernet Port 4 IP Address	—	Varies	Displays ethernet IP address
• Ethernet Port 5 IP Address	—	Varies	Displays ethernet IP address
• Ethernet Port 6 IP Address	—	Varies	Displays ethernet IP address
Configuration Data			
• Manufacturer Enable Counter	—	Varies	Displays in counts
Bluetooth Data			
• Number of Bluetooth Devices Connected	—	Varies 1–10	Indicates the number of Bluetooth paired to the vehicle.
• Bluetooth Device 1: Connection Status	—	Varies	Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active
• Bluetooth Device 1: Friendly Name	—	Varies	The scan tool displays a decimal value between 0 and 255.
• Bluetooth Device 2: Connection Status	—	Varies	Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active
• Bluetooth Device 2: Friendly Name	—	Varies	Displays the bluetooth phone to telematics communication interface control module status.
• Bluetooth Device 3: Connection Status	—	Varies	Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active
• Bluetooth Device 3: Friendly Name	—	Varies	Indicates the name given to the paired device
• Bluetooth Device 4: Connection Status	—	Varies	Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active

Parameter	System State	Expected Value	Description
• Bluetooth Device 4: Friendly Name	—	Varies	Indicates the name given to the paired device
• Bluetooth Device 5: Connection Status	—	Varies	Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active
• Bluetooth Device 5: Friendly Name	—	Varies	Indicates the name given to the paired device
• Bluetooth Device 6: Connection Status	—	Varies	Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active
• Bluetooth Device 6: Friendly Name	—	Varies	Indicates the name given to the paired device
• Bluetooth Device 7: Connection Status	—	Varies	Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active
• Bluetooth Device 7: Friendly Name	—	Varies	Indicates the name given to the paired device
• Bluetooth Device 8: Connection Status	—	Varies	Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active
• Bluetooth Device 8: Friendly Name	—	Varies	Indicates the name given to the paired device
• Bluetooth Device 9: Connection Status	—	Varies	Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active
• Bluetooth Device 9: Friendly Name	—	Varies	Indicates the name given to the paired device
• Bluetooth Device 10: Connection Status	—	Varies	Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active
• Bluetooth Device 10: Friendly Name	—	Varies	Indicates the name given to the paired device
GPS Data			
Longitude at Last GPS Fix	—	Varies	Indicates the longitude coordinates at the last GPS signal reveived
Latitude at Last GPS Fix	—	Varies	Indicates the latitude coordinates at the last GPS signal reveived
Audio Data			
Left Rear Audio Output	—	Active/Not Active	Indicates the status of the audio output
Right Front Audio Output	—	Active/Not Active	Indicates the status of the audio output
Left Front Audio Output	—	Active/Not Active	Indicates the status of the audio output
Right Rear Audio Output	—	Active/Not Active	Indicates the status of the audio output
Current AM Frequency	—	Varies	Indicates the current frequency the radio is set to
Current FM Frequency	—	Varies	Indicates the current frequency the radio is set to
Auxiliary Input Data			
Infotainment Control Switch, Switch 1	—	Yes/No	Indicates if the switch is pressed
Infotainment Control Switch, Switch 2	—	Yes/No	Indicates if the switch is pressed
Infotainment Control Switch, Switch 3	—	Yes/No	Indicates if the switch is pressed
Infotainment Control Switch, Switch 4	—	Yes/No	Indicates if the switch is pressed

Parameter	System State	Expected Value	Description
Infotainment Control Switch, Switch 5	—	Yes/No	Indicates if the switch is pressed
Infotainment Control Switch, Switch 6	—	Yes/No	Indicates if the switch is pressed
Infotainment Control Switch, Switch 7	—	Yes/No	Indicates if the switch is pressed
Infotainment Control Switch, Switch 8	—	Yes/No	Indicates if the switch is pressed
Infotainment Control Switch, Knob 1 Push Switch	—	Yes/No	Indicates if the switch is pressed
Infotainment Control Switch, Knob 1 Rotary Position	—	Varies	Displays the counts when the knob is turned
Infotainment Control Switch, Knob 2 Push Switch	—	Yes/No	Indicates if the switch is pressed
Infotainment Control Switch, Knob 2 Rotary Position	—	Varies	Displays the counts when the knob is turned

A11 Radio: Scan Tool Output Controls

Output Control	Description
Display Check	
Info Display Dimming	Allows control of the info display dimming
Backlight Dimming	Allows control of the backlight dimming
Rearview Camera Display	Allows the rearview camera to be turned on and off
Radio Controls	
Radio Tuner AM Frequency	Allows control of the AM tuner frequency
Radio Tuner FM Frequency	Allows control of the FM tuner frequency

A26 Heater and Air Conditioning User Interface Control - Front: Scan Tool Information

A26 Heater and Air Conditioning User Interface Control– Front Scan Tool Data Parameters

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/ Vehicle in Service Mode			
Base Model Part Number	—	Varies	The 8– Digit Base Model Part Number is the part number for the hardware without software and calibrations.
Base Model Part Number – Alpha Code	—	Varies	The scan tool displays the Base Model Alpha Code
Boot Software Number	—	Varies	The scan tool displays the 8– Digit Boot Software Part Number
Communication Channel Status – CAN	—	Varies	The scan tool displays the status of the CAN Bus
Diagnostic Data Identifier	—	Varies	The scan tool displays the 4 character alphanumeric device ID.
End Model Part Number	—	Varies	The 8– Digit End Model Part Number is the part number for the hardware of the control module with software and calibrations.
End Model Part Number – Alpha Code	—	Varies	The scan tool displays the End Model Alpha Code

Parameter	System State	Expected Value	Description
Power Mode	—	Run	The scan tool displays the current vehicle power mode.
Vehicle Identification Number (VIN)	—	Varies	The scan tool displays the learned VIN

B174W Front View Camera - Windshield: Scan Tool Information (with UGN)

Identification Information

Parameter	System State	Expected Value	Definition
Operating Conditions: Ignition ON			
Module Diagnostic Address	–	Varies	The scan tool displays the Software Module 1 Identifier
Base Model Part Number	–	Varies	The scan tool displays the Base Model Part Number
End Model Part Number	–	Varies	The scan tool displays the End Model Part Number
Date Programmed	–	Varies	The scan tool displays the Date Programmed
Adaptive Cruise Control Disengage Hisotry Data	–	–	Refer to: Driver Assistance Systems Disable History Conditions
Adaptive Cruise Control Disengage Hisotry Data	–	–	Refer to: Driver Assistance Systems Disable History Conditions
Front Impact Mitigation Disable History Data	–	–	Refer to: Driver Assistance Systems Disable History Conditions
Lane Keep Assist Disable History	–	–	Refer to: Driver Assistance Systems Disable History Conditions
Parking Assist Disable History Data	–	–	Refer to: Parking Assist Systems Disable History Conditions
Rear Impact Mitigation Disable History Data	–	–	Refer to: Driver Assistance Systems Disable History Conditions
Trailer System Induced Disable History Data	–	–	Refer to: Driver Assistance Systems Disable History Conditions
Vehicle Dynamic System Disable History Data	–	–	Refer to: Driver Assistance Systems Disable History Conditions

B174W Front View Camera - Windshield: Scan Tool Information (without UGN)

Identification Information

Parameter	System State	Expected Value	Definition
Operating Conditions: Ignition ON			
Module Diagnostic Address	–	Varies	The scan tool displays the Software Module 1 Identifier
Base Model Part Number	–	Varies	The scan tool displays the Base Model Part Number
End Model Part Number	–	Varies	The scan tool displays the End Model Part Number
Date Programmed	–	Varies	The scan tool displays the Date Programmed

Data Display

Parameter	System State	Expected Value	Definition
Operating Conditions: Ignition ON			
Frontview Camera Module Learn Mode Status	–	Learn Successful	The scan tool displays the current learn status of the B174W Frontview Camera - Windshield

Parameter	System State	Expected Value	Definition
Frontview Camera Module Learn Mode Progress	–	100%	The scan tool displays the current learn progress of the B174W Frontview Camera - Windshield as a percentage
Yaw Rate	–	Varies	The scan tool displays the yaw offset of the B174W Frontview Camera - Windshield
Traffic Sign Memory	–	Varies	The scan tool displays if traffic sign memory is Active or Off

B218L Side Obstacle Detection Control Module - Left: Scan Tool Information

Identification Information

Parameter	System State	Expected Value	Definition
Operating Conditions: Ignition ON			
Vehicle Identification Number (VIN)	–	Varies	The scan tool displays the vehicle VIN number
Last Dealer Code or Scan Tool Serial Number	–	Varies	The scan tool displays the Last Dealer Code or Scan Tool Serial Number
Date Programmed	–	Varies	The scan tool displays the Date Programmed
Diagnostic Data Identifier	–	Varies	The scan tool displays the Diagnostic Data Identifier
Manufacturer Enable Counter	–	Varies	The scan tool displays the Manufacturer Enable Counter
Module Diagnostic Address	–	Varies	The scan tool displays the Software Module 1 Identifier
Manufacturer’s Traceability Number	–	Varies	The scan tool displays the Manufacturer’s Traceability Number
Application Software Part Number 1	–	Varies	The scan tool displays the Application Software Part Number 1
Calibration Part Number 1	–	Varies	The scan tool displays the Calibration Part Number 1
End Model Part Number	–	Varies	The scan tool displays the End Model Part Number
Base Model Part Number	–	Varies	The scan tool displays the Base Model Part Number
Application Software Part Number 1 Alpha Code	–	Varies	The scan tool displays the Application Software Part Number 1 Alpha Code
Calibration Part Number 1 Alpha Code	–	Varies	The scan tool displays the Calibration Part Number 1 Alpha Code
End Model Part Number Alpha Code	–	Varies	The scan tool displays the End Model Part Number Alpha Code
Base Model Part Number Alpha Code	–	Varies	The scan tool displays the Base Model Part Number Alpha Code

B218R Side Obstacle Detection Control Module - Right: Scan Tool Information

Identification Information

Parameter	System State	Expected Value	Definition
Operating Conditions: Ignition ON			
Vehicle Identification Number (VIN)	–	Varies	The scan tool displays the vehicle VIN number
Last Dealer Code or Scan Tool Serial Number	–	Varies	The scan tool displays the Last Dealer Code or Scan Tool Serial Number
Date Programmed	–	Varies	The scan tool displays the Date Programmed

Parameter	System State	Expected Value	Definition
Diagnostic Data Identifier	–	Varies	The scan tool displays the Diagnostic Data Identifier
Manufacturer Enable Counter	–	Varies	The scan tool displays the Manufacturer Enable Counter
Module Diagnostic Address	–	Varies	The scan tool displays the Software Module 1 Identifier
Manufacturer’s Traceability Number	–	Varies	The scan tool displays the Manufacturer’s Traceability Number
Application Software Part Number 1	–	Varies	The scan tool displays the Application Software Part Number 1
Calibration Part Number 1	–	Varies	The scan tool displays the Calibration Part Number 1
End Model Part Number	–	Varies	The scan tool displays the End Model Part Number
Base Model Part Number	–	Varies	The scan tool displays the Base Model Part Number
Application Software Part Number 1 Alpha Code	–	Varies	The scan tool displays the Application Software Part Number 1 Alpha Code
Calibration Part Number 1 Alpha Code	–	Varies	The scan tool displays the Calibration Part Number 1 Alpha Code
End Model Part Number Alpha Code	–	Varies	The scan tool displays the End Model Part Number Alpha Code
Base Model Part Number Alpha Code	–	Varies	The scan tool displays the Base Model Part Number Alpha Code

B233B Forward Range Radar Sensor - Long Range: Scan Tool Information

Identification Information

Parameter	System State	Expected Value	Definition
Operating Conditions: Ignition ON			
Last Dealer Code or Scan Tool Serial Number	–	Varies	The scan tool displays the Last Dealer Code or Scan Tool Serial Number
Application Software Part Number 1	–	Varies	The scan tool displays the Application Software Part Number 1
Application Software Part Number 1 Alpha Code	–	Varies	The scan tool displays the Application Software Part Number 1 Alpha Code
Calibration Part Number 1 Alpha Code	–	Varies	The scan tool displays the Calibration Part Number 1 Alpha Code
Manufacturer’s Traceability Number	–	Varies	The scan tool displays the Manufacturer’s Traceability Number
Diagnostic Data Identifier	–	Varies	The scan tool displays the Diagnostic Data Identifier
Module Diagnostic Address	–	Varies	The scan tool displays the Software Module 1 Identifier
Base Model Part Number	–	Varies	The scan tool displays the Base Model Part Number
Vehicle Identification Number (VIN)	–	Varies	The scan tool displays the vehicle VIN number
Manufacturer Enable Counter	–	Varies	The scan tool displays the Manufacturer Enable Counter
Calibration Part Number 1	–	Varies	The scan tool displays the Calibration Part Number 1
End Model Part Number	–	Varies	The scan tool displays the End Model Part Number
Base Model Part Number Alpha Code	–	Varies	The scan tool displays the Base Model Part Number Alpha Code

Parameter	System State	Expected Value	Definition
Date Programmed	–	Varies	The scan tool displays the Date Programmed
End Model Part Number Alpha Code	–	Varies	The scan tool displays the End Model Part Number Alpha Code

Data Display

Parameter	System State	Expected Value	Definition
Operating Conditions: Ignition ON			
Learn Status	–	Complete	The scan tool displays the current learn status of the B233B Forward Range Radar Sensor – Long Range

Configuration/Reset Functions

Parameter	Definition
Operating Conditions: Ignition ON	
Long Range Radar Sensor Module Learn	The scan tool will being B233B Forward Range Radar Sensor – Long Range learn

B233LF Short Range Radar Sensor - Left Front: Scan Tool Information

Identification Information

Parameter	System State	Expected Value	Definition
Operating Conditions: Ignition ON			
Last Dealer Code or Scan Tool Serial Number	–	Varies	The scan tool displays the Last Dealer Code or Scan Tool Serial Number
Application Software Part Number 1	–	Varies	The scan tool displays the Application Software Part Number 1
Application Software Part Number 1 Alpha Code	–	Varies	The scan tool displays the Application Software Part Number 1 Alpha Code
Calibration Part Number 1 Alpha Code	–	Varies	The scan tool displays the Calibration Part Number 1 Alpha Code
Manufacturer’s Traceability Number	–	Varies	The scan tool displays the Manufacturer’s Traceability Number
Module Diagnostic Address	–	Varies	The scan tool displays the Software Module 1 Identifier
Base Model Part Number	–	Varies	The scan tool displays the Base Model Part Number
Manufacturer Enable Counter	–	Varies	The scan tool displays the Manufacturer Enable Counter
Calibration Part Number 1	–	Varies	The scan tool displays the Calibration Part Number 1
End Model Part Number	–	Varies	The scan tool displays the End Model Part Number
Base Model Part Number Alpha Code	–	Varies	The scan tool displays the Base Model Part Number Alpha Code
Date Programmed	–	Varies	The scan tool displays the Date Programmed
End Model Part Number Alpha Code	–	Varies	The scan tool displays the End Model Part Number Alpha Code
Diagnostic Data Identifier	–	Varies	The scan tool displays the Diagnostic Data Identifier
Vehicle Identification Number (VIN)	–	Varies	The scan tool displays the vehicle VIN number

B233LR Short Range Radar Sensor - Left Rear: Scan Tool Information

Identification Information

Parameter	System State	Expected Value	Definition
Operating Conditions: Ignition ON			
Last Dealer Code or Scan Tool Serial Number	–	Varies	The scan tool displays the Last Dealer Code or Scan Tool Serial Number
Application Software Part Number 1	–	Varies	The scan tool displays the Application Software Part Number 1
Application Software Part Number 1 Alpha Code	–	Varies	The scan tool displays the Application Software Part Number 1 Alpha Code
Calibration Part Number 1 Alpha Code	–	Varies	The scan tool displays the Calibration Part Number 1 Alpha Code
Manufacturer’s Traceability Number	–	Varies	The scan tool displays the Manufacturer’s Traceability Number
Module Diagnostic Address	–	Varies	The scan tool displays the Software Module 1 Identifier
Base Model Part Number	–	Varies	The scan tool displays the Base Model Part Number
Manufacturer Enable Counter	–	Varies	The scan tool displays the Manufacturer Enable Counter
Calibration Part Number 1	–	Varies	The scan tool displays the Calibration Part Number 1
End Model Part Number	–	Varies	The scan tool displays the End Model Part Number
Base Model Part Number Alpha Code	–	Varies	The scan tool displays the Base Model Part Number Alpha Code
Date Programmed	–	Varies	The scan tool displays the Date Programmed
End Model Part Number Alpha Code	–	Varies	The scan tool displays the End Model Part Number Alpha Code
Diagnostic Data Identifier	–	Varies	The scan tool displays the Diagnostic Data Identifier
Vehicle Identification Number (VIN)	–	Varies	The scan tool displays the vehicle VIN number

B233RF Short Range Radar Sensor - Right Front: Scan Tool Information

Identification Information

Parameter	System State	Expected Value	Definition
Operating Conditions: Ignition ON			
Last Dealer Code or Scan Tool Serial Number	–	Varies	The scan tool displays the Last Dealer Code or Scan Tool Serial Number
Application Software Part Number 1	–	Varies	The scan tool displays the Application Software Part Number 1
Application Software Part Number 1 Alpha Code	–	Varies	The scan tool displays the Application Software Part Number 1 Alpha Code
Calibration Part Number 1 Alpha Code	–	Varies	The scan tool displays the Calibration Part Number 1 Alpha Code
Manufacturer’s Traceability Number	–	Varies	The scan tool displays the Manufacturer’s Traceability Number
Module Diagnostic Address	–	Varies	The scan tool displays the Software Module 1 Identifier
Base Model Part Number	–	Varies	The scan tool displays the Base Model Part Number
Manufacturer Enable Counter	–	Varies	The scan tool displays the Manufacturer Enable Counter
Calibration Part Number 1	–	Varies	The scan tool displays the Calibration Part Number 1
End Model Part Number	–	Varies	The scan tool displays the End Model Part Number

Parameter	System State	Expected Value	Definition
Base Model Part Number Alpha Code	–	Varies	The scan tool displays the Base Model Part Number Alpha Code
Date Programmed	–	Varies	The scan tool displays the Date Programmed
End Model Part Number Alpha Code	–	Varies	The scan tool displays the End Model Part Number Alpha Code
Diagnostic Data Identifier	–	Varies	The scan tool displays the Diagnostic Data Identifier
Vehicle Identification Number (VIN)	–	Varies	The scan tool displays the vehicle VIN number

B233RR Short Range Radar Sensor - Right Rear: Scan Tool Information

Identification Information

Parameter	System State	Expected Value	Definition
Operating Conditions: Ignition ON			
Last Dealer Code or Scan Tool Serial Number	–	Varies	The scan tool displays the Last Dealer Code or Scan Tool Serial Number
Application Software Part Number 1	–	Varies	The scan tool displays the Application Software Part Number 1
Application Software Part Number 1 Alpha Code	–	Varies	The scan tool displays the Application Software Part Number 1 Alpha Code
Calibration Part Number 1 Alpha Code	–	Varies	The scan tool displays the Calibration Part Number 1 Alpha Code
Manufacturer’s Traceability Number	–	Varies	The scan tool displays the Manufacturer’s Traceability Number
Module Diagnostic Address	–	Varies	The scan tool displays the Software Module 1 Identifier
Base Model Part Number	–	Varies	The scan tool displays the Base Model Part Number
Manufacturer Enable Counter	–	Varies	The scan tool displays the Manufacturer Enable Counter
Calibration Part Number 1	–	Varies	The scan tool displays the Calibration Part Number 1
End Model Part Number	–	Varies	The scan tool displays the End Model Part Number
Base Model Part Number Alpha Code	–	Varies	The scan tool displays the Base Model Part Number Alpha Code
Date Programmed	–	Varies	The scan tool displays the Date Programmed
End Model Part Number Alpha Code	–	Varies	The scan tool displays the End Model Part Number Alpha Code
Diagnostic Data Identifier	–	Varies	The scan tool displays the Diagnostic Data Identifier
Vehicle Identification Number (VIN)	–	Varies	The scan tool displays the vehicle VIN number

B233SL Short Range Radar Rear Side Sensor - Left: Scan Tool Information

Identification Information

Parameter	System State	Expected Value	Definition
Operating Conditions: Ignition ON			
Last Dealer Code or Scan Tool Serial Number	–	Varies	The scan tool displays the Last Dealer Code or Scan Tool Serial Number
Application Software Part Number 1	–	Varies	The scan tool displays the Application Software Part Number 1
Application Software Part Number 1 Alpha Code	–	Varies	The scan tool displays the Application Software Part Number 1 Alpha Code
Calibration Part Number 1 Alpha Code	–	Varies	The scan tool displays the Calibration Part Number 1 Alpha Code
Manufacturer’s Traceability Number	–	Varies	The scan tool displays the Manufacturer’s Traceability Number
Module Diagnostic Address	–	Varies	The scan tool displays the Software Module 1 Identifier
Base Model Part Number	–	Varies	The scan tool displays the Base Model Part Number
Manufacturer Enable Counter	–	Varies	The scan tool displays the Manufacturer Enable Counter
Calibration Part Number 1	–	Varies	The scan tool displays the Calibration Part Number 1
End Model Part Number	–	Varies	The scan tool displays the End Model Part Number
Base Model Part Number Alpha Code	–	Varies	The scan tool displays the Base Model Part Number Alpha Code
Date Programmed	–	Varies	The scan tool displays the Date Programmed
End Model Part Number Alpha Code	–	Varies	The scan tool displays the End Model Part Number Alpha Code
Diagnostic Data Identifier	–	Varies	The scan tool displays the Diagnostic Data Identifier
Vehicle Identification Number (VIN)	–	Varies	The scan tool displays the vehicle VIN number

B233SR Short Range Radar Rear Side Sensor - Right: Scan Tool Information

Identification Information

Parameter	System State	Expected Value	Definition
Operating Conditions: Ignition ON			
Last Dealer Code or Scan Tool Serial Number	–	Varies	The scan tool displays the Last Dealer Code or Scan Tool Serial Number
Application Software Part Number 1	–	Varies	The scan tool displays the Application Software Part Number 1
Application Software Part Number 1 Alpha Code	–	Varies	The scan tool displays the Application Software Part Number 1 Alpha Code
Calibration Part Number 1 Alpha Code	–	Varies	The scan tool displays the Calibration Part Number 1 Alpha Code
Manufacturer’s Traceability Number	–	Varies	The scan tool displays the Manufacturer’s Traceability Number
Module Diagnostic Address	–	Varies	The scan tool displays the Software Module 1 Identifier
Base Model Part Number	–	Varies	The scan tool displays the Base Model Part Number
Manufacturer Enable Counter	–	Varies	The scan tool displays the Manufacturer Enable Counter
Calibration Part Number 1	–	Varies	The scan tool displays the Calibration Part Number 1

Parameter	System State	Expected Value	Definition
End Model Part Number	–	Varies	The scan tool displays the End Model Part Number
Base Model Part Number Alpha Code	–	Varies	The scan tool displays the Base Model Part Number Alpha Code
Date Programmed	–	Varies	The scan tool displays the Date Programmed
End Model Part Number Alpha Code	–	Varies	The scan tool displays the End Model Part Number Alpha Code
Diagnostic Data Identifier	–	Varies	The scan tool displays the Diagnostic Data Identifier
Vehicle Identification Number (VIN)	–	Varies	The scan tool displays the vehicle VIN number

K4 Assist Step Control Module: Scan Tool Information

Scan Tool Data Parameters

Parameter	Expected Value	Description
Operating Conditions: Ignition ON		
Manual Deploy Status	Normal	Scan tool displays Unknown, Off, Extend to Passenger Position - Left and Right, or Extend to Cargo Position - Left and Right.
Left Assist Step Motor Current	0 A	Scan tool displays the current amperage of the left assist step motor.
Left Assist Step Position	Retracted Position - Left	Scan tool displays Retracted Position - Left, Extend to Passenger Position - Left, Extend to Cargo Position - Left, or Extend to Service Position - Left.
Left Assist Step Position	Count Value	Scan tool displays the current left step position count.
Left Assist Step System Status	Retracted Position - Left	Scan tool displays Retracted Position - Left, Extend to Passenger Position - Left, Extend to Cargo Position - Left, or Extend to Service Position - Left.
Left Assist Step Learn Status	Yes	Scan tool displays Learned if the left step learn has been completed.
Left Front Door Ajar Switch	Inactive	Scan tool displays Inactive if the door is shut, and Active if the door is open.
Left Rear Door Ajar Switch	Inactive	Scan tool displays Inactive if the door is shut, and Active if the door is open.
Right Assist Step Motor Current	0 A	Scan tool displays the current amperage of the right assist step motor.
Right Assist Step Position	Retracted Position - Right	Scan tool displays Retracted Position - Right, Extend to Passenger Position - Right, Extend to Cargo Position - Right, or Extend to Service Position - Right.
Right Assist Step Position	Count Value	Scan tool displays the current right step position count.
Right Assist Step System Status	Retracted Position - Right	Scan tool displays Retracted Position - Right, Extend to Passenger Position - Right, Extend to Cargo Position - Right, or Extend to Service Position - Right.
Right Assist Step Learn Status	Yes	Scan tool displays Learned if the right step learn has been completed.
Right Front Door Ajar Switch	Inactive	Scan tool displays Inactive if the door is shut, and Active if the door is open.
Right Rear Door Ajar Switch	Inactive	Scan tool displays Inactive if the door is shut, and Active if the door is open.
Headlamp Switch Signal	Off	Scan tool displays Unknown, Off, Auto, Park Lamps, Headlamp.
Exterior Lighting	Inactive	Scan tool displays Inactive or Active

Parameter	Expected Value	Description
System Power Mode	Varies	Scan tool displays Off, Accessory, Run, Start Request, or Propulsion Active.
Battery Voltage	Varies	Current voltage of battery.

Scan Tool Output Controls

Output Control	Description
Assist Step Courtesy Lamp	Turns the assist step courtesy lamp ON and OFF.
Extend to Passenger Position - Right	Commands the right assist step to the deployed position.
Extend to Service Position - Right	Commands the right assist step to the fully extended service position.
Retracted Position - Right	Commands the right assist step to the retracted position.
Extend to Passenger Position - Left	Commands the Left assist step to the deployed position.
Extend to Service Position - Left	Commands the Left assist step to the fully extended service position.
Retracted Position - Left	Commands the Left assist step to the retracted position.

K19 Suspension Control Module: Scan Tool Information

The suspension control module scan tool data parameters list contains all suspension control related parameters that are available on the scan tool. The list is arranged in alphabetical order. A given parameter may appear in any one of the data lists.

Suspension Control Module Scan Tool Data Parameters

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON			
Battery Voltage	—	11–14 V	The scan tool displays V. This is the current battery voltage.
Left Front Damper Actuator Command	—	varies	The scan tool displays mA. This is the current applied to the left front shock absorber actuator.
Left Front Suspension Position Sensor	—	.25–.4.75 V	The scan tool displays V. This is the signal from the left front suspension position sensor.
Right Front Damper Actuator Command	—	varies	The scan tool displays mA. This is the current applied to the right front shock absorber actuator.
Right Front Suspension Position Sensor	—	.25–.4.75 V	The scan tool displays V. This is the signal from the Right front suspension position sensor.
Left Rear Damper Actuator Command	—	varies	The scan tool displays mA. This is the current from the left rear shock absorber actuator.
Left Rear Suspension Position Sensor	—	.25–.4.75 V	The scan tool displays V. This is the signal from the left rear suspension position sensor.
Right Rear Damper Actuator Command	—	varies	The scan tool displays mA. This is the current from the right rear shock absorber actuator.
Right Rear Suspension Position Sensor	—	.25–.4.75 V	The scan tool displays V. This is the signal from the right rear suspension position sensor.
Suspension System Mode	—	varies	The scan tool displays Comfort, Sport, Normal, or Hard depending on the selected mode.
Suspension Position Sensor 5 V Reference	V	4.8–5.2 V	The scan tool displays V. This is the suspension position sensor supply voltage.

Suspension Control Module Scan Tool Output Controls

Output Control	Description
Left Front Damper Actuator	Commands the current applied to the left front shock absorber actuator Increase or Decrease.
Left Rear Damper Actuator	Commands the current applied to the left rear shock absorber actuator Increase or Decrease.
Right Front Damper Actuator	Commands the current applied to the right front shock absorber actuator Increase or Decrease.
Right Rear Damper Actuator	Commands the current applied to the right rear shock absorber actuator Increase or Decrease.

K219 Lighting Control Module: Scan Tool Information

Lighting Control Module — Data Display — Front Exterior Lighting Data

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed			
Left Daytime Running Lamps	—	Off	The scan tool displays On or Off.
Right Daytime Running Lamps	—	Off	The scan tool displays On or Off.
Left Low Beam Command	—	Inactive	The scan tool displays Active or Inactive.
Right Low Beam Command	—	Inactive	The scan tool displays Active or Inactive.
Left Front Turn Signal Lamp Command	—	Off	The scan tool displays On or Off.
Right Front Turn Signal Lamp Command	—	Off	The scan tool displays On or Off.
Left Park Lamps Command	—	Off	The scan tool displays On or Off.
Right Park Lamps Command	—	Off	The scan tool displays On or Off.

Lighting Control Module — Data Display — Rear Exterior Lighting Data

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed			
Left Turn Signal Lamps	—	Off	The scan tool displays On or Off.
Right Turn Signal Lamps	—	Off	The scan tool displays On or Off.
Left Tail Lamp Driver	—	Off	The scan tool displays On or Off.
Right Tail Lamp Driver	—	Off	The scan tool displays On or Off.
Center High Mounted Stop Lamp Driver	—	Off	The scan tool displays On or Off.
License Plate Lamp Circuit Driver	—	Off	The scan tool displays On or Off.

Lighting Control Module — Data Display — Side Exterior Lighting Data

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed			
Left Side Marker Lamp Command	—	Off	The scan tool displays On or Off.
Right Side Marker Lamp Command	—	Off	The scan tool displays On or Off.
Left Turn Signal Repeater Lamp Command	—	Off	The scan tool displays On or Off.
Right Turn Signal Repeater Lamp Command	—	Off	The scan tool displays On or Off.

Lighting Control Module — Data Display — Indicator Data

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed			
Daytime Running Lamps Indicator	—	Off	The scan tool displays On or Off.
Front Park Lamps Indicator	—	Off	The scan tool displays On or Off.
Headlamp High Beam Indicator	—	Inactive	The scan tool displays Active or Inactive.
Left Turn Signal Indicator	—	Off	The scan tool displays On or Off.
Right Turn Signal Indicator	—	Off	The scan tool displays On or Off.
Left Front Turn Signal Lamp Malfunction Indicator	—	Off	The scan tool displays On or Off.
Left Rear Turn Signal Lamp Malfunction Indicator	—	Off	The scan tool displays On or Off.
Right Front Turn Signal Lamp Malfunction Indicator	—	Off	The scan tool displays On or Off.
Right Rear Turn Signal Lamp Malfunction Indicator	—	Off	The scan tool displays On or Off.

Lighting Control Module — Exterior Lighting — Scan Tool Output Controls

Output Control	Description
Center High Mounted Stop Lamp	This output control is used to activate the center high mounted stop lamp when selecting On. The center high mounted stop lamp should illuminate until commanded Off.
Left Stop Lamp	This output control is used to activate the left stop lamp when selecting On. The left stop lamp should illuminate until commanded Off.
Right Stop Lamp	This output control is used to activate the right stop lamp when selecting On. The right stop lamp should illuminate until commanded Off.
License Plate Lamps	This output control is used to activate the license plate lamps when selecting On. The license plate lamps should illuminate until commanded Off.
Backup Lamps	This output control is used to activate the backup lamps when selecting On. The backup lamps should illuminate until commanded Off.
Left Front Park Lamp Status	This output control is used to activate the left park lamps when selecting On. The left park lamps should illuminate until commanded Off.
Right Front Park Lamp Status	This output control is used to activate the right park lamps when selecting On. The right park lamps should illuminate until commanded Off.
Left Daytime Running Lamps	This output control is used to activate the left daytime running lamps when selecting On. The left daytime running lamps should illuminate until commanded Off.

Output Control	Description
Right Daytime Running Lamps	This output control is used to activate the right daytime running lamps when selecting On. The right daytime running lamps should illuminate until commanded Off.
Left Auxiliary Daytime Running Lamps	This output control is used to activate the left auxiliary daytime running lamps when selecting On. The left auxiliary daytime running lamps should illuminate until commanded Off.
Right Auxiliary Daytime Running Lamps	This output control is used to activate the right auxiliary daytime running lamps when selecting On. The right auxiliary daytime running lamps should illuminate until commanded Off.
Left Front Auxiliary Park Lamp Command	This output control is used to activate the left front auxiliary park lamp when selecting On. The left front auxiliary park lamp should illuminate until commanded Off.
Right Front Auxiliary Park Lamp Command	This output control is used to activate the right front auxiliary park lamp when selecting On. The right front auxiliary park lamp should illuminate until commanded Off.
Left Front Turn Signal Lamp Command	This output control is used to activate the left front turn signal lamp when selecting On. The left front turn signal lamp should illuminate until commanded Off.
Right Front Turn Signal Lamp Command	This output control is used to activate the right front turn signal lamp when selecting On. The right front turn signal lamp should illuminate until commanded Off.
Left Turn Signal Repeater Lamp Command	This output control is used to activate the left turn signal repeater lamp when selecting On. The left turn signal repeater lamp should illuminate until commanded Off.
Right Turn Signal Repeater Lamp Command	This output control is used to activate the right turn signal repeater lamp when selecting On. The right turn signal repeater lamp should illuminate until commanded Off.
Left Rear Turn Signal Lamp	This output control is used to activate the left rear turn signal lamp when selecting On. The left rear turn signal lamp should illuminate until commanded Off.
Right Rear Turn Signal Lamp	This output control is used to activate the right rear turn signal lamp when selecting On. The right rear turn signal lamp should illuminate until commanded Off.

K29FV Front Seat Heater Vent Control Module: Scan Tool Information

Front Seat Heating Control Module Scan Tool Data Parameters

Parameter	Expected Values	Description
Operating Conditions: Engine Running		
Seat Heating/Venting/Cooling Load Shed	Inactive / Active	When this parameter is active it indicates the Heating/Venting/ System is shutdown to reduce strain on the vehicle electrical system which is experiencing too high of a current draw
Left Front Seat Heating/Venting/ Cooling Operating Conditions	Remote Vehicle Start / Automatic / Manual / Autostop Request	The functional behavior of heated seats is dependent on its determined operational state. This parameter indicates the defined state which it is operating in.
Left Front Seat Heating/Venting/ Cooling Switch	Inactive / Active	The Heated/Vented switch assembly contains a number of switches affecting the operation of the Heated Vented Seats. This parameter indicates when any one of the switches is active and is persistent as long as the switch is pressed.
Left Front Seat Heating/Venting/ Cooling Requested Mode	Off / Seat Back Heating / Seat Back and Cushion Heating / Seat Venting/ Cooling	This parameter indicates the type of Heated/Vented Seat function being requested , as determined by the BCM tracking various inputs
Left Front Seat Heating/Venting/ Cooling Requested Level	Off / High / Medium / Low	This parameter indicates the type of Heated/Vented Seat level of intensity being requested as determined by the BCM tracking various inputs
Left Front Seat Heating/Venting/ Cooling Mode	Off / Seat Back Heating / Seat Back and Cushion Heating / Seat Venting/ Cooling	This parameter indicates the type of Heated/Vented Seat function being applied as commanded by the BCM software based on a number of factors
Left Front Seat Heating/Venting/ Cooling Level	Off / High / Medium / Low	This parameter indicates the type of Heated/Vented Seat level of intensity being applied as commanded by the BCM software based on a number of factors.

Parameter	Expected Values	Description
Right Front Seat Heating/Venting/ Cooling Operating Conditions	Remote Vehicle Start / Automatic / Manual / Autostop Request	The functional behavior of heated seats is dependent on its determined operational state. This parameter indicates the defined state which it is operating in.
Right Front Seat Heating/Venting/ Cooling Switch	Inactive / Active	The Heated/Vented switch assembly contains a number of switches affecting the operation of the Heated Vented Seats. This parameter indicates when any one of the switches is active and is persistent as long as the switch is pressed.
Right Front Seat Heating/Venting/ Cooling Requested Mode	Off / Seat Back Heating / Seat Back and Cushion Heating / Seat Venting/ Cooling	This parameter indicates the type of Heated/Vented Seat function being requested, as determined by the BCM tracking various inputs
Right Front Seat Heating/Venting/ Cooling Requested Level	Off / High / Medium / Low	This parameter indicates the type of Heated/Vented Seat level of intensity being requested as determined by the BCM tracking various inputs
Right Front Seat Heating/Venting/ Cooling Mode	Off / Seat Back Heating / Seat Back and Cushion Heating / Seat Venting/ Cooling	This parameter indicates the type of Heated/Vented Seat function being applied as commanded by the BCM software based on a number of factors
Right Front Seat Heating/Venting/ Cooling Level	Off / High / Medium / Low	This parameter indicates the type of Heated/Vented Seat level of intensity being applied as commanded by the BCM software based on a number of factors.

Front Seat Heating Control Module Scan Tool Output Controls

Control Functions	Description
Operating Conditions: Engine Running	
Left Front Seat Heating	This output control is used to command the left front seat heater elements On.
Right Front Seat Heating	This output control is used to command the right front seat heater elements On.
Left Front Seat Blower Command	This output control is used to command the left front seat blower On.
Right Front Seat Blower Command	This output control is used to command the right front seat blower On.

K36 Restraints Control Module: Scan Tool Information

Note: Some parameters and values in the table below may not apply to every vehicle.

Restraints Control Module Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
2nd Row Left Seat Belt Reminder Sensor Pad Enable Status	Disabled/Enabled	The scan tool displays if the left rear seat belt reminder sensor pad is enabled to the RCM.
2nd Row Left Seat Belt Reminder Sensor Pad Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the left rear seat belt reminder sensor pad has been learned by the RCM.
2nd Row Left Seat Belt Status	Buckled/Unbuckled	The scan tool displays Buckled or Unbuckled. This is the state of the left rear seat belt switch when the seat belt is buckled or unbuckled.
2nd Row Middle Seat Belt Reminder Sensor Pad Enable Status	Disabled/Enabled	The scan tool displays if the rear middle seat belt reminder sensor pad is enabled to the RCM.
2nd Row Middle Seat Belt Reminder Sensor Pad Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the rear middle seat belt reminder sensor pad has been learned by the RCM.

Parameter	Expected Value	Definition
2nd Row Middle Seat Belt Status	Buckled/Unbuckled	The scan tool displays Buckled or Unbuckled. This is the state of the middle rear seat belt switch when the seat belt is buckled or unbuckled.
2nd Row Middle Seat Belt Reminder Sensor Pad Enable Status	Disabled/Enabled	The scan tool displays if the rear right seat belt reminder sensor pad is enabled to the RCM.
2nd Row Middle Seat Belt Reminder Sensor Pad Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the rear right seat belt reminder sensor pad has been learned by the RCM.
2nd Row Right Seat Belt Status	Buckled/Unbuckled	The scan tool displays Buckled or Unbuckled. This is the state of the right rear seat belt switch when the seat belt is buckled or unbuckled.
Air Bag Malfunction Indicator	On/Off/Flashes	The scan tool will display On or Flashes if there is a problem with the SIR system. Any problems within the SIR system will illuminate the air bag indicator. The indicator will either flash or stay on.
Base Model Part Number	Varies, 8 Digit Number	The scan tool displays the part number of the RCM which is stored in non volatile memory.
Calibration Part Number	Varies, 8 Digit Number	The scan tool displays the part number of the calibration file in the RCM.
Deployment Loop 1-18 Enable Status	Enabled/Disabled	The scan tool displays Enabled or Disabled. This is the status of the air bag or pretensioner.
Deployment Loop 1-18 Learn Status	Learned/Not Learned	The scan tool displays Learned or Not learned. Learned is displayed if the RCM has defined the number loop programmed from an air bag or pretensioner.
Deployment Loop 1-18 Resistance	1.44–4.25 Ohms	The scan tool displays the resistance of the learned loop of the air bag or pretensioner when connected to the RCM.
Deployment Loop 1-18 Type	Varies	The scan tool displays the name of the air bag or pretensioner associated with the loop type 1–18.
Driver Seat Belt Reminder Indicator	On/Off	The scan tool displays On if this indicator is on. If the indicator is on it means the seat belt has not been buckled.
Driver Seat Belt Sensor Enable Status	Enabled/Disabled	The scan tool displays if the seat belt sensor in the seat belt buckle is enabled to the RCM.
Driver Seat Belt Sensor Learn Status	Learned/Not learned	The scan tool displays Learned or Not Learned. Learned is displayed if the driver seat belt sensor has been learned by the RCM.
Driver Seat Belt Status	Buckled/Unbuckled	The scan tool displays Buckled or Unbuckled. This is the state of the driver seat belt switch when the seat belt is buckled or unbuckled.
Driver Seat Position Sensor	Rearward/Forward	The scan tool will display if the driver seat is forward or rearward of the sensor set position.
Driver Seat Position Sensor Enable Status	Enabled/Disabled	The scan tool displays if the seat position sensor is enabled to the RCM.
Driver Seat Position Sensor Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the driver seat position sensor has been learned by the RCM.
End Model Part Number	Varies, 8 Digit Number	The scan tool displays the part number of the RCM in production.
Impact Sensor 1-8 Enable Status	Enabled/Disabled	The scan tool displays Enabled or Disabled This is the status of the impact sensor.
Impact Sensor 1-8 Learn Status	Learned/Not Learned	The scan tool displays Learned or Not learned. Learned is displayed if the RCM has learned and has assigned a number to that impact sensor.
Impact Sensor 1-8 Type	Equipped/Not Equipped	The scan tool displays the name of the impact sensor associated with the type 1–8.
Restraint Control Module Module Primary Key	Hex Value	The scan tool indicates the primary key Hex value.

Parameter	Expected Value	Definition
Manufacturer's Traceability Number	Varies, 16 Digit Number	The scan tool displays the 16 digit traceability number in the RCM.
Module Setup	Incomplete/Complete	The scan tool indicates if the RCM is set up.
Passenger Air Bag Disabled Switch	On/Off	The scan tool displays Off when the customer manually turns the passenger airbag off with this switch.
Passenger Air Bag Off Indicator	On/Off	The scan tool displays Off when the passenger indicator is not illuminated. This indicator is off when the disable switch is in the off position or no one is sitting in the passenger seat.
Passenger Air Bag On Indicator	On/Off	The scan tool displays On when the passenger indicator is illuminated. This indicator is on when the disable switch is in the on position and someone is sitting in the passenger seat.
Passenger Air Bag Status	Enabled/Disabled	The scan tool displays if the passenger air bag is enabled to the RCM.
Passenger Air Bag Disable Indicator Enable Status	Enabled/Disabled	The scan tool displays if the passenger air bag disable indicator is enabled to the RCM.
Passenger Air Bag Disable Indicator Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the RCM has learned the status of the passenger air bag disable indicator.
Passenger Air Bag Disable Switch Enable Status	Enabled/Disabled	The scan tool displays if the passenger air bag disable switch is enabled to the RCM.
Passenger Air Bag Disable Switch Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the RCM has learned the status of the passenger air bag disable switch.
Passenger Air Bag Enable Indicator Enable Status	Enabled/Disabled	The scan tool displays if the passenger air bag enable indicator is enabled to the RCM.
Passenger Air Bag Enable Indicator Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the RCM has learned the status of the passenger air bag enable indicator.
Passenger Classification	00–07	The scan tool will display what type of individual is sitting in the passenger seat.
Passenger Presence Detection System Enable Status	Enabled/Disabled	The scan tool displays if the restraint occupation classification system is enabled to the RCM.
Passenger Presence Detection System Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the RCM has learned the passenger presence system.
Passenger Presence Detection System Reporting DTC(s)	Yes/No	The RCM will report if there are DTCs set in the passenger presence module.
Passenger Seat Belt Reminder Indicator	On/Off	The scan tool displays On if this indicator is on. If the indicator is on it means the seat belt has not been buckled.
Passenger Seat Belt Reminder Indicator Enable Status	Disabled/Enabled	The scan tool displays if the passenger seat belt reminder indicator is enabled to the RCM.
Passenger Seat Belt Reminder Indicator Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the passenger seat belt reminder indicator has been learned by the RCM.
Passenger Seat Belt Reminder Sensor Pad Enable Status	Disabled/Enabled	The scan tool displays if the passenger seat belt reminder sensor pad is enabled to the RCM.
Passenger Seat Belt Reminder Sensor Pad Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the passenger seat belt reminder sensor pad has been learned by the RCM.
Passenger Seat Belt Sensor Enable Status	Enabled/Disabled	The scan tool displays if the seat position sensor is enabled to the RCM.
Passenger Seat Belt Sensor Learn Status	Learned/Not learned	The scan tool displays Learned or Not Learned. Learned is displayed if the passenger seat belt sensor has been learned by the RCM.

Parameter	Expected Value	Definition
Passenger Seat Belt Status	Buckled/Unbuckled	The scan tool displays Buckled or Unbuckled. This is the state of the passenger seat belt switch when the seat belt is buckled or unbuckled.
Passenger Seat Occupancy Status	Empty Seat/Occupied	The scan tool displays Occupied if someone is sitting in the passenger seat.
Passenger Seat Position Sensor	Rearward/Forward	The scan tool will display if the passenger seat is forward or rearward of the sensor set position.
Passenger Seat Position Sensor Enable Status	Disabled/Enabled	The scan tool displays if the passenger seat position sensor pad is enabled to the RCM.
Passenger Seat Position Sensor Learn Status	Learned/Not Learned	The scan tool displays Learned or Not Learned. Learned is displayed if the passenger seat position sensor has been learned by the RCM.
Power Mode	Off/Accessory/Run/Crank Request	The scan tool will display the power mode of the vehicle.
Primary Key Status	Valid/Invalid	The scan tool displays Valid if the primary key matches what is stored to memory in the RCM.
Primary Key Status Last Ignition Cycle	Invalid/Valid	The RCM checks to see if the primary key data received is valid.
Received Primary Key	Hex Value	The scan tool displays a Hex value indicating the RCM received primary key data.
Rollover Sensor Enable Status	Disabled/Enabled	The scan tool displays if the rollover sensor is enabled to the RCM.
Rollover Sensor Learn Status	Learn/Unlearn	The scan tool displays Learned or Not Learned. Learned is displayed if the rollover sensor has been learned by the RCM.
Security Code Accepted	Yes/No	The RCM either accepts the security code or it does not. The scan tool displays Yes if the security code has been accepted by the RCM.
Security Code Lockout	Yes/No	The scan tool displays Yes if the RCM has been locked out because of the security code not being accepted.
Security Code Lockout Active Timer	Random Value	The RCM uses a timer before the security code is locked in the RCM.
Security Code Programmed	Yes/No	The scan tool displays Yes if the RCM has been programmed with the security code.
Security Code Programming Counter	Random Value	The RCM uses a counter for the value of the security code programming.
Security Code Reset Counter	Random Value	The RCM uses a counter to reset the value of the security code.
Software Part Number	Varies, 8 Digit Number	The scan tool displays the software part number in the RCM.
Vehicle Identification Number	Varies, 17 Digit Number	The VIN number of the vehicle programmed into the RCM.
VIN Programmed	Yes/No	The scan tool displays Yes if the VIN has been programmed into the RCM.
VIN Programming Counter	Random Value	The RCM uses this counter while programming the VIN.

K38 Chassis Control Module: Scan Tool Information

Chassis Control Module (CCM) Scan Tool Data Parameters for Fuel System

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine Idling at Normal Operating Temperature/Vehicle is in Park or Neutral			
Desired Fuel Pressure	—	306.8 kPa (44.5 psi)	This displays kPa (psi). This is the desired fuel pressure.
Fuel Pump Command	—	On	The scan tool displays On or Off. This is the current state of the fuel pump command.

Parameter	System State	Expected Value	Description
Fuel Pump Signal Command	—	Varies	This displays %. This is the commanded fuel pump signal measured in percentage.
Fuel Pressure Sensor	—	296.4–310.3 kPa (43–45 psi)	This displays kPa (psi). This is the current pressure at the fuel pressure sensor.
Fuel Pressure Sensor	—	2.00–3.00 Volts	This voltage can vary depending on the engine application, engine load, operating conditions and other factors. This display is in Volts. This is the fuel pressure sensor voltage.
Ignition 1 Signal	—	Varies	This displays Volts. This is the current ignition 1 signal.
LT Fuel Pump Trim	—	Varies	This displays a numeric value. This is the long term (LT) fuel pump trim.
ST Fuel Pump Trim	—	Varies	This displays a numeric value. This is the short term (ST) fuel pump trim.

Chassis Control Module (CCM) Scan Tool Output Controls for Fuel System

Output Control	Description
Fuel Pressure Control	This output control is used to control the fuel pressure.
Fuel Pump	This output control is used to command the fuel pump ON and OFF.
Fuel Pump Trim Reset	This output control is used to reset the fuel pump trim.

CCM Scan Tool Parameters for Active Grille Air Shutters (If Equipped)

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine Idling at Normal Operating Temperature / Vehicle is in Park or Neutral			
Active Grille Air Shutter Position Command (Single Shutter System)	—	Varies	This displays %. This is the commanded active grille air shutter position.
Active Grille Air Shutter Position (Single Shutter System)	—	Varies	This displays %. This is the actual active grille air shutter position.
Active Grille Air Shutter 1 Position Command (Dual Shutter System)	—	Varies	This displays %. This is the commanded active grille air shutter position.
Active Grille Air Shutter 1 Position (Dual Shutter System)	—	Varies	This displays %. This is the actual active grille air shutter position.
Active Grille Air Shutter 2 Position Command (Dual Shutter System)	—	Varies	This displays %. This is the commanded active grille air shutter position.
Active Grille Air Shutter 2 Position (Dual Shutter System)	—	Varies	This displays %. This is the actual active grille air shutter position.

CCM Scan Tool Output Controls for Active Grille Air Shutters (If Equipped)

Output Control	Description
Active Grille Air Shutter System (Single Shutter System)	This output control is used to perform the Active Grille Air Shutter Actuator test. It is used to cycle the active grille air shutter open and closed. The test result will display pass or fail based on the ability of the louvers to cycle open and closed.
Active Grille Air Shutter 1 (Dual Shutter System)	This output control is used to perform the Active Grille Air Shutter Actuator test. It is used to cycle the active grille air shutter open and closed. The test result will display pass or fail based on the ability of the louvers to cycle open and closed.
Active Grille Air Shutter 2 (Dual Shutter System)	This output control is used to perform the Active Grille Air Shutter Actuator test. It is used to cycle the active grille air shutter open and closed. The test result will display pass or fail based on the ability of the louvers to cycle open and closed.

CCM Scan Tool Parameters for Active Engine Mounts (If Equipped)

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine Idling at Normal Operating Temperature / Vehicle is in Park or Neutral			
Engine Mount Actuator Output 1	—	On/Off	The scan tool will display On/ Off. This is the engine mount actuator commanded state.
Engine Mount Actuator Output 2	—	On/Off	The scan tool will display On/ Off. This is the engine mount actuator commanded state.
Engine Mount Actuator Control Circuit 1 Status (2014 model year only)	—	Passed	The scan tool displays Passed/Short to Battery/Short to Ground/Open This is the engine mount actuator control circuit 1 condition.
Engine Mount Actuator Control Circuit 2 Status (2014 model year only)	—	Passed	The scan tool displays Passed/Short to Battery/Short to Ground/Open This is the engine mount actuator control circuit 2 condition.

CCM Scan Tool Output Controls for Active Engine Mounts (If Equipped)

Output Control	Description
Engine Mount Actuator Output 1	This output control is used to turn the engine mount actuator 1 On and Off.
Engine Mount Actuator Output 2	This output control is used to turn the engine mount actuator 2 On and Off.

CCM Scan Tool Parameters for Exhaust Flow Control Valves (If Equipped)

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine Idling at Normal Operating Temperature / Vehicle is in Park or Neutral			
Exhaust Flow Control Valve Command	—	Open/Closed	Exhaust Flow Valve Commanded State
Exhaust Flow Control Valve Command	—	%	Exhaust Flow Valve Commanded Duty Cycle (0%-100%)
Exhaust Flow Control Valve Performance Mode	—	Active/Inactive	Exhaust Flow Valve Control Status
Exhaust Flow Control Valve Rumble Mode	—	Active/Inactive	Exhaust Flow Valve Control Status
Exhaust Flow Control Valve	—	Active/Inactive	Exhaust Flow Valve Control Status

Parameter	System State	Expected Value	Description
Cylinder Deactivation Exhaust Flow Valve Command	—	Open/Closed/Disabled	Exhaust Flow Valve Commanded State
Cylinder Deactivation Exhaust Flow Control Valve	—	Active/Inactive	Exhaust Flow Valve Control Status
Cylinder Deactivation Exhaust Flow Control Valve 1 Position	—	Open range is 4 - 28 degrees Closed range is 64 - 93 degrees	Cylinder Deactivation Exhaust Flow Control Valve 1 actual position in degrees
Cylinder Deactivation Exhaust Flow Control Valve 2 Position	—	Open range is 4 - 28 degrees Closed range is 64 - 93 degrees	Cylinder Deactivation Exhaust Flow Control Valve 2 actual position in degrees

CCM Scan Tool Output Controls for Exhaust Flow Control Actuators (If Equipped)

Output Control	Description
Exhaust Flow Control Valve Command	This output control is used to cycle the exhaust flow control valve open and closed.
Cylinder Deactivation Exhaust Flow Valve Command	This output control is used to cycle the cylinder deactivation exhaust flow control valve open and closed.

CCM Scan Tool Parameters for Trailer Brake Control System (If Equipped)

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine Idling at Normal Operating Temperature / Vehicle is in Park or Neutral			
ABS Active Signal	—	OK	The scan tool displays Ok/Not Ok. The scan tool displays Ok when no problems are found with the ABS Active Signal serial data message from the electronic brake control module to the chassis control module.
Antilock Braking System	—	Inactive	The scan tool displays Active/Inactive. The scan tool displays Inactive when the ABS system is not functioning.
Automatic Brake Control Gain Request From EBCM	—	0–100%	The scan tool displays a number between 0–100%.
Automatic Brake Request From EBCM	—	No	The scan tool displays Yes/No. This is a request from the EBCM to apply the trailer brakes.
Automatic-Brake Torque	—	Nm	The scan tool displays a numerical value.
Automatic-Brake Torque Signal	—	Ok	The scan tool displays Ok/Not Ok. The scan tool displays Ok when no problems are found with the Automatic Brake Torque Signal serial data message to the chassis control module.
Automatic Braking Active Signal	—	Ok	The scan tool displays Ok/Not OK. The scan tool displays OK when no problems are found with the Automatic Braking Active Signal serial data message to the chassis control module.

Parameter	System State	Expected Value	Description
Automatic Braking Event	—	Not Detected	The scan tool displays Detected/Not Detected. This parameter represents a command to apply the trailer brakes from the adaptive cruise control system.
Brake Master Cylinder Pressure Sensor	—	Varies	The scan tool will display brake fluid pressure in the master cylinder. The scan tool will display a kPa or psi signal received from the chassis control module.
Brake Pressure Signal	—	OK	The scan tool will display Ok/Not Ok. The scan tool will display a serial data message received from the chassis control module.
Brake Request from EBCM	—	Ok	The scan tool displays Ok/Not Ok. The scan tool displays Ok when no problems are found with the Brake Request signal serial data message from the electronic brake control module to the chassis control module.
Desired Trailer Brake Control Duty Cycle	—	0–100%	The scan tool displays a number between 0–100%. This number represents a duty cycle request signal from the chassis control module to the trailer brake power module.
Deviation Between Manual Trailer Brake Apply Request Signal 1 and 2	—	Varies	The scan tools displays a percentage difference between the Apply Request Signal 2 and Redundant Request Signal 1.
Driver Initiated Brake Event	—	Not Detected	The scan tool displays Detected/Not Detected. The scan tool detects when the driver has applied the trailer brakes.
Induced Voltage by Trailer Brake Coil	—	0–20 V	The scan tool displays a voltage. This number represents the actual voltage supplied by the trailer brake power module to the trailer brakes.
Manual Trailer Brake Apply Request Signal 1	—	Varies	The scan tool displays a percentage. This represents a brake apply signal between the chassis control module and the trailer brake power module.
Manual Trailer Brake Apply Request Signal 2	—	Varies	The scan tool displays a percentage. This represents a brake apply signal between the chassis control module and the trailer brake power module.
Stop Lamp Signal	—	Not Requested	The scan tool displays Requested/Not Requested. This is the brake pedal position sensor signal from the BCM to the chassis control module.

Parameter	System State	Expected Value	Description
Trailer Brake Automatic Control State	—	Normal	The scan tool displays Normal/Active/Temporarily Inhibited/Temporarily Limited/Permanently Failed/Communication Failed/Disabled by Calibration. This represents the operational state of the chassis control module.
Trailer Brake Control Duty Cycle	—	0–100%	The scan tool displays a percentage. This is the pulse width modulated output signal from the trailer brake power module to the trailer brakes.
Trailer Brake Control Output Circuit	—	Okay	The scan tool displays Unknown/Short to Battery/Short to Ground/Okay. This represents the state of health of the output circuit from the trailer brake power module to the trailer brakes.
Trailer Brake Control Output Circuit	—	0–20 V	The scan tool displays a voltage. This represents the voltage supplied by the trailer brake power module to the trailer brakes.
Trailer Brake Power Control Module	—	De-Energized	The scan tool displays Energized/De-Energized. This represents the state of the trailer brake power module.
Trailer Brake Power Control Module Battery Voltage	—	Varies	The scan tool displays a voltage. This represents the battery voltage supplied to the trailer brake power module.
Trailer Brake Type	—	Undefined	The scan tool displays Undefined when a trailer is not connected to the vehicle. The scan tool displays Electromagnetic Brakes or Electrohydraulic Brakes when a trailer is connected to the vehicle. The type displayed is based on what is detected by the chassis control module.
Trailer Brake User Gain	—	Varies	The scan tool displays percent of full gain setting. The scan tool displays 0–100%. Each full gain setting represents an increment of approximately 10 percent of full gain setting. Approximately 40% will be indicated with a gain setting of 4.0, 65% will be indicated with a gain setting of 6.5, etc.
Trailer Brake User Gain Switch	—	Varies	The scan tool displays percent of full gain setting. The scan tool displays 0–100%. Each full gain setting represents an increment of approximately 10 percent of full gain setting. Approximately 40% will be indicated with a gain setting of 4.0, 65% will be indicated with a gain setting of 6.5, etc.

Parameter	System State	Expected Value	Description
Vehicle Speed	—	Varies	The scan tool displays 0–327 km/h (0–204 mph). The scan tool displays 0 km/h (0 mph) when the vehicle is not moving. This is the vehicle speed serial data message from the ECM.
Vehicle Stability Enhancement System Signal	—	Ok	The scan tool displays Ok/Not Ok. The scan tool displays Ok when no problems are found with the Vehicle Stability Enhancement System signal to the chassis control module.
Wheel Speed Signal	—	Ok	The scan tool displays Ok/Not Ok. The scan tool displays Ok when no problems are found with the Wheel Speed signal from the EBCM to the chassis control module.

Chassis Control Module (CCM) Scan Tool Output Controls for Trailer Brake Control System (If Equipped)

Output Control	Description
Trailer Brake Control Signal	This output control is used to turn the trailer brake power control module on and off.
Trailer Brake Duty Cycle	This output control is used to control the trailer brake apply signal from trailer brake power control module.

CCM Scan Tool Parameters for Vehicle Level Control (If Equipped)

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON			
Left Rear Vehicle Level Position Sensor	—	.25–4.75 Volts	This displays Volts. This is the level position sensor voltage.
Right Rear Vehicle Level Position Sensor	—	.25–4.75 Volts	This displays Volts. This is the level position sensor voltage.
Vehicle Level Control Compressor Over Temperature	—	No	This displays Yes or No. This will display Yes if the compressor is overheated.
Excessive Compressor Activity	—	No	This displays Yes or No. This will display Yes if the compressor activity is excessive.
Vehicle Level Control Status	—	Normal	This displays Normal/Uneven Surface or Hoisted/ Overloaded/Failed.
Vehicle Level Control Compressor	—	Varies	This displays On or Off. This will display if the compressor is on or off.
Vehicle Level Control Exhaust Valve	—	Varies	This displays Open or Closed. This will display if the exhaust valve is open or closed.
Vehicle Level Control Pressure Sensor	—	.4–4.8 Volts	This displays Volts. This is the level control pressure sensor voltage.
Vehicle Leveling Sensors Supply Voltage	—	4.9–5.1 Volts	This displays Volts. This is the leveling sensors supply voltage.

Parameter	System State	Expected Value	Description
Vehicle Level Control Pressure Sensor Supply Voltage	—	4.9–5.1 Volts	This displays Volts. This is the level control pressure sensor supply voltage.
Vehicle Level Trim Height Status	—	Learned/Not Learned	This displays if the level trim height status

CCM Scan Tool Output Controls for Vehicle Level Control (If Equipped)

Output Control	Description
Suspension Position Sensor Trim Height	This output control is used to learn the trim height.
Vehicle Level Control Compressor Relay	This output control is used to command the compressor ON and OFF.
Vehicle Level Control Exhaust Valve	This output control is used to command the exhaust valve ON and OFF.

CCM Scan Tool Parameters for Transmission Cooling Fan (If Equipped)

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine Idling at Normal Operating Temperature / Vehicle is in Park or Neutral			
Transmission Cooling Fan Circuit High Voltage Test Status	—	OK	Malfunction/Not Run/OK
Transmission Cooling Fan Circuit Open Test Status	—	OK	Malfunction/Not Run/OK
Transmission Cooling Fan Circuit Low Voltage Status	—	OK	Malfunction/Not Run/OK
Transmission Cooling Fan Command	—	Yes/No	The scan tool displays Yes/No. This shows if the transmission cooling fan is being commanded ON.
Transmission Cooling Fan Duty Cycle	—	0 – 100%	The scan tool displays a percentage. This is the transmission cooling fan ON duty cycle.

CCM Scan Tool Output Controls for Transmission Cooling Fan (If Equipped)

Output Control	Description
Transmission Cooling Fan Duty Cycle	This output control is used to control the transmission cooling fan.

K40D Driver Seat Adjuster Memory Module: Scan Tool Information

Seat Position Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Driver Seat Back Switch	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat recline switch is pressed, the scan tool displays the direction for which the switch is pressed.
Driver Seat Back Direction Command	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat recline switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat recline motor.

Parameter	Expected Value	Definition
Driver Seat Back Position	Varies	The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat back is in the forward position, while low count values indicate that the seat back is in the rearward position.
Driver Seat Cushion Front Vertical Direction Command	Inactive	The scan tool displays Inactive, Up or Down. When the seat front vertical switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat front vertical motor.
Driver Seat Cushion Front Vertical Position	Varies	The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat front vertical is in the up position, while low count values indicate that the seat front vertical is in the down position.
Driver Seat Cushion Front Vertical Switch	Inactive	The scan tool displays Inactive, Up or Down. When the seat front vertical switch is pressed, the scan tool should display the direction for which the switch is pressed.
Driver Seat Cushion Rear Vertical Direction Command	Inactive	The scan tool displays Inactive, Up or Down. When the seat rear vertical switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat rear vertical motor.
Driver Seat Cushion Rear Vertical Position	Varies	The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat rear vertical is in the up position, while low count values indicate that the seat rear vertical is in the down position.
Driver Seat Cushion Rear Vertical Switch	Inactive	The scan tool displays Inactive, Up or Down. When the seat rear vertical switch is pressed, the scan tool should display the direction for which the switch is pressed.
Driver Seat Horizontal Direction Command	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat horizontal switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat horizontal motor.
Driver Seat Horizontal Position	Varies	The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat horizontal position is forward, while low count values indicate that the seat horizontal position is rearward.
Driver Seat Horizontal Switch	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat horizontal switch is pressed, the scan tool should display the direction for which the switch is pressed.
Driver Seat Lumbar Support Horizontal Switch	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat lumbar horizontal switch is pressed, the scan tool should display the direction for which the switch is pressed.
Driver Seat Lumbar Support Horizontal Direction Command	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat lumbar horizontal switch is pressed, the scan tool displays the direction the memory control module is commanding the seat lumbar horizontal motor.
Lumbar Support Horizontal Position	Varies	The module stores the pressure information for lumbar position.
Driver Seat Lumbar Support Vertical Switch	Inactive	The scan tool displays Inactive, Up, or Down. When the seat lumbar vertical switch is pressed, the scan tool should display the direction for which the switch is pressed.
Driver Seat Lumbar Support Vertical Direction Command	Inactive	The scan tool displays Inactive, Up, or Down. When the seat lumbar vertical switch is pressed, the scan tool displays the direction the memory control module is commanding the seat lumbar vertical motor.
Driver Seat Memory Recall Switches	Inactive	The scan tool displays Inactive, Memory 1, Memory 2, or Exit. When a memory function switch is pressed, the scan tool should momentarily display the function selected.

Parameter	Expected Value	Definition
Driver Seat Memory Set Switch	Inactive	The scan tool displays Inactive/Active. When the memory SET switch is pressed, the scan tool should display Active.
Driver Seat Back Side Bolster Direction Command	Inactive	The scan tool displays Inactive, Inflate, or Deflate. When the seat back side bolster switch is pressed, the scan tool displays the function the memory control module is commanding the seat lumbar/bolster pump.
Driver Seat Back Side Bolster Switch	Inactive	The scan tool displays Inactive, Inflate, or Deflate. When the seat back side bolster switch is pressed, the scan tool should display the function for which the switch is pressed.
Driver Seat Cushion Side Bolster Direction Command	Inactive	The scan tool displays Inactive, Inflate, or Deflate. When the seat back side bolster switch is pressed, the scan tool displays the function the memory control module is commanding the seat lumbar/bolster pump.
Driver Seat Cushion Side Bolster Switch	Inactive	The scan tool displays Inactive, Inflate, or Deflate. When the seat back side bolster switch is pressed, the scan tool should display the function for which the switch is pressed.
Seat Massage Switch	Inactive	The scan tool displays Inactive/Active. When the seat massage switch s pressed, the scan tool should display Active.

Mirror Memory Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Mirror Select Switch	None	The scan tool displays None, Driver Door, or Passenger Door. The scan tool displays the current state of the mirror select switch.
Mirror Direction Switch	Inactive	The scan tool displays Inactive/Up/Down/Left/Right/Folding/Extending. The scan tool displays the current state of the power mirror switch as pressed.
Driver Mirror Direction Command	Inactive	The scan tool displays Inactive/Up/Down/Left/Right. When the power mirror switch is being used or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the driver mirror motors.
Driver Mirror Vertical Position	Varies	The scan tool displays 0–5 V. The voltage displayed represents the position of the driver vertical motor. High voltage values indicate the mirror position is up, while low count values indicate the mirror position is down.
Driver Mirror Horizontal Position	Varies	The scan tool displays 0–5 V. The voltage displayed represents the position of the driver horizontal motor. High voltage values indicate the mirror position is to the right or in, while low count values indicate the mirror position is to the left or out.
Passenger Mirror Direction Command	Inactive	The scan tool displays Inactive/Up/Down/Left/Right. When the power mirror switch is being used or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the passenger mirror motors.
Passenger Mirror Vertical Position	Varies	The scan tool displays 0–5 V. The voltage displayed represents the position of the passenger vertical motor. High voltage values indicate the mirror position is up, while low count values indicate the mirror position is down.
Passenger Mirror Horizontal Position	Varies	The scan tool displays 0–5 V. The voltage displayed represents the position of the passenger horizontal motor. High voltage values indicate the mirror position is to the right or in, while low count values indicate the mirror position is to the left or out.

Steering Column Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Steering Column Direction Switch	Varies	The scan tool displays Inactive, Forward, Rearward, Up, or Down. When the steering column switch is pressed, the scan tool should display the direction for which the switch is pressed.
Steering Column Direction Command	Varies	The scan tool displays Inactive, Forward, Rearward, Up, or Down. When the module is commanding movement of the column, the scan tool should display the direction the module is commanding the column to move in.
Steering Column Vertical Position	Varies	The scan tool displays 0–5 V. The voltage displayed is an input to the seat memory control module from the steering column vertical position sensor. Higher voltage readings indicates the steering wheel position is up while lower voltage readings indicate the steering wheel position is down.
Steering Column Horizontal Position	Off	The scan tool displays 0–5 V. The voltage displayed is an input to the seat memory control module from the steering column vertical position sensor. Higher voltage readings indicates the steering wheel position is forward toward the front of the vehicle or away from the driver while lower voltage readings indicate the steering wheel position is rearward toward the driver.

Seat Memory Scan Tool Control Functions

Control Functions	Description
Driver Seat Back Horizontal Movement	This output control is used to command the driver seat back recline position Forward and Rearward.
Driver Seat Cushion Front Vertical Movement	This output control is used to command the driver seat cushion front vertical position Up and Down.
Driver Seat Cushion Rear Vertical Movement	This output control is used to command the driver seat cushion rear vertical position Up and Down.
Driver Seat Horizontal Movement	This output control is used to command the driver seat horizontal position Forward and Rearward.
Driver Seat Back Side Bolster Movement	This output control is used to command the driver seat back side bolster support to Inflate or Deflate.
Driver Seat Lumbar Support Horizontal Movement	This output control is used to command the driver seat lumbar horizontal position Forward and Rearward.
Driver Seat Lumbar Support Vertical Movement	This output control is used to command the lumbar vertical position Up and Down.

Mirror Memory Scan Tool Control Functions

Control Functions	Description
Driver Mirror Fold	This output control is used to command the driver mirror to fold and unfold.
Driver Mirror Movement	This output control is used to command the driver mirror up and down or left and right.
Passenger Mirror Fold	This output control is used to command the passenger mirror to fold and unfold.
Passenger Mirror Movement	This output control is used to command the passenger mirror up and down or left and right.

Adjustable Steering Column Scan Tool Control Functions

Control Functions	Description
Steering Column Tilt Up Command	This output control is used to command the steering column to the up position.
Steering Column Tilt Down Command	This output control is used to command the steering column to the down position.
Steering Column Telescope Forward Command	This output control is used to command the steering column to the forward position.
Steering Column Telescope Rearward Command	This output control is used to command the steering column to the rearward position.

Seat Cushion Haptic Motors Scan Tool Control Functions

Control Functions	Description
Driver Seat Cushion Left Rear Haptic Movement	This output control is used to Enable and Disable the driver seat cushion left rear haptic motor function.
Driver Seat Cushion Right Rear Haptic Movement	This output control is used to Enable and Disable the driver seat cushion right rear haptic motor function.

K40P Passenger Seat Adjuster Memory Module: Scan Tool Information

Seat Memory Control Module Scan Tool Data Display Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Passenger Seat Back Switch	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat recline switch is pressed, the scan tool displays the direction for which the switch is pressed.
Passenger Seat Back Direction Command	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat recline switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat recline motor.
Passenger Seat Back Position	Varies	The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat back is in the forward position, while low count values indicate that the seat back is in the rearward position.
Passenger Seat Cushion Front Vertical Direction Command	Inactive	The scan tool displays Inactive, Up or Down. When the seat front vertical switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat front vertical motor.
Passenger Seat Cushion Front Vertical Position	Varies	The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat front vertical is in the up position, while low count values indicate that the seat front vertical is in the down position.
Passenger Seat Cushion Front Vertical Switch	Inactive	The scan tool displays Inactive, Up or Down. When the seat front vertical switch is pressed, the scan tool will display the direction for which the switch is pressed.
Passenger Seat Cushion Rear Vertical Direction Command	Inactive	The scan tool displays Inactive, Up or Down. When the seat rear vertical switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat rear vertical motor.

Parameter	Expected Value	Definition
Passenger Seat Cushion Rear Vertical Position	Varies	The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat rear vertical is in the up position, while low count values indicate that the seat rear vertical is in the down position.
Passenger Seat Cushion Rear Vertical Switch	Inactive	The scan tool displays Inactive, Up or Down. When the seat rear vertical switch is pressed, the scan tool will display the direction for which the switch is pressed.
Passenger Seat Horizontal Direction Command	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat horizontal switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat horizontal motor.
Passenger Seat Horizontal Position	Varies	The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat horizontal position is forward, while low count values indicate that the seat horizontal position is rearward.
Passenger Seat Horizontal Switch	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat horizontal switch is pressed, the scan tool will display the direction for which the switch is pressed.
Passenger Seat Lumbar Support Horizontal Switch	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat lumbar horizontal switch is pressed, the scan tool will display the direction for which the switch is pressed.
Passenger Seat Lumbar Support Horizontal Direction Command	Inactive	The scan tool displays Inactive, Forward, or Rearward. When the seat lumbar horizontal switch is pressed, the scan tool displays the direction the memory control module is commanding the seat lumbar horizontal motor.
Passenger Seat Lumbar Support Horizontal Position	Varies	
Passenger Seat Lumbar Support Vertical Switch	Inactive	The scan tool displays Inactive, Up, or Down. When the seat lumbar vertical switch is pressed, the scan tool will display the direction for which the switch is pressed.
Passenger Seat Lumbar Support Vertical Direction Command	Inactive	The scan tool displays Inactive, Up, or Down. When the seat lumbar vertical switch is pressed, the scan tool displays the direction the memory control module is commanding the seat lumbar vertical motor.
Passenger Seat Back Side Bolster Switch	Inactive	The scan tool displays Inactive, In, or Out. When the seat back side bolster switch is pressed, the scan tool will display the function for which the switch is pressed.
Passenger Seat Back Side Bolster Direction	Inactive	The scan tool displays Inactive, In or Out. When the seat back side bolster switch is pressed, the scan tool displays the function the memory control module is commanding the seat lumbar/bolster pump.
Seat Cushion Side Bolster Switch	Inactive	The scan tool displays Inactive, In, or Out. When the seat back side bolster switch is pressed, the scan tool will display the function for which the switch is pressed.
Seat Cushion Side Bolster Direction Command	Inactive	The scan tool displays Inactive, In or Out. When the seat back side bolster switch is pressed, the scan tool displays the function the memory control module is commanding the seat lumbar/bolster pump.
Passenger Seat Memory Recall Switches	Inactive	The scan tool displays Inactive, Memory 1, Memory 2, or Exit. When a memory function switch is pressed, the scan tool should momentarily display the function selected.
Passenger Seat Memory Set Switch	Inactive	The scan tool displays Inactive/Active. When the memory SET switch is pressed, the scan tool should display Active.
Seat Massage Switch	Inactive	The scan tool displays Inactive/Active. When the massage switch is pressed, the scan tool should display Active.

Seat Memory Control Module Scan Tool Control Functions

Control Functions	Description
Seat Back Direction Command	This output control is used to command the seat back recline position Forward and Rearward.
Seat Back Side Bolster Direction Command	This output control is used to command the seat back side bolster position In or Out.
Seat Cushion Side Bolster Direction Command	This output control is used to command the seat cushion side bolster position In or Out.
Seat Cushion Front Vertical Direction Command	This output control is used to command the seat cushion front vertical position Up and Down.
Seat Cushion Rear Vertical Direction Command	This output control is used to command the seat cushion rear vertical position Up and Down.
Seat Horizontal Directional Command	This output control is used to command the seat horizontal position Forward and Rearward.
Lumbar Support Horizontal Direction Command	This output control is used to command the seat lumbar horizontal position Forward and Rearward.
Lumbar Support Vertical Direction Command	This output control is used to command the seat lumbar vertical position Up and Down.

K43 Power Steering Control Module: Scan Tool Information

Power Steering Control Module Scan Tool Data Parameters

Parameter	Expected Value	Description
Operating Conditions: Ignition ON		
Steering Wheel Input Torque	Varies	This displays the current steering input torque inN•m
Power Steering System Status	No Assist No Assist – Auto Stop Active Full Assist Limp Home Mode Limp Aside Mode	This displays the current status of the power steering system. When no faults are present, the status should be Full Assist.
Power Steering System Assist Status	Normal Maximum Assist - Level 1 Maximum Assist - Level 2 Minimum Assist - Level 1 Minimum Assist - Level 2	This displays the current performance mode of the power steering assist.
Advanced Parking Assist Status	Temporarily Inhibited Available Active Malfunction	This displays the current status of the advance parking assist system.
Power Steering Softstops Learn Status	Not Learned Learned	This displays whether the power steering rack softstops have been learned.
Battery Voltage	Varies	This displays Volts. This is the current battery voltage.
Ignition On Time	Varies	This displays seconds. This is the amount of time the current ignition cycle has been active.
Vehicle Speed	0 Km/h (0 MPH)	This displays km/h (mph). This is the current vehicle speed.

Parameter	Expected Value	Description
Electric Power Steering Motor Current Commanded	Varies	This displays amps (A). This displays the amount of current requested by the power steering assist motor.
Electric Power Steering Motor Current Feedback	Varies	This displays amps (A). This displays the Electric Power Steering Motor Current Feedback.
Calculated Steering Gear Rack Travel	Varies	This displays mm. This is the amount of rack travel in either direction from center.
Power Steering Output Torque	Varies	This displays N•m . This displays the current value of the Output Torque of the Electric Power Steering.
Calculated System Temperature	Varies	This displays ° C. This is the current system temperature.
Power Steering Level 1 Malfunction Ignition Cycle Counter	Varies	This displays counts. This is the number of ignition cycles performed while the vehicle is in a state of Power Steering Level 1 Malfunction.
Power Steering Motor Overload Protection Counter	Varies	This displays counts. This displays the Electric Power Steering Motor Overload Protection Incidents counter.
Ignition Cycle Counter	Varies	This displays counts. This number of ignition cycles performed.
Steering Wheel Angle Sensor Calibration Status	Unknown Estimated Calibrated	This displays the current calibration status of the steering wheel angle sensor.
Power Steering Assist Request from other Vehicle Device	Unknown Temporarily Inhibited Inactive Active Temporarily Limited Malfunction	Displays the current state of requests to the power steering control module for assist from other vehicle devices.
Power Steering Assist Inhibited - Motor Over Temperature	Yes/No	Indicates if the power steering assist motor is experiencing an over temperature condition and is reducing assist.
Power Steering Motor Assist Status	Normal Reduced Unavailable	This displays the current status of the power steering assist motor.
Power Steering Assist Mode	None Normal Sport Mode Comfort Track Mode Tow/Haul City Mode Performance	This displays the currently selected assist mode.

Parameter	Expected Value	Description
System Power Mode	Off Accessory Run Start Propulsion Active	This displays the current ignition power mode of the vehicle.
System Logistic Setting	Off Assembly Plant Mode Transport Mode Storage Mode	This displays the currently selected logistic setting of the vehicle system.

Power Steering Control Module Scan Tool Output Controls

Output Control	Description
Steering Wheel Angle Sensor Learn	Command to relearn the center position of the power steering system.
Power Steering Active Pull/Drift Compensation Learn	Clear active pull compensation learned limits. Command to reset the active pull compensation learned values.

K60 Column Lock Module: Scan Tool Information

Scan Tool Data Parameters

Parameter	Expected Value	Description
Operating Conditions: Ignition ON		
Column Lock Status	Locked Invalid Unlocked Unknown	The scan tool displays Failed, Unknown, Locked and Unlocked. The scan tool displays the current state of the column lock.
Turn Steering Wheel, Start Vehicle Again Display Message	Inactive Active	The scan tool displays Active/Inactive. If the wheels are against a curb, the lock pin may not be able to pull out. A message for the driver that is displayed on the Driver Information Center. The scan tool displays the need to turn the steering wheel, turn off the vehicle and then restart the vehicle.
Steering Column Lock Indicator	Inactive Active	The scan tool displays Active/Inactive. The scan tool displays the current state of the column lock.

K68 Trailer Lighting Control Module: Scan Tool Information

Body Control Module Scan Tool Data Parameters

Parameter	System State	Expected Value	Definition
Operating Conditions: Ignition ON, Vehicle in Park.			
Battery Voltage	—	Varies	The scan tool displays the current battery voltage.
Brake Pedal Switch Status	—	Active/Inactive	The scan tool displays the status of the brake pedal
State of Charge	—	Varies	The scan tool displays percentage. This parameter displays state of charge status.
System Voltage	—	Varies	The scan tool displays the current system voltage.
Trailer Connection Status	—	Connected/Not Connected	The scan tool displays the trailer connected status.

Body Control Module Scan Tool Output Controls

Scan Tool Output Control	Description
Left Trailer Turn Signal/ Stop Lamp Command	The Trailer Lighting Control Module activates the left trailer turn signal/stop lamp control circuit when you select Active. B+ should be applied to terminal G at the X88 Trailer Connector.
Right Trailer Turn Signal/ Stop Lamp Command	The Trailer Lighting Control Module activates the right trailer turn signal/stop lamp control circuit when you select Active. B+ should be applied to terminal D at the X88 Trailer Connector.
Left Trailer Tail Lamp	The Trailer Lighting Control Module activates the trailer park lamp control circuit when you select Active. B+ should be applied to terminal F at the X88 Trailer Connector.
Right Trailer Tail Lamp	The Trailer Lighting Control Module activates the trailer park lamp control circuit when you select Active. B+ should be applied to terminal F at the X88 Trailer Connector.
Trailer Backup Lamps	The Trailer Lighting Control Module activates the trailer backup lamp control circuit when you select Active. B+ should be applied to terminal A at the X88 Trailer Connector.

K69 Transfer Case Control Module: Scan Tool Information

Scan Tool Data Parameters

Parameter	Expected Value	Expected Value	Description
Operating Conditions: Ignition ON, engine OFF, Park or Neutral, and transfer case in 2WD, unless otherwise noted.			
Engine Speed	RPM	Varies	This parameter displays engine RPM.
Warm-Ups Since Diagnostic Trouble Code Cleared	Counts	Varies	This parameter displays the number of warm-ups since DTC cleared.
Control Module Voltage Signal	0.0 to 25.5 V	Battery Voltage	This parameter displays the voltage measured by the transfer case control module at the battery positive voltage circuit.
Ignition Cycles without Completed Test Since First Malfunction	Counts	Varies	This parameter displays the number of ignition cycles without a pass or a failure reported.
Engine Torque in Steady State	Nm	Varies	This parameter displays the engine actual steady state torque as received via CAN.
Steering Wheel Angle	Steering wheel in straight position	−5 to +5°	The scan tool displays °. This is the current position of the steering angle sensor.
	Steering wheel turned left until stop	450–550°	
	Steering wheel turned right until stop	−550 to −450°	
4WD Automatic Range Indicator Command	ON or OFF	OFF	This parameter displays ON when the transfer case control module commands the Auto 4WD indicator ON.
Electric Park Brake Not Available	Not Available, Available, Failed	Available	This parameter displays the EPB status based on CAN message.
Odometer	M or Km	Varies	This parameter displays the vehicle mileage.
Propulsion System Status	Not Active, Active	Active	This parameter displays the propulsion system state as received via CAN.
Service 4WD Indicator Command	ON or OFF	OFF	This parameter displays ON anytime a DTC sets.
All Wheel Drive	Normal, Temporarily Inhibited, Temporarily Limited, Failed	Normal	This parameter displays the status of the transfer case system.

Parameter	Expected Value	Expected Value	Description
AWD Off Indicator Request	Requested, Not Requested	Not Requested	This parameter displays ON anytime the AWD OFF DIC message displays.
AWD Input-Output Circuit Status	OK, Failed	OK	This parameter displays the status of the AWD system.
Transfer Case Clutch Torque	Nm	0.0	This parameter displays the estimated torque being held by the transfer case clutch.
Transfer Case Thermal Capacity Used	%	Varies	This parameter displays the estimated clutch capacity used.
Transfer Case Drive Mode	Two Wheel Drive High Active, Four Wheel Drive High Lock Active, Four Wheel Drive Low Active, All Wheel Drive Connected Active, Four Wheel Drive High Auto Active, Four Wheel Drive Low Active, All Wheel Drive Connected Active, Two Wheel Drive Low Active, Position Unknown, Transfer Case Neutral Active	Varies	This parameter displays the current mode of the 4WD system based on the secondary axle.
Calculated Transfer Case Clutch Temperature	°C/°F	Varies	This parameter displays the estimated clutch temperature.
Transfer Case Fluid Temperature	°C/°F	Varies	This parameter displays the estimated transfer case fluid temperature.
Transfer Case Clutch Engagement	%	Varies	This parameter displays the transfer case clutch torque level in percentage of clutch capacity.
Requested Transfer Case Clutch Torque	Nm	Varies	This parameter displays the commanded torque to be held by the transfer case clutch.
Transfer Case Clutch Overtemperature Counter	Counts	Varies	This parameter displays the count of clutch over temperature events.
Clutch Overtemperature Counter Reset Request Allowed	No, Yes	Yes	This parameter displays status of over temperature counter reset.
Transfer Case Clutch Learn Status	Not Learned, Passed, Failed, Aborted, In Progress, Reserved	Passed	This parameter displays the status of the last transfer case clutch learn.
Vehicle Stability Control Request	%	Varies	Vehicle stability enhancement system coupling request value
AWD Front and Rear Wheel Speed Differential	RPM	Varies	This parameter displays the speed difference between the front and rear wheels.
Lateral Acceleration	G’s	Varies	This parameter displays the vehicles lateral acceleration..
Yaw Rate	degree/sec	Varies	This parameter displays the vehicles yaw.

Parameter	Expected Value	Expected Value	Description
Secondary Axle Locking Torque Coupling Request	Not Requested, Maximum Torque, Minimum Torque, Actual Torque	Varies	This parameter displays the secondary axle locking torque requested by CAN message.
Range Actuator Lock Command	Disengaged or Engaged	Disengaged	This parameter displays the commanded status of the range actuator lock. The lock will be engaged in Auto 4WD, 4WD High, or 4WD Low, and Disengaged in 2WD High and Neutral.
Range Actuator Motor Current - Shunt Circuit 1	Amps	Varies	This parameter displays the measured current of the Transfer Case Range Actuator on Shunt 1.
Range Actuator Motor Current - Shunt Circuit 2	Amps	Varies	This parameter displays the measured current of the Transfer Case Range Actuator on Shunt 2.
Message Authentication Key Configuration State	Not Needed, Needed	Varies	This parameter is an indication to service tool that key provisioning is necessary.
Power Mode	OFF, Accessory, Run or Crank Request	Run	This parameter displays the status of the ignition switch.
Left Front Wheel Speed	Varies	0 km/h (0 MPH)	The scan tool displays km/h (MPH) depending on the current speed of the left front wheel speed sensor.
Left Rear Wheel Speed	Varies	0 km/h (0 MPH)	The scan tool displays km/h (MPH) depending on the current speed of the left rear wheel speed sensor.
Right Front Wheel Speed	Varies	0 km/h (0 MPH)	The scan tool displays km/h (MPH) depending on the current speed of the right front wheel speed sensor.
Right Rear Wheel Speed	Varies	0 km/h (0 MPH)	The scan tool displays km/h (MPH) depending on the current speed of the right rear wheel speed sensor.
Transfer Case Range Position Sensor and Transfer Case Incremental Position Sensor Variance Allowed	°	Varies	This parameter displays the allowed variation between transfer case range position sensor and the range actuator position sensor.
Transfer Case Range Position Sensor and Transfer Case Incremental Position Sensor Variance	°	Varies	This parameter displays the actual variation between transfer case range position sensor and the range actuator position sensor.
Front Axle Engagement Actuator Command	Engaged or Disengaged	Disengaged	This parameter displays either Engaged or Disengaged. Engaged when the body control module is commanding Auto 4WD, 4WD, or 4WD Low ranges, and Disengaged when the body control module is commanding Neutral, or 2WD ranges.
Front Axle Engagement Actuator Control Circuit High Voltage Test Status	Not Run, OK or Malfunction	OK	This parameter monitors the status of the front axle engagement actuator control circuit. A short to battery on the front axle engagement actuator control circuit will cause this parameter to display Malfunction.
Front Axle Engagement Actuator Control Circuit Low Voltage Test Status	Not Run, OK or Malfunction	OK	This parameter monitors the status of the front axle engagement actuator control circuit. A short to ground on the front axle engagement actuator control circuit will cause this parameter to display Malfunction.
Front Axle Engagement Actuator Control Circuit Open Test Status	Not Run, OK or Malfunction	OK	This parameter monitors the status of the front axle engagement actuator control circuit. An open/high resistance condition on the front axle engagement actuator control circuit will cause this parameter to display Malfunction.
Front Axle Actuator Status	Engaged or Disengaged	Disengaged	This parameter displays the actual status of the front axle. The parameter will display Engaged when the system is in Auto 4WD, 4WD, or 4WD Low modes, and Disengaged when the system is in Neutral, or 2WD High or Neutral mode.

Parameter	Expected Value	Expected Value	Description
Range Actuator Control Circuit High Voltage Test Status	Not Run, OK or Malfunction	OK	This parameter monitors the status of the range actuator control circuit. The range actuator control circuit is made up of the range actuator control circuit A and the range actuator control circuit B. A short to battery on the range actuator control circuit A or the range actuator control circuit B will cause this parameter to display Malfunction.
Range Actuator Control Circuit Low Voltage Test Status	Not Run, OK or Malfunction	OK	This parameter monitors the status of the range actuator control circuit. The range actuator control circuit is made up of the range actuator control circuit A and the range actuator control circuit B. A short to ground on the range actuator control circuit A or the range actuator control circuit B will cause this parameter to display Malfunction.
Range Actuator Control Circuit Open Test Status	Not Run, OK or Malfunction	OK	This parameter monitors the status of the range actuator control circuit. The range actuator control circuit is made up of the range actuator control circuit A and the range actuator control circuit B. An open on the range actuator control circuit A or the range actuator control circuit B will cause this parameter to display Malfunction.
Range Actuator Control Circuit Shorted Test Status	Not Run, OK or Malfunction	OK	This parameter monitors the status of the range actuator control circuit. The range actuator control circuit is made up of the range actuator control circuit A and the range actuator control circuit B. A short to ground, short to battery or short together on the range actuator control circuit A and/or the range actuator control circuit B will cause this parameter to display Malfunction.
Range Actuator Current	−15.0 to +36.0 A	0.0 A	This parameter displays the current drawn by the range actuator from the transfer case control module on either the range actuator control circuit A or the range actuator control circuit B. Typical values display 0.0 to 12.0 A. This parameter will display 0.0 A after shifting ranges.
Range Actuator Direction Command	Invalid, Stationary, Clockwise or Counter-clockwise	Stationary	This parameter displays what direction the transfer case control module is commanding the range actuator to turn. This parameter will display Stationary after a range change.
Transfer Case Range - Range Position Sensor	2WD, 4WD High–2WD 4WD High/ Locked, 4WD High–Neutral, Neutral, Neutral–4WD Low, or 4WD Low	2WD	This parameter displays the actual position of the transfer case according to the range actuator position sensor.
Transfer Case Range - Incremental Position Sensor	2WD, 4WD High–2WD 4WD High/ Locked, 4WD High–Neutral, Neutral, Neutral–4WD Low, or 4WD Low	2WD	This parameter displays the actual position of the transfer case according to the incremental position sensor.
Transfer Case Position - Range Position Sensor	–125 to 120°	6°	This parameter displays the position of the range actuator position sensor in degrees. Typical scan tool displays: • 2WD High = 6° • 4WD Auto = 89° • 4WD High = 117° • 4WD Low = −123° • Neutral = −32°

Parameter	Expected Value	Expected Value	Description
Transfer Case Commanded Position	–65 to 0°	0°	This parameter displays the commanded position of the transfer case in degrees. Typical scan tool displays: • 2WD High = 0° • 4WD Auto = 0° • 4WD High = 0° • 4WD Low = −65° • Neutral = −20°
Transfer Case Commanded Position	2WD, 4WD High/Locked, 4WD Low, Neutral or None	2WD	This parameter displays the current range commanded by the driver.
Transfer Case Range Selection Switch State	Invalid, Neutral, 2WD, 4WD/AWD Automatic, 4WD High/ Locked, 4WD Low, 4WD Unlocked	2WD	This parameter displays the current mode the transfer case is in, as indicated by the transfer case range position switch.
Range Actuator Lock Command Status	Disengage, Engage, Failed	Engage	This parameter displays the range actuator brake status.
Range Actuator Brake Control Circuit Current	Amps	Varies	This parameter displays the current for the transfer case range actuator brake.
Range Actuator Brake Control Circuit Low Side Voltage	Volts	Varies	This parameter displays the diagnostic voltage for the transfer case range actuator brake.
Range Actuator Brake Control Circuit High Side Voltage	Volts	Varies	This parameter displays the diagnostic voltage for the transfer case range actuator brake.
Range Actuator Lock Command Status	Unlocked, Locked	Locked	This parameter displays the command status of the range actuator brake.
Range Actuator Lock Control Circuit Low Voltage Test Status	Failed, Indeterminate, Passed	Passed	This parameter displays the status of the range actuator brake test.
Range Actuator Lock Control Circuit Open Test Status	Failed, Indeterminate, Passed	Passed	This parameter displays the status of the range actuator brake test.
Range Actuator Lock Control Circuit High Voltage Test Status	Failed, Indeterminate, Passed	Passed	This parameter displays the status of the range actuator brake test.
Transfer Case Clutch Learn Counter	Counts	Varies	This parameter displays the number of times the transfer case clutch learn has been completed.

Scan Tool Output Controls

Output Control	Description
Note: Transmission must be in transmission neutral for any of these output controls to operate. Refer to the scan tool manual for complete scan tool operating instructions.	
Front Axle Engagement Actuator	**Note:** Transmission must be in transmission Neutral for this output control to operate. This function allows the technician to command the front axle to engage or disengage.

Output Control	Description
Range Actuator (if equipped)	This function is intended to activate the range actuator control circuits. The range actuator control circuits can be commanded OFF or ON, in either the clockwise or counter-clockwise direction, to ensure all portions of the control module driver are operational. This device control can be operated with the actuator connected to verify actuator operation, or disconnected for circuit testing. The activation of this control must ensure the range actuator lock is activated as well to ensure actuator movement when the range actuator is plugged in. If the device control is activated with the range actuator plugged in, the range actuator shall return to the nearest legal range position after return to normal control.
Range Actuator Lock	**Note:** You may need to perform an ignition OFF in order to recover. This function allows the technician to command the range actuator lock to engage or disengage.
Range Actuator Learn	This function allows the technician to command the transfer case control module to relearn the clutch status after the range actuator, control module, or transfer case has been replaced.
Transfer Case Clutch Engagement	This function is used to override the clutch capacity command of the all wheel drive clutch output.
Transfer Case Clutch Identifier	This device control is used to program the transfer case clutch identifier.
Transfer Case Range	This device control is used to override the transfer case range position.
Transfer Case Neutral Range Indicator	This function allows the technician to command the transfer case neutral range indicator, within the transfer case control switch, ON or OFF.
Transfer Case Clutch Learn Counter Reset Command	This function allows the technician to command a reset of the learn counter.

K71 Transmission Control Module: Scan Tool Information (8L80 (MFC))

K71 Transmission Control Module — Scan Tool Parameter

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition= On			
9V Reference 1 Circuit Status	—	OK	Indicates that the Signal Out of Range buffered 9V Reference 1 value (within the controller) is currently out of range.
9V Reference 2 Circuit Status	—	OK	Indicates that the Signal Out of Range buffered 9V Reference 2 value (within the controller) is currently out of range.
Calculated Line Pressure	Ignition On - Engine Off	550 to 620 kPa (80 to 90 PSI)	The expected calculated transmission line pressure when accounting for pump loss factors.
	Ignition On - Engine Running	550 to 620 kPa (80 to 90 PSI)	
	48 km/h (30 MPH)	380 to 480 kPa (55 to 70 PSI)	
	80 km/h (50 MPH)	380 to 480 kPa (55 to 70 PSI)	
Calculated Throttle Position	0 km/h (0 MPH)	0%	The accelerator effective position, which represents the driver’s intended request for torque or acceleration. It is determined from the maximum of the driver requests to open the throttle (e.g., accelerator pedal, cruise control, PTO, etc.) and is normalized to 0 to 100 %, where 0 % represents an idle or coast request and 100% represents a request for wide open throttle (WOT). It is the primary indication of accelerator position / throttle position used by transmission control algorithms and, thus, is often referred to as transmission throttle position. In the event that the engine is operating in a forced idle mode due to an accelerator pedal position fault, the accelerator effective position will have a value of 0 %, corresponding to an idle request.
	48 km/h (30 MPH)	5%	
	80 km/h (50 MPH)	20%	

Parameter	System State	Expected Value	Description
Control Module Voltage Signal	Ignition On - Engine Off	12.60 V	The voltage of the power input to the control module. Since battery voltage is not directly measured by powertrain controllers, switched battery voltage, available from the Run/Crank input to the controller, shall be used to populate this PID.
	Ignition On - Engine Running	14.40 V	
Current Gear	P	Park	Indicates the current gear that the transmission has achieved. In order for the transmission to achieve a gear other than Park/Neutral, transmission hydraulic pressure must be available (Engine Speed = Greater than 349 RPM).
	R	Reverse	
	N	Neutral	
	D	1–8	
	L	1–8	
Driver Shift Control Mode	S3 Transmission Shift Lever = P, R, N, D	Inactive	The status of the Sport/Low/Manual Mode, this PID will read active when the transmission shift lever is in the Sport/Low/Manual Mode.
	S3 Transmission Shift Lever = L, M, S	Active	
Driver Shift Request	No Button Pressed	Inactive	The status of the Up and Down shift switches.
	Upshift» Pressed	Up	
	Downshift» Pressed	Down	
Engine Coolant Temperature	Ignition On - Engine Off	21°C (70°F)	The undefaulted engine coolant temperature measured by a sensor. If the data used to compute engine coolant temperature is obtained from a serial data signal, then, if the signal is not received, the value shall be set to: −40°C (−40°F) .
	Ignition On - Engine Running	80 to 95°C (175 to 205°F)	
	48 km/h (30 MPH)	80 to 95°C (175 to 205°F)	
	80 km/h (50 MPH)	80 to 95°C (175 to 205°F)	
Engine Speed	Ignition On - Engine Off	0 RPM	The engine speed determined from the crank position sensor. The data used to compute engine speed is obtained from a serial data signal.
	Ignition On - Engine Running	753 RPM	
	48 km/h (30 MPH)	1371 RPM	
	80 km/h (50 MPH)	1566 RPM	
Engine Torque	Ignition On - Engine Off	−53 Nm (−39 lb ft)	The calculated engine torque based upon the airflow through the engine and the torque losses due to spark retard and fuel shutoff. Since this is a steady state engine torque, it does not include the inertial component of engine torque.
	Ignition On - Engine Running	−6 Nm (−4 lb ft)	
	48 km/h (30 MPH)	10 Nm (7 lb ft)	
	80 km/h (50 MPH)	45 Nm (33 lb ft)	
Gear Command	P	Park	The current gear that is being commanded within the transmission. Only Park/Neutral will be commanded if transmission hydraulic pressure is not available. Transmission hydraulic pressure is available when Engine Speed = Greater than 349 RPM.
	R	Reverse	
	N	Neutral	
	D	1–8	
	L	1–8	

Parameter	System State	Expected Value	Description
Gear Ratio	1	4.62:1	This Parameter Identifier (PID) contains the calculated gear ratio based on Transmission Input Shaft Speed and Transmission Output Shaft Speed.
	2	3.04:1	
	3	2.15:1	
	4	1.66:1	
	5	1.26:1	
	6	1.00:1	
	7	0.85:1	
	8	0.66:1	
	R	3.93:1	
High Side Driver 1 Circuit High Voltage Test Status	—	OK	The status of the short to voltage test.
High Side Driver 1 Circuit Low Voltage Test Status	—	OK	The status of the short to ground test.
High Side Driver 1 Circuit Open Test Status	—	Not Run	The status of the open circuit test.
High Side Driver 1 Command	Engine ≠Running	Disabled	The commanded state of the shared high side driver 1.
	Engine = Running	Enabled	
High Side Driver 2 Circuit High Voltage Test Status	—	OK	The status of the short to voltage test.
High Side Driver 2 Circuit Low Voltage Test Status	—	OK	The status of the short to ground test.
High Side Driver 2 Circuit Open Test Status	—	Not Run	The status of the open circuit test.
High Side Driver 2 Command	Engine ≠Running	Disabled	The commanded state of the shared high side driver 2.
	Engine = Running	Enabled	
Ignition 1 Signal	—	On	Displays the signal associated with the status of hardwire vehicle power mode inputs.
Ignition Accessory Signal	—	On	Displays the status of the ignition voltage availability to the controller.
Ignition Voltage	Ignition On - Engine Off	12.60 V	The voltage of the Run/Crank input to the controller.
	Ignition On - Engine Running	14.40 V	
Power Mode	—	Run	Displays the state of the ignition.
Shift Limiting Active Reason	—	None	Displays current Reason for a default shift pattern.
TCC Pressure Control Solenoid Valve Command	0 km/h (0 MPH)	0.00 kPa (0.00 PSI)	Displays the commanded pressure to the TCC clutch.
	48 km/h (30 MPH)	160 kPa (23 PSI)	
	80 km/h (50 MPH)	250 kPa (36 PSI)	

Parameter	System State	Expected Value	Description
TCC Slip Speed	Ignition On - Engine Off	0 RPM	The Torque Converter Clutch (TCC) slip speed determined as the difference between engine speed and transmission input shaft speed.
	Ignition On - Engine Running	30 RPM	
	48 km/h (30 MPH)	3 RPM	
	80 km/h (50 MPH)	9 RPM	
Tow/Haul Mode	Inactive	Inactive	Displays the current state of Tow/Haul Mode.
	Active	Active	
Transmission Control Solenoid Valve 1–9 Calibration Data	—	Valid	Stored history of any condition causing the Transmission Control Solenoid Valves to set a Transmission Control Solenoid Valve Calibration Incorrect DTC.
Transmission Control Solenoid Valve 1–9 Control Circuit High Voltage Test Status	—	Not RunorOK	The status of the short to power test. The parameter status will indicate not run, if the command for the solenoid is not in the correct state to perform the circuit test.
Transmission Control Solenoid Valve 1–9 Control Circuit Low Voltage Test Status	—	Not RunorOK	The status of the short to ground test. The parameter status will indicate not run, if the command for the solenoid is not in the correct state to perform the circuit test.
Transmission Control Solenoid Valve 1–9 Control Circuit Open Test Status	—	Not RunorOK	The status of the open circuit test. The parameter status will indicate not run, if the command for the solenoid is not in the correct state to perform the circuit test.
Transmission Control Solenoid Valve 1 Current	Ignition On - Engine Off	0.0 A	The Average Diagnostic Current for the Transmission Control Solenoid Valve
	Ignition On - Engine Running	0.4 A	
	48 km/h (30 MPH)	1.15 A	
	80 km/h (50 MPH)	1.15 A	
Transmission Control Solenoid Valve 1 Current Command	Ignition On - Engine Off	1.15 A	The Current Command for the Transmission Control Solenoid Valve
	Ignition On - Engine Running	0.4 A	
	48 km/h (30 MPH)	1.15 A	
	80 km/h (50 MPH)	1.15 A	
Transmission Control Solenoid Valve 1 Pressure Command	Ignition On - Engine Off	0.00 kPa (0.00 PSI)	The commanded pressure for the Transmission Control Solenoid Valve
	Ignition On - Engine Running	760 kPa (110 PSI)	
	48 km/h (30 MPH)	0 kPa (0 PSI)	
	80 km/h (50 MPH)	760 kPa (110 PSI)	

Parameter	System State	Expected Value	Description
Transmission Control Solenoid Valve 2 Current	Ignition On - Engine Off	0.0 A	The Average Diagnostic Current for the Transmission Control Solenoid Valve
	Ignition On - Engine Running	1.15 A	
	48 km/h (30 MPH)	1.15 A	
	80 km/h (50 MPH)	0.0 A	
Transmission Control Solenoid Valve 2 Current Command	Ignition On - Engine Off	0.0 A	The Current Command for the Transmission Control Solenoid Valve
	Ignition On - Engine Running	1.15 A	
	48 km/h (30 MPH)	1.15 A	
	80 km/h (50 MPH)	0.0 A	
Transmission Control Solenoid Valve 2 Pressure Command	Ignition On - Engine Off	0.00 kPa (0.00 PSI)	The commanded pressure for the Transmission Control Solenoid Valve
	Ignition On - Engine Running	1638 kPa (238 PSI)	
	48 km/h (30 MPH)	1638 kPa (238 PSI)	
	80 km/h (50 MPH)	0.00 kPa (0.00 PSI)	
Transmission Control Solenoid Valve 3 Current	Ignition On - Engine Off	0.0 A	The Average Diagnostic Current for the Transmission Control Solenoid Valve
	Ignition On - Engine Running	0.0 A	
	48 km/h (30 MPH)	1.15 A	
	80 km/h (50 MPH)	1.15 A	
Transmission Control Solenoid Valve 3 Current Command	Ignition On - Engine Off	0.0 A	The Current Command for the Transmission Control Solenoid Valve
	Ignition On - Engine Running	0.0 A	
	48 km/h (30 MPH)	1.15 A	
	80 km/h (50 MPH)	1.15 A	
Transmission Control Solenoid Valve 3 Pressure Command	Ignition On - Engine Off	0 kPa (0 PSI)	The commanded pressure for the Transmission Control Solenoid Valve
	Ignition On - Engine Running	0 kPa (0 PSI)	
	48 km/h (30 MPH)	800 kPa (116 PSI)	
	80 km/h (50 MPH)	1344 kPa (195 PSI)	

Parameter	System State	Expected Value	Description
Transmission Control Solenoid Valve 4 Current	Ignition On - Engine Off	0.0 A	The Average Diagnostic Current for the Transmission Control Solenoid Valve
	Ignition On - Engine Running	1.15 A	
	48 km/h (30 MPH)	1.15 A	
	80 km/h (50 MPH)	1.15 A	
Transmission Control Solenoid Valve 4 Current Command	Ignition On - Engine Off	1.15 A	The Current Command for the Transmission Control Solenoid Valve
	Ignition On - Engine Running	1.15 A	
	48 km/h (30 MPH)	1.15 A	
	80 km/h (50 MPH)	1.15 A	
Transmission Control Solenoid Valve 4 Pressure Command	Ignition On - Engine Off	0 kPa (0 PSI)	The commanded pressure for the Transmission Control Solenoid Valve
	Ignition On - Engine Running	0 kPa (0 PSI)	
	48 km/h (30 MPH)	0 kPa (0 PSI)	
	80 km/h (50 MPH)	0 kPa (0 PSI)	
Transmission Control Solenoid Valve 5 Current	Ignition On - Engine Off	0.0 A	The Average Diagnostic Current for the Transmission Control Solenoid Valve
	Ignition On - Engine Running	1.15 A	
	48 km/h (30 MPH)	0.4 A	
	80 km/h (50 MPH)	0.4 A	
Transmission Control Solenoid Valve 5 Current Command	Ignition On - Engine Off	1.15 A	The Current Command for the Transmission Control Solenoid Valve
	Ignition On - Engine Running	1.15 A	
	48 km/h (30 MPH)	0.4 A	
	80 km/h (50 MPH)	0.4 A	
Transmission Control Solenoid Valve 5 Pressure Command	Ignition On - Engine Off	0 kPa (0 PSI)	The commanded pressure for the Transmission Control Solenoid Valve
	Ignition On - Engine Running	0 kPa (0 PSI)	
	48 km/h (30 MPH)	760 kPa (110 PSI)	
	80 km/h (50 MPH)	760 kPa (110 PSI)	

Parameter	System State	Expected Value	Description
Transmission Control Solenoid Valve 6 Current	Ignition On - Engine Off	0.0 A	The Average Diagnostic Current for the Transmission Control Solenoid Valve
	Ignition On - Engine Running	0.85 A	
	48 km/h (30 MPH)	0.85 A	
	80 km/h (50 MPH)	0.85 A	
Transmission Control Solenoid Valve 6 Current Command	Ignition On - Engine Off	0.85 A	The Current Command for the Transmission Control Solenoid Valve
	Ignition On - Engine Running	0.85 A	
	48 km/h (30 MPH)	0.85 A	
	80 km/h (50 MPH)	0.85 A	
Transmission Control Solenoid Valve 6 Pressure Command	Ignition On - Engine Off	0 kPa (0 PSI)	The commanded pressure for the Transmission Control Solenoid Valve
	Ignition On - Engine Running	0 kPa (0 PSI)	
	48 km/h (30 MPH)	760 kPa (110 PSI)	
	80 km/h (50 MPH)	0 kPa (0 PSI)	
Transmission Control Solenoid Valve 7 Current	Ignition On - Engine Off	0.0 A	The Average Diagnostic Current for the Transmission Control Solenoid Valve
	Ignition On - Engine Running	0.0 A	
	48 km/h (30 MPH)	0.32 A	
	80 km/h (50 MPH)	0.29 A	
Transmission Control Solenoid Valve 7 Current Command	Ignition On - Engine Off	0.0 A	The commanded pressure for the Transmission Control Solenoid Valve
	Ignition On - Engine Running	0.0 A	
	48 km/h (30 MPH)	0.32 A	
	80 km/h (50 MPH)	0.29 A	
Q77H Transmission Control Solenoid Valve 8	—	OfforOn	The current command for the Transmission Control Solenoid Valve 8.
Transmission Control Solenoid Valve 9	—	OfforOn	The current command for the Transmission Control Solenoid Valve 9.
Transmission Fluid Temperature	Ignition On - Engine Off	33°C (91°F)	The undefaulted, unfiltered transmission oil / fluid temperature measured by a sensor. In automatic transmission applications, this PID is based upon the transmission oil temperature sensor input to the TCM.
	Ignition On - Engine Running	42°C (108°F)	
	48 km/h (30 MPH)	49°C (120°F)	
	80 km/h (50 MPH)	63°C (145°F)	
Transmission Hot Mode	—	No	Indicates whether or not the default Transmission Hot Mode shift pattern is active.

Parameter	System State	Expected Value	Description
Transmission Input Speed	Ignition On - Engine Off	0 RPM	The undefaulted, raw transmission input speed (the speed at the input of the gear box) determined from the speed measured by the Transmission Input Speed Sensor with the application of factors to account for the location of the sensor.
	Ignition On - Engine Running	551 RPM	
	48 km/h (30 MPH)	1166 RPM	
	80 km/h (50 MPH)	1184 RPM	
Transmission Input Speed Sensor Direction	Forward	Forward	The enumerated state of the raw Transmission Input Speed Sensor direction information. This parameter will display Undetermined State, until the TCM receives the speed sensor input.
	Reverse	Reverse	
Transmission Input Speed Sensor Direction Signal	Forward	0.05 ms	The enumerated state of the raw Transmission Input Speed Sensor direction information. This parameter will display Undetermined State, until the TCM receives the speed sensor input. contains the Transmission Input Speed Sensor Direction ON Period Time in milliseconds. This PID will display 0.00 ms until the TCM receives the speed sensor input
	Reverse	0.18 ms	
Transmission Intermediate Speed Sensor	0 km/h (0 MPH)	0 RPM	Displays the current speed of the Intermediate Speed Sensor 1.
	48 km/h (30 MPH)	975 RPM	
	80 km/h (50 MPH)	1930 RPM	
Transmission Output Speed	0 km/h (0 MPH)	0 RPM	Displays the current speed of the Output Shaft Speed Sensor.
	48 km/h (30 MPH)	1159 RPM	
	80 km/h (50 MPH)	1850 RPM	
Transmission Output Speed Sensor Direction	Forward	Forward	This Parameter Identifier (PID) contains the enumerated state of the raw Transmission Output Speed Sensor direction information. This parameter will display Undetermined State, until the TCM receives the speed sensor input.
	Reverse	Reverse	
Transmission Output Speed Sensor Direction Signal	Forward	0.05 ms	This Parameter Identifier (PID)This Parameter Identifier (PID) contains the enumerated state of the raw Transmission Output Speed Sensor direction information. This parameter will display Undetermined State, until the TCM receives the speed sensor input. contains the Transmission Output Speed Sensor Direction ON Period Time in milliseconds. This PID will display 0.00 ms until the TCM receives the speed sensor input
	Reverse	0.18 ms	
Transmission Range Sensor 1	P	15%	The raw PWM duty cycle for Transmission Range Sensor 1/A that is wired to the TCM.
	R	39%	
	N	50%	
	D	62%	
	M	74%	
Transmission Range Sensor 2	P	85%	The raw PWM duty cycle for Transmission Range Sensor 2/B that is wired to the ECM.
	R	60%	
	N	49%	
	D	38%	
	M	26%	
Vehicle Speed	—	Varies	The undefaulted vehicle speed calculated from the Transmission Output Speed Sensor.

K71 Transmission Control Module — Scan Tool Control Function

Control Function	Description
High Side Driver 1–2	Overrides the state of the High Side Driver Output
Shift Transmission Gear	Overrides the commanded gear output
Transmission Control Solenoid Valve 1–9	Overrides the state of the Transmission Control Solenoid Valve — On or Off
Transmission Control Solenoid Valve 1–7 Current	Overrides the current of the Transmission Control Solenoid Valve — 0–1.2 A
Torque Converter Clutch— Dynamic Test	Overrides the state of the Transmission Control Solenoid Valve that operates the Torque Converter Clutch, to be used during a road test.
Torque Converter Clutch— Static Test	Overrides the state of the Transmission Control Solenoid Valve that operates the Torque Converter Clutch, to be used when the engine is not running.

K71 Transmission Control Module: Scan Tool Information (10L80 (MHS, MHT, MI2, MQB, MQC))

K71 Transmission Control Module — Scan Tool Parameter

Parameter	Expected Value	Units
Note: The following scan tool parameter values were taken from a normally operating vehicle. The parameter values on a different vehicle will vary slightly which depends on the following operating conditions: • Altitude • Ambient Air Temperature • Ambient Humidity • Engine Coolant Temperature **Operating Conditions:** Ignition= On— Accessories= Off		
Accelerator Pedal Position	Varies	%
Automatic Transmission Auxiliary Fluid Pump Command	On Off	—
Automatic Transmission Auxiliary Fluid Pump Control Circuit Low Test Status	Not RunorOkay	—
Automatic Transmission Auxiliary Fluid Pump Control Circuit Open Test Status	Not RunorOkay	—
Automatic Transmission Auxiliary Fluid Pump Control Circuit High Test Status	Not RunorOkay	—
Brake Pedal Position Switch	Brake Pedal Released= Released Brake Pedal Applied= Applied	—
Calculated Line Pressure	Ignition On - Engine Off= 550 /80 Ignition On - Engine Running= 550 /80 48 km/h (30 MPH) = 500 /73 80 km/h (50 MPH) = 524 /76	kPa / PSI
Calculated Throttle Position	0 km/h (0 MPH) = 0 48 km/h (30 MPH) = 10 80 km/h (50 MPH) = 13	%
Control Module Voltage Signal	Ignition On - Engine Off= 12.60 Ignition On - Engine Running= 14.40	V
Current Gear	P = Park R = Reverse N = Neutral D = 1–10 L = 1–10	—
Distance Since Diagnostic Trouble Code Cleared	Varies	km / mi

Parameter	Expected Value	Units
Driver Requested Axle Torque	Varies	N·m
Driver Shift Control Mode	S3 Transmission Shift Lever — P, R, N, D = Inactive S3 Transmission Shift Lever — L, M, S = Active	—
Electronic Transmission Range Select Actual Range	Park Neutral Low Neutral High Drive Reverse Neutral Shift	—
Engine Coolant Temperature	Ignition On - Engine Off= 41 /105 Ignition On - Engine Running= 52 /126 48 km/h (30 MPH) = 87 /189 80 km/h (50 MPH) = 94 /201	°C/°F
Engine Speed	Ignition On - Engine Off= 0 Ignition On - Engine Running= 582 48 km/h (30 MPH) = 1173 80 km/h (50 MPH) = 1277	RPM
Engine Torque	Ignition On - Engine Off= −41 /−30 Ignition On - Engine Running= 15 /11 48 km/h (30 MPH) = 58 /43 80 km/h (50 MPH) = 136 /100	N·m/lb ft
Gear Command	P = Park R = Reverse N = Neutral D = 1–10 L = 1–10	—
Gear Ratio	1 = 4.70:1 2 = 2.99:1 3 = 2.15:1 4 = 1.77:1 5 = 1.52:1 6 = 1.28:1 7 = 1.00:1 8 = 0.85:1 9 = 0.69:1 10 = 0.64:1 R = 4.87:1	—
High Side Driver Circuit High Test Status	Okay	—
High Side Driver Circuit Low Test Status	Okay	—
High Side Driver Circuit Open Test Status	Not Run	—
High Side Driver Command	Engine ≠Running= Disabled Engine — Running= Enabled	—
High Side Driver 2 Circuit High Test Status	Okay	—
High Side Driver 2 Circuit Low Test Status	Okay	—
High Side Driver 2 Circuit Open Test Status	Not Run	—
High Side Driver 2 Command	Engine ≠Running= Off Engine — Running= On	—

Parameter	Expected Value	Units
Ignition and Start Switch Accessory Signal	On	—
Ignition and Start Switch Signal	On	—
Ignition and Start Signal	Ignition On - Engine Off= 12.6 Ignition On - Engine Running= 14.4	V
Input Shaft Speed Sensor	Ignition On - Engine Off= 0 Ignition On - Engine Running= 551 48 km/h (30 MPH) = 1166 80 km/h (50 MPH) = 1184	RPM
Input Speed Sensor Direction	Forward Reverse	—
Input Speed Sensor Direction Signal	Forward= 0.05 Reverse= 0.18	ms
Intermediate Speed Sensor	0 km/h (0 MPH) = 0 48 km/h (30 MPH) = 1170 80 km/h (50 MPH) = 2754	RPM
Intermediate Speed Sensor Direction	Forward Reverse	—
Intermediate Speed Sensor Direction Signal	Forward= 0.05 Reverse= 0.18	ms
Intermediate Speed Sensor 2	0 km/h (0 MPH) = 0 48 km/h (30 MPH) = 1166 80 km/h (50 MPH) = 2754	RPM
Intermediate Speed Sensor 2 Direction	Forward Reverse	—
Intermediate Speed Sensor 2 Direction Signal	Forward= 0.05 Reverse= 0.18	ms
Last Shift Time	0.12	[s]
Output Shaft Speed Sensor	0 km/h (0 MPH) = 0 48 km/h (30 MPH) = 1159 80 km/h (50 MPH) = 1720	RPM
Output Speed Sensor Direction	Forward Reverse	—
Output Speed Sensor Direction Signal	Forward= 0.05 Reverse= 0.18	ms
Park System Status	P = Park R, N, D, L, S = Out of Park	—
Power Mode	Off Accessory Run Crank Request	—
Propulsion System Status	Engine Running= Active Engine Off= Inactive	Active
Shift Limiting Active Reason	None	—
Sensor Supply Circuit Status	Okay	—
Sensor Supply 2 Circuit Status	Okay	—
Torque Converter Clutch Pressure Command	0.00	kPa / PSI
Torque Converter Clutch Desired Slip Speed	0.0	RPM

Parameter	Expected Value	Units
Torque Converter Clutch Slip Speed	Ignition On - Engine Off= 0 Ignition On - Engine Running= 30 48 km/h (30 MPH) = 1 80 km/h (50 MPH) = 47	RPM
Tow/Haul Mode	Inactive Active	—
Transmission Clutch 1-6 Return Spring Learn Status	Inactive Learn Inhibited - Transmission Fluid Temperature Too Low Learn Inhibited - Transmission Fluid Temperature Too High Learn inhibited — malfunction present Learn Inhibited - Throttle Position/Engine Torque Unstable Learn Inhibited - Accelerator Pedal Angle Too Small Learn Inhibited - Accelerator Pedal Angle Too Large Learn Inhibited - Engine Speed Too Low Learn Inhibited - Engine Speed Too High Learn Inhibited - Rough Road Learn in Progress	—
Transmission Clutch 1-6 Return Spring Learn Required	Yes No	—
Transmission Clutch 1-6 Return Spring Learn Driving Maneuver Required	None 1-2 Upshift 2-3 Upshift 2-4 Upshift 3-4 Upshift 4-5 Upshift 5-6 Upshift 6-7 Upshift 7-8 Upshift 8-9 Upshift 9-10 Upshift 10-9 Downshift 9-8 Downshift 8-7 Downshift 7-6 Downshift 6-5 Downshift 5-4 Downshift 4-3 Downshift 3-2 Downshift 3-1 Downshift 2-1 Downshift 1st Gear 2nd Gear 3rd Gear 4th Gear 5th Gear 6th Gear 7th Gear 8th Gear	

Parameter	Expected Value	Units
	9th Gear 10th Gear	
Transmission Clutch 1-6 Return Spring Learn Progress Counter	Varies	Counts
Transmission Clutch 1-6 Volume Learn Status	Inactive Learn Inhibited - Transmission Fluid Temperature Too Low Learn Inhibited - Transmission Fluid Temperature Too High Learn inhibited — malfunction present Learn Inhibited - Throttle Position/Engine Torque Unstable Learn Inhibited - Accelerator Pedal Angle Too Small Learn Inhibited - Accelerator Pedal Angle Too Large Learn Inhibited - Engine Speed Too Low Learn Inhibited - Engine Speed Too High Learn Inhibited - Rough Road Learn in Progress	—
Transmission Clutch 1-6 Volume Learn Required	Yes No	—
Transmission Clutch 1-6 Volume Learn Progress Counter	Varies	Counts
Transmission Clutch 1-6 Volume Learn Driving Maneuver Required	None 1-2 Upshift 2-3 Upshift 2-4 Upshift 3-4 Upshift 4-5 Upshift 5-6 Upshift 6-7 Upshift 7-8 Upshift 8-9 Upshift 9-10 Upshift 10-9 Downshift 9-8 Downshift 8-7 Downshift 7-6 Downshift 6-5 Downshift 5-4 Downshift 4-3 Downshift 3-2 Downshift 3-1 Downshift 2-1 Downshift 1st Gear 2nd Gear 3rd Gear 4th Gear 5th Gear 6th Gear 7th Gear 8th Gear 9th Gear	—

Parameter	Expected Value	Units
	10th Gear	
Transmission Control Solenoid Valve 1–9 Calibration Data	Valid	—
Transmission Control Solenoid Valve 1-9 Control Circuit High Test Status	Not RunorOkay	—
Transmission Control Solenoid Valve 1-9 Control Circuit Low Test Status	Not RunorOK	—
Transmission Control Solenoid Valve 1–9 Control Circuit Open Test Status	Not RunorOkay	—
Transmission Control Solenoid Valve 1 Current	Ignition On - Engine Off= 0.75 Ignition On - Engine Running= 0.98 48 km/h (30 MPH) = 0.99 80 km/h (50 MPH) = 0.98	A
Transmission Control Solenoid Valve 1 Current Command	Ignition On - Engine Off= 0.76 Ignition On - Engine Running= 0.98 48 km/h (30 MPH) = 1.02 80 km/h (50 MPH) = 0.97	A
Transmission Control Solenoid Valve 1 Pressure Command	Ignition On - Engine Off= 0.00 /0.00 Ignition On - Engine Running= 136 /20 48 km/h (30 MPH) = 0.00 /0.00 80 km/h (50 MPH) = 0.00 /0.00	kPa / PSI
Transmission Control Solenoid Valve 2 Current	Ignition On - Engine Off= 0.82 Ignition On - Engine Running= 0.98 48 km/h (30 MPH) = 0.99 80 km/h (50 MPH) = 0.92	A
Transmission Control Solenoid Valve 2 Current Command	Ignition On - Engine Off= 0.83 Ignition On - Engine Running= 0.98 48 km/h (30 MPH) = 1.02 80 km/h (50 MPH) = 0.92	A
Transmission Control Solenoid Valve 2 Pressure Command	Ignition On - Engine Off= 0.00 /0.00 Ignition On - Engine Running= 2,206 /320 48 km/h (30 MPH) = 0.00 /0.00 80 km/h (50 MPH) = 2,206 /320	kPa / PSI
Transmission Control Solenoid Valve 3 Current	Ignition On - Engine Off= 0.75 Ignition On - Engine Running= 1.01 48 km/h (30 MPH) = 1.05 80 km/h (50 MPH) = 0.88	A
Transmission Control Solenoid Valve 3 Current Command	Ignition On - Engine Off= 0.76 Ignition On - Engine Running= 1.02 48 km/h (30 MPH) = 1.06 80 km/h (50 MPH) = 0.89	A
Transmission Control Solenoid Valve 3 Pressure Command	Ignition On - Engine Off= 0.00 /0.00 Ignition On - Engine Running= 0.00 /0.00 48 km/h (30 MPH) = 2,206 /320 80 km/h (50 MPH) = 2,206 /320	kPa / PSI
Transmission Control Solenoid Valve 4 Current	Ignition On - Engine Off= 1.20 Ignition On - Engine Running= 0.89 48 km/h (30 MPH) = 0.69 80 km/h (50 MPH) = 0.88	A

Parameter	Expected Value	Units
Transmission Control Solenoid Valve 4 Current Command	Ignition On - Engine Off= 1.20 Ignition On - Engine Running= 0.89 48 km/h (30 MPH) = 0.70 80 km/h (50 MPH) = 0.89	A
Transmission Control Solenoid Valve 4 Pressure Command	Ignition On - Engine Off= 0.00 /0.00 Ignition On - Engine Running= 0.00 /0.00 48 km/h (30 MPH) = 2,206 /320 80 km/h (50 MPH) = 173 /25	kPa / PSI
Transmission Control Solenoid Valve 5 Current	Ignition On - Engine Off= 0.04 Ignition On - Engine Running= 0.04 48 km/h (30 MPH) = 0.46 80 km/h (50 MPH) = 0.58	A
Transmission Control Solenoid Valve 5 Current Command	Ignition On - Engine Off= 0.04 Ignition On - Engine Running= 0.04 48 km/h (30 MPH) = 0.47 80 km/h (50 MPH) = 0.59	A
Transmission Control Solenoid Valve 5 Pressure Command	Ignition On - Engine Off= 0.00 /0.00 Ignition On - Engine Running= 0.00 /0.00 48 km/h (30 MPH) = 2,206 /320 80 km/h (50 MPH) = 173 /25	kPa / PSI
Transmission Control Solenoid Valve 6 Current	Ignition On - Engine Off= 0.57 Ignition On - Engine Running= 0.54 48 km/h (30 MPH) = 0.53 80 km/h (50 MPH) = 1.20	A
Transmission Control Solenoid Valve 6 Current Command	Ignition On - Engine Off= 0.57 Ignition On - Engine Running= 0.54 48 km/h (30 MPH) = 0.54 80 km/h (50 MPH) = 1.20	A
Transmission Control Solenoid Valve 6 Pressure Command	Ignition On - Engine Off= 0.00 /0.00 Ignition On - Engine Running= 2,206 /320 48 km/h (30 MPH) = 2,206 /320 80 km/h (50 MPH) = 2,206 /320	kPa / PSI
Transmission Control Solenoid Valve 7 Current	Ignition On - Engine Off= 0.01 Ignition On - Engine Running= 0.78 48 km/h (30 MPH) = 0.54 80 km/h (50 MPH) = 1.20	A
Transmission Control Solenoid Valve 7 Current Command	Ignition On - Engine Off= 0.01 Ignition On - Engine Running= 0.78 48 km/h (30 MPH) = 0.54 80 km/h (50 MPH) = 0.51	A
Transmission Control Solenoid Valve 8 Current	Ignition On - Engine Off= 0.00 Ignition On - Engine Running= 0.00 48 km/h (30 MPH) = 0.52 80 km/h (50 MPH) = 0.50	A
Transmission Control Solenoid Valve 8 Current Command	Ignition On - Engine Off= 0.00 Ignition On - Engine Running= 0.78 48 km/h (30 MPH) = 0.54 80 km/h (50 MPH) = 1.20	A
Transmission Control Solenoid Valve 9	OfforOn	—

Parameter	Expected Value	Units
Transmission Fluid Temperature Sensor	Ignition On - Engine Off= 33 /91 Ignition On - Engine Running= 42 /108 48 km/h (30 MPH) = 49 /120 80 km/h (50 MPH) = 63 /145	°C/°F
Transmission Hot Mode	No	—
Transmission Park Valve Lock Solenoid Actuator	Park= Off Out of Park= On	—
Transmission Park Valve Position Sensor	Park= 2.00 Out of Park= 0.80	V
Transmission Park Valve Position Sensor Status	Park Out of Park	—
Transmission Park Valve Position Sensor 2	Park= 0.80 Out of Park= 1.98	V
Transmission Park Valve Position Sensor 2 Status	Park Out of Park	—
Transmission Range Control Valve Position Sensor	Park= 0.80 Out of Park= 1.98	V
Transmission Range Control Valve Position Sensor Status	Park= Complete Out of Park= Failed	—
Transmission Range Sensor	P = 13 R = 47 N = 61 D = 75 L = 86	%
Transmission Range Sensor 2	P = 87 R = 53 N = 39 D = 25 L = 14	%
Up and Down Shift Switch	No Button Pressed= None Upshift» Pressed= Upshift Downshift» Pressed= Downshift	—
Vehicle Speed	Varies	km/h/MPH

Scan Tool Control Function

Control Function	Description
Automatic Transmission Auxiliary Fluid Pump	Overrides the state of the auxiliary transmission pump relay output
High Side Driver& High Side Driver 2	Overrides the state of the High Side Driver Output
Shift Transmission Gear	Overrides the commanded gear output
Torque Converter Clutch	Overrides the state of the Torque Converter Clutch Enable and/or Torque Converter Clutch Control Solenoid
Transmission Control Solenoid Valve 1–9	Overrides the state of the Transmission Control Solenoid Valve — On or Off
Transmission Control Solenoid Valve 1–8 Current	Overrides the current of the Transmission Control Solenoid Valve — 0–1.2 A

Configuration/Reset Functions

Control Function	Description
Transmission Adaptive Pressure Reset	Triggers the reset of the transmission adaptive parameters
Transmission Service Fast Learn	This test executes a procedure in the TCM software to re-learn a variety of inputs.
Vehicle Speed Detected When Park Range Selected Reset	Triggers the reset of the park at speed detection values

K73 Telematic Control Module: Scan Tool Information

Telematic Control Module Scan Tool Data Parameters

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON			
GPS Data			
• Dead Reckoning Calibration Status	—	Calibrated or Not Calibrated	Indicates the dead reckoning calibration status.
• Position Calibration Method	—	Varies	Indicates the method used to determine current location. (0) GPS, (1) Wheel Speed Dead Reckoning only, (2) Combined Wheel Speed and GPS, (3) Gyro only, (4) Combined Gyro and GPS, (5) No Fix
• Month	—	MM	This displays the current month.
• Day	—	DD	This displays the current day of the month.
• Year	—	YY	This displays the current year.
• Hour	—	HH	This displays the GPS current hour (24 hour format – GMT).
• Minute	—	MM	This displays the GPS current minute.
• Second	—	SS	This displays the GPS current second.
• Number of Satellites Tracked	—	Varies	The scan tool displays the number of satellites being tracked by the Telematic Control Module.
Signal Strength Data			
• GSM Signal Strength	—	Varies	The scan tool displays 0–127. This is the Telematic Control Module signal strength.
• Current Public Land Mobile Network	—	Varies	Identifies the cellular communications network currently in use by the Telematic Control Module. Each network has a unique decimal number assigned to it for identification.
Bluetooth Data			
• Bluetooth	—	Enabled	Indicates if the Bluetooth system is enabled or disabled.
• Bluetooth Link Status	—	Varies	Indicates the current link status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active
• Bluetooth Link Quality	—	Varies	The scan tool displays a decimal value between 0 and 255.
• Bluetooth Phone to Telematic Control Module Authentication Status	—	Active or Inactive	Displays the bluetooth phone to Telematic Control Module authentication status.
• Bluetooth Phone to Telematic Control Module Communication Status	—	Active or Inactive	Displays the bluetooth phone to Telematic Control Module status.

Parameter	System State	Expected Value	Description
- Bluetooth Phone Voice Recognition Status	—	Active or Inactive	Displays the bluetooth phone to voice recognition status.
WLAN Device Data			
Off-Board Navigation	—	Enabled or Disabled	Indicates if Off-Board Navigation is enabled or disabled
Wireless LAN	—	Enabled or Disabled	Indicates the capability of the wireless communication of the Telematic Control Module
Number of WLAN Devices	—	Varies	Indicates the number of Wireless devices present
Active WLAN 2.4GHz Chennel	—	Varies	Indicates the active Wireless channel being used on the 2.4 GHz frequency
WLAN Link Status	—	Radio System – Never, Remembered but Not Associated or Associated	Indicates the link status of the Telematic Control Module and Infotainment system
GSM Signal Strength	—	Varies	State for Received Signal Strength Indicator
Mobile Communication Standard	—	2G, 3G, 4G or 4G LTE	State for Cellular Data Connection. Indicates the currently used data rate speed
WLAN Password	—	Varies	Indicates the Telematic Control Module Wireless Password
WLAN SSID (Service Set Identifier)	—	Varies	Indicates the Telematic Control Module Wireless Service Name
WLAN Encryption – WPA (Wi–Fi Protected Access)	—	Active or Inactive	Indicates if the WLAN Encryption – WPA (Wi–Fi Protected Access) is Active or Inactive
WLAN Encryption – WPA2 (Wi–Fi Protected Access II)	—	Active or Inactive	Indicates if the WLAN Encryption – WPA2 (Wi–Fi Protected Access II) is Active or Inactive
WLAN Encryption – AES (Advanced Encryption Standard)	—	Active or Inactive	Indicates if the WLAN Encryption – AES (Advanced Encryption Standard) is Active or Inactive
WLAN Encryption – TKIP (Temporal Key Intergrity Protocol)	—	Active or Inactive	Indicates if the WLAN Encryption – TKIP (Temporal Key Integrity Protocol) is Active or Inactive

Telematic Control Module Scan Tool Output Controls

Output Control	Description
B1000 Information	This shows the data recorded when DTC B1000 was set in the Telematic Control Module.
Green Indicator	The Telematic Control Module illuminates the green LED when ON is selected.
Phone Call Test	When ON is selected, Telematic Control Module commands OnStar to connect to the OnStar Center.
Red Indicator	The Telematic Control Module illuminates the red LED when ON is selected.
Preferred Roaming List Update	The Telematic Control Module performs a preferred roaming list (PRL) update when this is selected.
Remote Vehicle Speed Limiting Reset	This function resets the speed limiting feature.

K85P Restraints Occupant Classification System Module - Passenger: Scan Tool Information

Restraint Occupant Classification System Module Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Base Model Part Number	Varies, 8 Digit Number	The scan tool displays the part number of the ROCSM which is stored in non volatile memory.

Parameter	Expected Value	Definition
Battery Voltage	Volts	The scan tool will display battery voltage.
Calibration Part Number	Varies, 8 Digit Number	The scan tool displays the part number of the calibration file in the ROCSM.
End Model Part Number	Varies, 8 Digit Number	The scan tool displays the part number of the ROCSM in production.
Manufacturer's Traceability Number	Varies, 16 Digit Number	The scan tool displays the 16 digit traceability number in the ROCSM.
Passenger Air Bag Enable/Disable Request by Restraint Occupant Classification System Module	Disable	The scan tool displays the Passenger Air Bag Enable/ Disable Request by Restraint Occupant Classification System Module.
Restraint Occupant Classification Module Primary Key	Hex Value	The scan tool indicates the primary key Hex value.
Restraint Occupant Classification System Reporting DTC(s)	Yes/No	The ROCSM will report if there are DTCs set in the Restraint Occupant Classification module.
Passenger Seat Occupancy Status	Empty Seat	The scan tool displays Undefined, Empty Seat, Occupied, or Invalid. This is the state of the passenger seat if it is occupied or empty and monitored by the Restraint Occupant Classification System.
Power Mode	Off / Accessory / Run / Crank Request	The scan tool will display the power mode of the vehicle.
Primary Key Status	Valid/Invalid	The scan tool displays Valid if the primary key matches what is stored to memory in the ROCSM.
Received Primary Key	Hex Value	The scan tool displays a Hex value indicating the ROCSM received primary key data.
Software Part Number	Varies, 8 Digit Number	The scan tool displays the software part number in the ROCSM.

K124 Image Processing Module: Scan Tool Information (UGN)

Image Processing Module Scan Tool Data Parameters

Parameter	System State	Expected Value	Description
Operating Conditions: Vehicle in Run power mode, engine off.			
Steering Wheel Angle Sensor Learn Status	—	Learned	This displays the current learn status of the steering wheel angle sensor
Lane Keep Assist Malfunction Detection Status	—	OK	This displays whether or not there is a current malfunction detected in the Lane Keep Assist system.
Frontview Camera - Windshield Lane Detection Status	—	OK	This displays the current lane detection status of the Frontview Camera.
Power Steering System Assist Status	—	OK	This displays the current readiness status of the power steering assist system.
Power Steering System Status	—	OK	This displays the current status of the power steering system.
Active Rear Steering System Status	—	OK	This displays the current status of the active rear steering system
Lane Keep Assist Disabled By External Input	—	No	This displays whether or not there is an external input disabling the Lane Keep Assist system.
Lane Keep Assist Disabled By Switch Input	—	No	This displays whether or not there is a switch input disabling the Lane Keep Assist system.
Trailer Detected	—	No	This displays whether or not there is a trailer detected by the system.
Emergency Braking Active	—	No	This displays whether or not emergency braking is active.

Parameter	System State	Expected Value	Description
Traction Control Active	—	No	This displays whether or not traction control is active.
Vehicle Stability Control Active	—	No	This displays whether or not the vehicle stability control is active.
ABS Active	—	No	This displays whether or not the ABS system is active.
Vehicle Speed Too High or Low	—	No	This displays whether or not the vehicle speed is too high or too low.
Power Mode Set to Run	—	Yes	This displays whether or not the vehicle power mode is set to RUN.
Vehicle Stability Control System Status	—	Ready to Assist	This displays the readiness status of the vehicle stability control system.
Unreliable Lane Markings - Right Side	—	No	This displays if the driver assist system is detecting unreliable lane markings to the right side of the vehicle.
Unreliable Lane Markings - Left Side	—	No	This displays if the driver assist system is detecting unreliable lane markings to the left side of the vehicle.
Lane Curvature Right too High	—	No	This displays if the driver assist system is detecting a curve that is too tight on the right side of the vehicle.
Lane Curvature Left too High	—	No	This displays if the driver assist system is detecting a curve that is too tight on the left side of the vehicle.
Rural Road	—	Not Detected	This displays whether or not a rural road is detected.
Construction Area	—	Not Detected	This displays whether or not a construction zone is detected.
Hands-Free Steering Wheel Driving Detected	—	No	This displays whether or not the drivers hand is detected on the steering wheel.
Excessive Lateral Acceleration Detected	—	No	This displays whether or not the vehicle detects an excessive lateral movement.
Lane Curvature Error - Right Side	—	No	This displays whether or not the driver assist system detects an error while following a right curving road.
Lane Curvature Error - Left Side	—	No	This displays whether or not the driver assist system detects an error while following a left curving road.
Lane Marking Width Error - Right Side	—	No	This displays whether or not the driver assist system detects an error with the size of lane markings on the right side of the vehicle.
Lane Marking Width Error - Left Side	—	No	This displays whether or not the driver assist system detects an error with the size of lane markings on the left side of the vehicle.
Lane Marking Position Error - Right Side	—	No	This displays whether or not the driver assist system detects an error with the positioning of lane markings on the right side of the vehicle.
Lane Marking Position Error - Left Side	—	No	This displays whether or not the driver assist system detects an error with the positioning of lane markings on the left side of the vehicle.
Lane Marking Quality - Right Side	—	OK	This displays whether the quality of lane markings on the right side of the vehicle are adequate.
Lane Marking Quality - Left Side	—	OK	This displays whether the quality of lane markings on the left side of the vehicle are adequate.
Lane Width	—	OK	This displays whether the width of the current road lane is adequate.
Lane Keep Assist Switch Status	—	OK	This displays the current status of the lane keep assist switch.
Left and Right Lane Markings	—	Detected	This displays the detection status of lane markings on the left and right side of the vehicle.
Lane Curvature Not Plausible	—	No	This displays the plausibility of expected road curvature vs observed by the system.

Parameter	System State	Expected Value	Description
Lane Curvature Rate - Right	—	OK	This displays the curvature to the right as either OK or Excessive
Lane Curvature Rate - Left	—	OK	This displays the curvature to the left as either OK or Excessive
Look Ahead Distance Further Than View Range - Right	—	No	This displays whether or not the vehicle distance to an object on the right side of the vehicle is greater than the frontview camera’s field of view.
Look Ahead Distance Further Than View Range - Left	—	No	This displays whether or not the vehicle distance to an object on the left side of the vehicle is greater than the frontview camera’s field of view.
Brake Pedal Position Signal Invalid	—	No	This displays the validity of the brake pedal position sensor signal.
Accelerator Pedal Position Signal Invalid	—	No	This displays the validity of the accelerator pedal position sensor signal.
Transmission Gear Status Invalid	—	No	This displays the validity of the transmission gear status.
Yaw Rate Signal Invalid	—	No	This displays the validity of the yaw rate signal.
Lateral Acceleration Rate Signal Invalid	—	No	This displays the validity of the lateral acceleration rate signal.
Driver Applied Steering Torque Signal Invalid	—	No	This displays the validity of the driver applied steering torque signal.
Hands-Free Steering Wheel Detection Signal Invalid	—	No	This displays the validity of the hands-free steering wheel detection signal.
Steering Torque Overlay Signal Invalid	—	No	This displays the validity of the steering torque overlay signal.
ABS Status	—	Ready to Assist	This displays the readiness status of the ABS system.
Teen Driver Signal Invalid	—	No	This displays the validity of the teen driver signal.
Traction Control System Status Signal Invalid	—	No	This displays the validity of the traction control system status signal.
Traction Control Status	—	Ready to Assist	This displays the readiness status of the traction control system.
Vehicle Stability Control System Status Signal Invalid	—	No	This displays the validity of the vehicle stability control system status signal.
Steering Wheel Angle Sensor Signal Invalid	—	No	This displays the validity of the steering wheel angle sensor signal.
Vehicle Speed Signal Invalid	—	No	This displays the validity of the vehicle speed signal.
Vehicle Stability Control System Disabled by Driver	—	No	This displays whether or not the vehicle stability control system has been disabled by the driver.
Super Cruise Engaged	—	No	This displays whether or not the Super Cruise system is engaged.
Side Object Detection Status	—	OK	This displays the current status of the Side Object Detection system.
Construction Zone Detection Signal Invalid	—	No	This displays the validity of the construction zone detection signal.
Power Mode Signal Status Invalid	—	No	This displays the validity of the vehicle power mode signal.
Turn Signal Switch Signal Invalid	—	No	This displays the validity of the turn signal switch signal.
Trailer Connected Signal Invalid	—	No	This displays the validity of the trailer connection signal.
Time to Collision Signal Invalid	—	No	This displays the validity of the time to collision signal.

Parameter	System State	Expected Value	Description
ABS Status Signal Invalid	—	No	This displays the validity of the ABS status signal.
Power Mode	—	Run	This displays the current power mode of the vehicle. This can read OFF, Accessory, RUN, Start, or Propulsion Active.

Drivers Assist System Disable History Conditions
Refer to [Link target (target-id 331106-) not found] for a list of all available conditions that can cause the driver assist systems functions to be inhibited or disabled.

Lane Keep Assist Event History

Control Module	Parameter Name	Normal Value	Unit	Description
Image Processing Module	Lane Keep Assist Event History 1-8 - Status	Blank	Blank	The status of the diagnostic
Image Processing Module	Lane Keep Assist Event History 1-8	Blank	Blank	
Image Processing Module	Lane Keep Assist Event History 1-8 - Ignition Cycles Since Last Diagnostic Event	Blank	Counts	Ignition Cycles Since Last Diagnostic Event
Image Processing Module	Lane Keep Assist Event History 1-8 - Malfunction Counter	Blank	Counts	Number of malfunctions
Image Processing Module	Lane Keep Assist Event History 1-8 Odometer at First Malfunction	Blank	km	Odometer at First Malfunction/failure
Image Processing Module	Lane Keep Assist Event History 1-8 Odometer at Last Malfunction	Blank	km	Odometer at Last Malfunction/failure

Front Impact Mitigation Event History

Control Module	Parameter Name	Normal Value	Unit	Description
Image Processing Module	Front Impact Mitigation Event History 1-8 - Status	Blank	Blank	The status of the diagnostic
Image Processing Module	Front Impact Mitigation Event History 1-8	Blank	Blank	
Image Processing Module	Front Impact Mitigation Event History 1-8 - Ignition Cycles Since Last Diagnostic Event	Blank	Counts	Ignition Cycles Since Last Diagnostic Event
Image Processing Module	Front Impact Mitigation Event History 1-8 - Malfunction Counter	Blank	Counts	Number of malfunctions

Control Module	Parameter Name	Normal Value	Unit	Description
Image Processing Module	Front Impact Mitigation Event History 1-8 - Odometer at First Malfunction	Blank	km	Odometer at First Malfunction/failure
Image Processing Module	Front Impact Mitigation Event History 1-8 - Odometer at Last Malfunction	Blank	km	Odometer at Last Malfunction/failure

Adaptive Cruise Control Disengage History

Control Module	Parameter Name	Normal Value	Unit	Description
Image Processing Module	Adaptive Cruise Control Disengage History 1-8 - Status	Blank	Blank	The status of the diagnostic
Image Processing Module	Adaptive Cruise Control Disengage History 1-8	Blank	Blank	
Image Processing Module	Adaptive Cruise Control Disengage History 1-8 - Ignition Cycles Since Last Diagnostic Event	Blank	Counts	Ignition Cycles Since Last Diagnostic Event
Image Processing Module	Adaptive Cruise Control Disengage History 1-8 - Malfunction Counter	Blank	Counts	Number of malfunctions
Image Processing Module	Adaptive Cruise Control Disengage History 1-8 Odometer at First Malfunction	Blank	km	Odometer at First Malfunction/failure
Image Processing Module	Adaptive Cruise Control Disengage History 1-8 Odometer at Last Malfunction	Blank	km	Odometer at Last Malfunction/failure

Adaptive Cruise Control Inhibit History

Control Module	Parameter Name	Normal Value	Unit	Description
Image Processing Module	Adaptive Cruise Control Inhibit History 1-8 - Status	Blank	Blank	The status of the diagnostic
Image Processing Module	Adaptive Cruise Control Inhibit History 1-8	Blank	Blank	
Image Processing Module	Adaptive Cruise Control Inhibit History 1-8 - Ignition Cycles Since Last Diagnostic Event	Blank	Counts	Ignition Cycles Since Last Diagnostic Event
Image Processing Module	Adaptive Cruise Control Inhibit History 1-8 - Malfunction Counter	Blank	Counts	Number of malfunctions

Control Module	Parameter Name	Normal Value	Unit	Description
Image Processing Module	Adaptive Cruise Control Inhibit History 1-8 Odometer at First Malfunction	Blank	km	Odometer at First Malfunction/failure
Image Processing Module	Adaptive Cruise Control Inhibit History 1-8 Odometer at Last Malfunction	Blank	km	Odometer at Last Malfunction/failure

K124 Image Processing Module: Scan Tool Information (UKL)

Note: Due to software and hardware variations, not all information may be applicable.

Image Processing Module Scan Tool Data Parameters

Parameter	System State	Expected Value	Description
Operating Conditions: Vehicle in Run power mode, engine off.			
Lane Keep Assist Status	—	Enabled	This displays the current status of the Lane Keep Assist system.
Super Cruise Status	—	OFF	This displays the current status of the Super Cruise system.
Adaptive Cruise Control Status	—	OFF	This displays the current status of the Adaptive Cruise Control system.
Heated Steering Wheel Auto Command	—	OFF	This displays the current status of the automatic heated steering wheel system.
Vehicle Dynamic Sensor Orientation Calibration Status	—	Calibrated	This displays the current calibration status as either “Calibrated”, “In Progress”, or “Not Calibrated”
Vehicle Dynamic Sensor Offset Calibration Status	—	Calibrated	This displays the current calibration status as either “Calibrated”, “In Progress”, or “Not Calibrated”
Steering Wheel Touch Sensing	—	Inactive	This displays the current calibration status as either “Calibrated” or “Not Calibrated”
Steering Wheel Light Bar Color Command	—	OFF	This displays the current status of the steering wheel LED light bar color..
Power Mode	—	ACCESSORY	This displays the current power mode of the vehicle as “OFF”, “ACCESSORY”, “RUN”, or “START REQUEST”

Drivers Assist System Disable History Conditions

Refer to [Link target (target-id 331106-) not found] for a list of all available conditions that can cause the driver assist systems functions to be inhibited or disabled.

Environmentally Induced Disengagement Event History

Control Module	Parameter Name	Normal Value	Unit	Description
Image Processing Module - Processor 1 and Processor 2	Environmentally Induced Disengagement Event History 1-8 - Status	Blank	Blank	The status of the diagnostic
Image Processing Module - Processor 1 and Processor 2	Environmentally Induced Disengagement Event History 1-8	Blank	Blank	Disable reason

Control Module	Parameter Name	Normal Value	Unit	Description
Image Processing Module - Processor 1 and Processor 2	Environmentally Induced Disengagement Event History 1-8 - Ignition Cycles Since Last Diagnostic Event	Blank	Counts	Ignition Cycles Since Last Diagnostic Event
Image Processing Module - Processor 1 and Processor 2	Environmentally Induced Disengagement Event History 1-8 - Malfunction Counter	Blank	Counts	Number of malfunctions
Image Processing Module - Processor 1 and Processor 2	Environmentally Induced Disengagement Event History 1-8 Odometer at First Malfunction	Blank	km	Odometer at First Malfunction/failure
Image Processing Module - Processor 1 and Processor 2	Environmentally Induced Disengagement Event History 1-8 Odometer at Last Malfunction	Blank	km	Odometer at Last Malfunction/failure

Automatically Induced Disengagement Event History

Control Module	Parameter Name	Normal Value	Unit	Description
Image Processing Module - Processor 1 and Processor 2	Automatically Induced Disengagement Event History 1-8 - Status	Blank	Blank	The status of the diagnostic
Image Processing Module - Processor 1 and Processor 2	Automatically Induced Disengagement Event History 1-8	Blank	Blank	Disable reason
Image Processing Module - Processor 1 and Processor 2	Automatically Induced Disengagement Event History 1-8 - Ignition Cycles Since Last Diagnostic Event	Blank	Counts	Ignition Cycles Since Last Diagnostic Event
Image Processing Module - Processor 1 and Processor 2	Automatically Induced Disengagement Event History 1-8 - Malfunction Counter	Blank	Counts	Number of malfunctions
Image Processing Module - Processor 1 and Processor 2	Automatically Induced Disengagement Event History 1-8 - Odometer at First Malfunction	Blank	km	Odometer at First Malfunction/failure
Image Processing Module - Processor 1 and Processor 2	Automatically Induced Disengagement Event History 1-8 - Odometer at Last Malfunction	Blank	km	Odometer at Last Malfunction/failure

Driver Induced Disengagement Event History

Control Module	Parameter Name	Normal Value	Unit	Description
Image Processing Module - Processor 1 and Processor 2	Driver Induced Disengagement Event History 1-8 - Status	Blank	Blank	The status of the diagnostic
Image Processing Module - Processor 1 and Processor 2	Driver Induced Disengagement Event History 1-8	Blank	Blank	Disable reason
Image Processing Module - Processor 1 and Processor 2	Driver Induced Disengagement Event History 1-8 - Ignition Cycles Since Last Diagnostic Event	Blank	Counts	Ignition Cycles Since Last Diagnostic Event
Image Processing Module - Processor 1 and Processor 2	Driver Induced Disengagement Event History 1-8 - Malfunction Counter	Blank	Counts	Number of malfunctions
Image Processing Module - Processor 1 and Processor 2	Driver Induced Disengagement Event History 1-8 Odometer at First Malfunction	Blank	km	Odometer at First Malfunction/failure
Image Processing Module - Processor 1 and Processor 2	Driver Induced Disengagement Event History 1-8 Odometer at Last Malfunction	Blank	km	Odometer at Last Malfunction/failure

Lane Change on Demand Inhibited Event History

Control Module	Parameter Name	Normal Value	Unit	Description
Image Processing Module - Processor 1 and Processor 2	Lane Change on Demand Inhibited Event History 1-8 - Status	Blank	Blank	The status of the diagnostic
Image Processing Module - Processor 1 and Processor 2	Lane Change on Demand Inhibited Event History 1-8	Blank	Blank	Inhibit reason
Image Processing Module - Processor 1 and Processor 2	Lane Change on Demand Inhibited Event History 1-8 - Ignition Cycles Since Last Diagnostic Event	Blank	Counts	Ignition Cycles Since Last Diagnostic Event
Image Processing Module - Processor 1 and Processor 2	Lane Change on Demand Inhibited Event History 1-8 - Malfunction Counter	Blank	Counts	Number of malfunctions
Image Processing Module - Processor 1 and Processor 2	Lane Change on Demand Inhibited Event History 1-8 Odometer at First Malfunction	Blank	km	Odometer at First Malfunction/failure
Image Processing Module - Processor 1 and Processor 2	Lane Change on Demand Inhibited Event History 1-8 Odometer at Last Malfunction	Blank	km	Odometer at Last Malfunction/failure

Image Processing Module Output Controls

Output Control	Description
Vehicle Dynamic Sensor Offset Calibration	Learns the initial bias values for roll, yaw, and pitch rate for the multi-axis acceleration sensor.
Steering Wheel Light Bar	Requests the steering wheel light bar LED color and flash rate.

K160 Brake System Control Module: Scan Tool Information

The Electronic Brake Control Module (EBCM) scan tool data parameters list contains all ABS related parameters that are available on the scan tool. The list is arranged in alphabetical order. A given parameter may appear in any one of the data lists.

Brake System Control Module Scan Tool Data Parameters

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON			
ABS Active SIgnal		OK/Malfunction	Determine the state of the ABS system
ABS Pump Motor Voltage		0 V	The scan tool displays the commanded pump motor voltage.
Actual Brake System Plunger Motor Torque		Varies	The scan tool displays the motor torque feedback.
Actual Brake System Plunger Position		Varies	The scan tool displays Plunger Position Feedback
Actual Brake System Plunger Speed		Varies	The scan tool displays Plunger Speed Feedback
All Wheel Drive		Active/Inactive	The scan tool displays when in four wheel drive (if equipped).
Antilock Braking System		OK/Malfunction	The scan tool displays OK or Malfunction. Malfunction is displayed if there is an ABS malfunction.
Automatic Brake Control Gain Request from Brake System Control Module		Varies	The scan tool displays a percentage of Autonomous Control Gain Request from BSCM
Automatic Braking Event		Detected/Not Detected	The scan tool displays Automatic Trailer Braking Event
Automatic Brake Request from Brake System Control Module		Yes/No	The scan tool displays Trailer Brake Autonomous Control Status
Automatic Braking Active Signal		Okay/ Malfunction	ABS Active Malfunction indicates invalid protected ABS active data received from Automatic Brake System Control Module
Automatic Braking Torque Signal		Okay/ Malfunction	The scan tool displays Automatic Brake Torque Signal Failure
Autonomous Braking Request Signal		Okay/ Malfunction	Autonomous Signal malfunction indicates invalid autonomous braking data received from Automatic Brake System Control Module
Brake Fluid Level Sensor		Okay/Low	The scan tool displays OK when the brake fluid is at correct level and Low when the brake fluid is low.
Brake Fluid Reservoir Seperating Solenoid Valve		Active/Inactive	The scan tool displays Eboost System Internal Valves Feedback Status Reservoir Seperation Valve Commanded
Brake Master Cylinder Separating Solenoid Valve 1		Active/Inactive	The scan tool displays Eboost System Internal Valves Feedback Status Circuit Seperating Valve 1 Commanded.
Brake Master Cylinder Separating Solenoid Valve 2		Active/Inactive	The scan tool displays Eboost System Internal Valves Feedback Status Circuit Seperating Valve 2 Commanded

Parameter	System State	Expected Value	Description
Brake Pad Wear Malfunction Signal		None Propulstion Active, Vehicle Speed, Malfunction, Reset	The scan tool displays the Brake Pad Life Monitoring Axle Reset Reject Reason
Brake Pad Wear Signal		Low/High	The scan tool displays Brake Pad Wear Input Status
Brake Pedal Position Sensor	Brake pedal released	Inactive	The scan tool displays Inactive or Active depending on the state of the brake pedal.
	Brake pedal applied	Active	
Brake Pedal Simulator Separating Solenoid Valve		Active/Inactive	System Internal Valves Feedback Status Simulator Separating Valve Commanded
Brake Pressure Signal		Okay/ Malfunction	The scan tool displays Brake Pressure Signal Failure
Brake System		Active/Inactive	The scan tool displays the boost status.
Brake System Plunger Motor Resistance		Varies	The scan tool displays the calculated Motor Resistance
Brake System Plunger Motor Temperature 1		Varies	The scan tool displays the Module Motor Driver Temperature CH1
Brake System Plunger Motor Temperature 2		Varies	The scan tool displays the Module Motor Driver Temperature CH2
Brake System Plunger Separating Solenoid Valve 1		Active/Inactive	The scan tool displays System Internal Valves Feedback Status Plunger Separating Valve 1 Commanded.
Brake System Plunger Separating Solenoid Valve 2		Active/Inactive	System Internal Valves Feedback Status Plunger Separating Valve 2 Commanded
Brake Pressure		Varies	The scan tool displays brake apply pressure.
Brake Pressure Created by Applying Brake Pedal		Varies	The scan tool displays Brake Pedal Driver Applied Pressure
Brake Pressure Sensor	Brake pedal released	0–1 V	The scan tool displays 0–5 V depending on the applied hydraulic brake pressure.
	Brake pedal applied	1–5 V	
Brake Pressure Sensor	Brake pedal released	2000–3000 kPa	The scan tool displays the actual pressure applied to the brake pedal.
Brake Pressure Test		Incomplete, Active, Complete, Failed	The scan tool displays the Wheel Pressure Control Feedback Test Status
Brake System Plunger Motor Current Limitation		Active/Inactive	Eboost Motor Current Limitation
Brake System Plunger Motor Status		Active/Inactive	The scan tool displays if the Eboost Motor Status has limitations.
Brake System Plunger Motor Temperature Limitation		Active/Inactive	Eboost Motor Temperature Limitation
Brake System Plunger Motor Torque Limitation		Active/Inactive	Eboost Motor Torque Limitation
Brake System Plunger Travel		Varies	The scan tool displays the plunger travel.
Calculated Input rod Position		Varies	The scan tool displays the EBoost Input Rod Stroke - Calculated

Parameter	System State	Expected Value	Description
Delivered Torque		Varies	The scan tool displays 0–100% depending on the how much torque the engine is delivering.
Desired Trailer Brake Control Duty Cycle		OK/Malfunction	The banded trailer brake duty cycle sent to the Trailer Brake Module. It represents the requested duty cycle as transformed to allow diagnostics on the transmission line
Desired Brake System Plunger Position		Varies	The scan tool displays the command Plunger Position
Desired Brake System Plunger Speed		Varies	The scan tool displays the commanded Plunger Speed.
Desired Brake System Plunger Motor Torque		Varies	The scan tool displays the commanded Motor Torque.
Deviation Between Manual Trailer Brake Apply Request Signal 1 and 2		Varies	The scan tool displays Trailer Brake Manual Apply Switch Position Error
Diagnostic Mode		Active/Inactive	Diagnostic Mode Status
Driver Initiated Brake Event		Not Detected/ Detected	The scan tool displays Brake Event Detected
Dynamic Rear Proportioning Status		Okay/ Malfunction	The scan tool displays Dynamic Rear Proportioning System Failure Status
Engine Drag Control Status		Okay/ Malfunction	The scan tool displays Engine Drag Control Status
Front Brake Pad Wear Sensors		Varies	The scan tool displays Front Axle Brake Pad Wear Sensor Voltage
Induced Voltage by Trailer Brake Coil		Varies	The scan tool displays Inductance Measurement Voltage
Input Rod Position 1		Varies	The scan tool display the position of the Input Rod Stroke 1
Input Rod Position 2		Varies	The scan tool display the position of the Input Rod Stroke 2
Input Rod Position Sensors 1 and 2 Supply Voltage		Varies	The scan tool display the Brake Pedal Postion Sensor Reference Voltage
Lateral Acceleration		Varies	The scan tool displays 0–5 V depending on the vehicle's lateral acceleration.
Left Front Inlet Solenoid Valve Feedback		Inactive/Active	Active is displayed when the left front inlet solenoid valve is commanded ON.
Left Front Outlet Solenoid Valve Feedback		Inactive/Active	Active is displayed when the left front outlet solenoid valve is commanded ON.
Left Front Wheel Speed		0 km/h (0 MPH)	The scan tool displays km/h (MPH) depending on the current speed of the left front wheel speed sensor.
Left Front Brake Pressure		Varies	The scan tool displays the left front wheel pressure
Left Park Brake Actuator Force		Varies	The scan tool displays the Left Park Brake Actuator force
Left Park Brake Actuator Status		Released, Applied, Malfunction, Service Release, Releasing, Applying, Unknown	The scan tool displays the Left Park Brake Actuator Status
Left Park Brake Actuator Voltage		Varies	The scan tool displays the Left Park Brake Actuator voltage
Left Rear Brake Pressure		Varies	The scan tool displays the left rear wheel pressure

Parameter	System State	Expected Value	Description
Left Rear Inlet Solenoid Valve Feedback		Inactive	The scan tool displays Inactive or Active. Active is displayed when the left rear inlet solenoid valve is commanded ON.
Left Rear Outlet Solenoid Valve Feedback		Inactive	The scan tool displays Inactive or Active. Active is displayed when the left rear outlet solenoid valve is commanded ON.
Left Rear Wheel Speed		0 km/h (0 MPH)	The scan tool displays km/h (MPH) depending on the current speed of the left rear wheel speed sensor.
Limited Brake Function - Only Limited Brake Pressure Available		Active/Inactive	The scan tool displays Partial Boost status
Limited Brake Function - Low Voltage Condition		Active/Inactive	The scan tool displays Low Voltage Boost Status
Limited Brake Function - Only One Brake Circuit Available		Active/Inactive	The scan tool displays half system boost status.
Longitudinal Acceleration		Varies	The scan tool displays the vehicle's longitudinal acceleration.
Manual Trailer Brake		Released/ Applied	Trailer Braking Signals Status Manual Trailer Brake Applied
Manual Trailer Brake Apply Request Signal 1		OK/Malfunction	Trailer Brake Primary Manual Apply Switch Position
Manual Trailer Brake Apply Request Signal 2		OK/Malfunction	Trailer Brake Redundant Manual Apply Switch Position
Module Temperature		Varies	The scan tool displays the Bake System Control Module Temperature.
Normal Braking Mode		Active/Inactive	The scan tool displays if the vehicle is in normal braking mode.
Park Brake Actuator		Active/Inactive	The scan tool displays the Electric Park Brake Motor Status
Park Brake Actuator Direction		Released/ Applied	The scan tool displays the Electric Park Brake Motor Status
Panic Brake Assist Status		OK	The scan tool displays OK or Malfunction. Malfunction is displayed if the EBCM disables the panic brake assist due to a fault.
Park Brake Mode		Active/Inactive	The scan tool displays if in Shut Down Boost status
Park Brake Switch		Active/Inactive	The scan tool displays the status of the Electric Park Brake Switch
Pump Motor Relay Feedback		Inactive	The scan tool displays Inactive or Active. Active is displayed when the pump motor is commanded ON.
Primary Isolation Solenoid Valve Feedback		Inactive	The scan tool displays Inactive or Active. Active is displayed when the isolation solenoid valve is commanded ON.
Primary Prime Solenoid Valve Feedback		Inactive	The scan tool displays Inactive or Active. Active is displayed when the prime solenoid valve is commanded ON.
Rear Brake Pad Wear Sensors		Varies	The scan tool displays the remaining percentage of brake pad.
Redundant Trailer Brake Manual Apply Slider		Varies	The scan tool displays Manual Apply Switch Voltage.
Regenerative Braking Axle Torque Request		Varies	The scan tool displays Regenerative Braking Axle Torque Request
Regenerative Braking, Stability or Traction Control Disable History 1		Varies	The scan tool displays Regenerative Braking, Stability or Traction Control Disabling ECU History 1
Regenerative Braking, Stability or Traction Control Disable History 2		Varies	The scan tool displays Regenerative Braking, Stability or Traction Control Disabling ECU History 2

Parameter	System State	Expected Value	Description
Regenerative Braking, Stability or Traction Control Disable History 3		Varies	The scan tool displays Regenerative Braking, Stability or Traction Control Disabling ECU History 3
Regenerative Braking, Stability or Traction Control Disable History 4		Varies	The scan tool displays Regenerative Braking, Stability or Traction Control Disabling ECU History 4
Regenerative Braking, Stability or Traction Control Disable History 5		Varies	The scan tool displays Regenerative Braking, Stability or Traction Control Disabling ECU History 5
Regenerative Braking, Stability or Traction Control Disable History 6		Varies	The scan tool displays Regenerative Braking, Stability or Traction Control Disabling ECU History 6
Regenerative Braking, Stability or Traction Control Disable History 7		Varies	The scan tool displays Regenerative Braking, Stability or Traction Control Disabling ECU History 7
Regenerative Braking, Stability or Traction Control Disable History 8		Varies	The scan tool displays Regenerative Braking, Stability or Traction Control Disabling ECU History 8
Regenerative Braking, Stability or Traction Control Disable History 9		Varies	The scan tool displays Regenerative Braking, Stability or Traction Control Disabling ECU History 9
Regenerative Braking, Stability or Traction Control Disable History 10		Varies	The scan tool displays Regenerative Braking, Stability or Traction Control Disabling ECU History 10
Requested Torque		Varies	The scan tool displays 0–100% depending on the how much torque is requested.
Right Front Brake Pressure		Varies	The scan tool displays the right front wheel pressure.
Right Front Inlet Solenoid Valve Feedback		Inactive	The scan tool displays Inactive or Active. Active is displayed when the right front inlet solenoid valve is commanded ON.
Right Front Outlet Solenoid Valve Feedback		Inactive	The scan tool displays Inactive or Active. Active is displayed when the right front outlet solenoid valve is commanded ON.
Right Front Wheel Speed		0 km/h (0 MPH)	The scan tool displays km/h (MPH) depending on the current speed of the right front wheel speed sensor.
Right Park Brake Actuator Force		Varies	Scan tool displays the Right Park Brake Actuator force
Right Park Brake Actuator Status		Released, Applied, Malfunction, Service Release, Releasing, Applying, Unknown	Scan tool displays the Right Park Brake Actuator Status
Right Park Brake Actuator Voltage		Varies	Scan tool displays the Right Park Brake Actuator voltage
Right Rear Brake Pressure		Varies	The scan tool displays the right rear wheel pressure.
Right Rear Inlet Solenoid Valve Feedback		Inactive	The scan tool displays Inactive or Active. Active is displayed when the right rear inlet solenoid valve is commanded ON.
Right Rear Outlet Solenoid Valve Feedback		Inactive	The scan tool displays Inactive or Active. Active is displayed when the right rear outlet solenoid valve is commanded ON.
Right Rear Wheel Speed		0 km/h (0 MPH)	The scan tool displays km/h (MPH) depending on the current speed of the right rear wheel speed sensor.
Roller Test Stand Mode		Active/Inactive	The scan tool displays dyno mode status
Secondary Isolation Solenoid Valve Feedback		Active/Inactive	The scan tool displays Inactive or Active. Active is displayed when the isolation solenoid valve is commanded ON.
Secondary Prime Solenoid Valve Feedback		Active/Inactive	The scan tool displays Inactive or Active. Active is displayed when the prime solenoid valve is commanded ON.

Parameter	System State	Expected Value	Description
Shutdown Mode		Active/Inactive	The scan tool displays if in shutdown mode
Stop Lamp Signal		Not Requested/ Requested	The scan tool displays Brake Lights Requested
Steering Wheel Angle	Steering wheel in straight position	−5 to +5°	The scan tool displays °. This is the current position of the steering angle sensor.
	Steering wheel turned left until stop	450–550°	
	Steering wheel turned right until stop	−550 to −450°	
System Voltage	—	11–14 V	The scan tool displays V. This is the current battery voltage.
Traction Control Switch	Traction control switch released	Inactive	The scan tool displays Inactive or Active depending on the traction control switch status.
	Traction control switch pressed	Active	
Traction Control System		OK	The scan tool displays OK or Malfunction. Malfunction is displayed if there is a traction control malfunction.
Trailer Brake Automatic Control State		Normal, Active, Temporarily Limited, Permanently Failed, Communication Failed, Off, No Signal	Trailer Brake Autonomous Control Status Autonomous Control Feedback State
Trailer Brake Control		Disabled, Inactive, Normal Brake Mode, High Brake Mode, Manual Apply Brake Mode, Brake in Autonomous Mode, Undefined	The Scan tool displays Trailer Braking Arbitration State
Trailer Brake Control Output Circuit		Indeterminate, Voltage too High, Voltage too Low, Okay	The Scan tool displays Trailer Brake Control Output State
Trailer Brake Manual Apply Slider		Varies	The scan tool displays the trailer brake slider position as a percentage
Trailer Brake Power Control Module		De-Energized/ Energized	Trailer Brake Control Status Energized
Trailer Brake Power Control Module Battery Voltage		Varies	The scan tool displays Trailer Brake Power Control Module Battery Voltage.
Trailer Brake Sensitivity		Varies	The scan tool displays Trailer Brake User Gain

Parameter	System State	Expected Value	Description
Trailer Brake Sensitivity Switch Up Button		Active/Inactive	The scan tool displays Trailer Brake Control Switch User Gain Button States
Trailer Brake Type		Unknown, Electrical, Electrohydraulic	The scan tool displays Trailer Connection Status
Vehicle Stability System		OK	The scan tool displays OK or Malfunction. Malfunction is displayed if there is a stability control malfunction.
Vehicle Stability Enhancement System Signal			
Vehicle Stability Enhancement System Switch	Traction control switch released	Inactive	The scan tool displays Inactive or Active depending on the traction control switch status.
	Traction control switch pressed	Active	
Wheel Speed Signal		Okay/ Malfunction	The scan tool displays Wheel Speed Signal Failure
Yaw Rate Signal		Varies	The scan tool displays 0–5 V depending on the vehicle's yaw rate.

Brake System Control Module Scan Tool Output Controls

Output Control	Description
Automated Brake Bleed	This is used in order to bleed ABS hydraulics.
Brake Hydraulics Test	This is used to check for leaks or air in the system.
Brake System Hydraulic Corner Test	Commands brake hydraulic pressure to each corner.
Deactivate Brake Boost System	This is used to deactivate brake boost system before performing certain functions.
Left Park Brake Actuator	Commands the left park brake actuator ON or OFF.
Right Park Brake Actuator	Commands the right park brake actuator ON or OFF.
Deactivate Rear Park Brake Service Position	Commands the caliper piston back into position after servicing the rear brakes,
Activate Rear Park Brake Service Position	Retracts the caliper piston to service the rear brakes.
Trailer Brake Control Signal	Commands the trailer brakes on and off
Trailer Brake Duty Cycle	Controls the battery output voltage to the trailer brakes.
Trailer Brake Switch Indicator	Conmands the Trailer Brake Switch Indicator on or off

K179 Automated Driving Mapping Module: Scan Tool Information

K179 Automated Driving Mapping Module Scan Tool Data Parameters

Parameter	System State	Expected Value	Description
Operating Conditions: Vehicle ON			
Battery Voltage	—	Varies	This display the battery voltage in V
Digital Map Version	—	Varies	This displays the current version of the map file
Ethernet Switch Software Part Number	—	Varies	This displays the current Ethernet Switch Software part numer
Heading as Last GPS Fix	—	Varies	This displays the vehicle heading as of the most recent GPS fix

Parameter	System State	Expected Value	Description
Elevation	—	Varies	This displays the current vehicle elevation position in degrees
Longitude	—	Varies	This displays the current vehicle longitudinal position in degrees
Latitude	—	Varies	This displays the current vehicle latitude position in degrees

K180 Driver Monitoring System Control Module: Scan Tool Information

Note: Due to software and hardware variations, not all information may be applicable.

K180 Driver Monitoring System Control Module Scan Tool Data Parameters

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON			
Vehicle Identification Number (VIN)	—	Varies	The scan tool displays the learned VIN
End Model Part Number	—	Varies	End Model Part Number is the part number for the hardware of the control module with software and calibrations.
Base Model Part Number	—	Varies	Base Model Part Number is the part number for the hardware without software and calibrations.
Manufacturer’s Traceability Number	—	Varies	
Diagnostic Data Identifier	—	Varies	The scan tool displays the 4 character alphanumeric device ID.
Manufacturer Enable Counter	—	Varies	
Boot Software Part Number 1 Alpha Code	—	Varies	
Application Software Part Number 1 Alpha Code	—	Varies	
Calibration Part Number 1	—	Varies	

K182 Parking Assist Control Module: Scan Tool Information

Note: Due to software and hardware variations, not all information may be applicable.

Parking Assist Control Module Scan Tool Data Parameters – Identification Information

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine OFF/Parking Assist ON			
Vehicle Identification Number (VIN)	—	Varies	The scan tool displays the Vehicle Identification Number
Diagnostic Data Identifier	—	Varies	The scan tool displays the Diagnostic Data Identifier
XML Configuration Compatibility Identifier	—	Varies	The scan tool displays the XML Configuration Compatibility Identifier
XML Data File Part Number	—	Varies	The scan tool displays the XML Data File Part Number
XML Data File Alpha Code	—	Varies	The scan tool displays the XML Data File Alpha Code

Parameter	System State	Expected Value	Description
Module Diagnostic Address	—	Varies	The scan tool displays the Module Diagnostic Address
Manufacturer's Traceability Number	—	Varies	The scan tool displays the Manufacturer's Traceability Number
Software Part Number	—	Varies	The scan tool displays the Software Part Number
Calibration Part Number 2	—	Varies	The scan tool displays the Calibration Part Number 2
End Model Part Number	—	Varies	The scan tool displays the End Model Part Number
Base Model Part Number	—	Varies	The scan tool displays the Base Model Part Number
Software Module 1 Identifier Alpha Code	—	Varies	The scan tool displays the Software Module 1 Identifier Alpha Code
End Model Part Number Alpha Code	—	Varies	The scan tool displays the End Model Part Number Alpha Code
Base Model Part Number Alpha Code	—	Varies	The scan tool displays the Base Model Part Number Alpha Code
GMLAN Identification Data - Bus 1 Type	—	Varies	The scan tool displays the GMLAN Identification Data - Bus 1 Type
GMLAN Identification Data - Data Dictionary 1 Version	—	Varies	The scan tool displays the GMLAN Identification Data - Data Dictionary 1 Version
GMLAN Identification Data - GMLAN Kernel 1 Version	—	Varies	The scan tool displays the GMLAN Identification Data - GMLAN Kernel 1 Version
Date Programmed	—	Varies	The scan tool displays the date the module was programmed

Parking Assist Control Module Scan Tool Data Parameters – Park Assist System Data

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine OFF/Parking Assist ON			
Power Mode	—	Run	The scan tool displays Off, Accessory, Run or Crank. This is the state of the ignition switch.
Battery Voltage	—	11–14 V	The scan tool displays V. This is the current battery voltage.
Parking Assist System Status	—	Enable	The scan tool displays Disable, Enable, Inhibited or Failed. This is the state of the parking assist system.
Parking Assist Chime	—	Varies	The scan tool displays On or Off. On is displayed if there is an object within the measuring range of the object sensors.
Parking Assist Sensors	—	ON	The scan tool displays On or Off.
Calculated Transmission Range	Transmission in reverse	Park	The scan tool displays Park, Reverse, Neutral, Drive or Unknown depending on the state of the commanded gear.
Parking Assist Switch	—	Active/Inactive	The scan tool displays Active or Inactive depending on the state of the parking assist switch.
Advanced Parking Assist Switch	—	Active/Inactive	The scan tool displays Active or Inactive depending on the state of the advanced parking assist switch.
Parking Assist Sensors Reference Voltage	—	7.3–12.1 V	The scan tool displays V. This is the amount of voltage being sent to the object sensors.
Parking Assist Switch LED	—	Varies	The scan tool displays On or Off depending on the state of the parking assist switch LED.
Right Side Object Detection Indicator	—	Varies	The scan tool displays a blank, On or Off depending on the state of the right side object detection indicator command status.

Parameter	System State	Expected Value	Description
Left Side Object Detection Indicator	—	Varies	The scan tool displays a blank, On or Off depending on the state of the left side object detection indicator command status.
Advanced Parking Assist Status	—	Standby	The scan tool displays Standby, Active, or Inactive depending on the state of the advanced parking assist.

Parking Assist Control Module Scan Tool Data Parameters – Parking Assist Sensor Data

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine OFF/Parking Assist ON			
Parking Assist Sensors	—	ON	The scan tool displays On or Off.
Parking Assist Sensors Reference Voltage	—	7.3–12.1 V	The scan tool displays V. This is the voltage being sent to the object sensors.
Left Front Advanced Parking Assist Side Object Sensor	—	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Left Front Outer Object Sensor Distance to Object	—	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Left Front Inner Object Sensor Distance to Object	—	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Right Front Advanced Parking Assist Side Object Sensor	—	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Right Front Outer Object Sensor Distance to Object	—	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Right Front Inner Object Sensor Distance to Object	—	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Left Rear Advanced Parking Assist Side Object Sensor	—	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Left Rear Outer Object Sensor Distance to Object	—	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Left Rear Inner Object Sensor Distance to Object	—	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Right Rear Advanced Parking Assist Side Object Sensor	—	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Right Rear Outer Object Sensor Distance to Object	—	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.
Right Rear Inner Object Sensor Distance to Object	—	32767 mm	The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object.

Parking Assist Control Module Scan Tool Data Parameters – Parking Assist Disable History 1–4 Data

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine OFF/Parking Assist ON			
Parking Assist Disable History 1	—	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.
Parking Assist Disable History 2	—	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.
Parking Assist Disable History 3	—	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.
Parking Assist Disable History 4	—	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.

Parking Assist Control Module Scan Tool Data Parameters – Parking Assist Disable History 5–7 Data

Parameter	System State	Expected Value	Description
Operating Conditions: Ignition ON/Engine OFF/Parking Assist ON			
Parking Assist Disable History 5	—	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.
Parking Assist Disable History 6	—	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.
Parking Assist Disable History 7	—	Varies	The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history.

Parking Assist Control Module Scan Tool Output Controls

Output Control	Description
Park Assist Switch LED	The parking assist control module illuminates the advanced park assist LED of the when commanded from the scan tool.
Clear Disable History Data	The parking assist control module clears the Parking Assist Disable History data when commanded from the scan tool.
Clear Side Object Detection Disable History	The parking assist control module clears the Side Object Detection Disable History data when commanded from the scan tool.
CAN Bus Configuration Learn	The parking assist control module learns the CAN Bus configuration when commanded from the scan tool.
Parking Assist Sensor Learn	The parking assist control module learns the Parking Assist Sensor configuration when commanded from the scan tool.

K194 Rear Gate Module: Scan Tool Information

Rear Gate Module Scan Tool Data Parameters

Parameter	System State	Expected Value	Definition
Operating Conditions: Ignition ON			
Rear Closure	—	Inactive/Active	Displays active when the power endgate is operating.
Rear Gate Latch Unlatch Switch	—	Inactive/Active	Inactive when endgate is closed. Changes to active once the endgate opens.
Rear Gate Latch Primary Switch	—	Inactive/Active	Inactive when endgate is closed. Changes to active as soon as the endgate unlatches.
Rear Gate Latch Neutral Switch	—	Inactive/Active	Inactive when endgate is closed. Changes briefly to active once endgate unlatches then goes back to inactive.
Rear Gate Travel	—	Percentage	Calculated percentage of endgate travel. 0% = Full Close, 100% = Full Open.
Rear Gate Obstacle Detection Zone 1	—	Counts	Displays a counter for each fault detection zone, if an obstruction or excessive resistance is seen by the RGM while power opening or closing the count number will go up for the respective detection zone.
Rear Gate Obstacle Detection Zone 2	—	Counts	Displays a counter for each fault detection zone, if an obstruction or excessive resistance is seen by the RGM while power opening or closing the count number will go up for the respective detection zone.
Rear Gate Obstacle Detection Zone 3	—	Counts	Displays a counter for each fault detection zone, if an obstruction or excessive resistance is seen by the RGM while power opening or closing the count number will go up for the respective detection zone.
Rear Gate Obstacle Detection Zone 4	—	Counts	Displays a counter for each fault detection zone, if an obstruction or excessive resistance is seen by the RGM while power opening or closing the count number will go up for the respective detection zone.
Rear Gate Obstacle Detection Zone 5	—	Counts	Displays a counter for each fault detection zone, if an obstruction or excessive resistance is seen by the RGM while power opening or closing the count number will go up for the respective detection zone.
Rear Gate Obstacle Detection Zone 6	—	Counts	Displays a counter for each fault detection zone, if an obstruction or excessive resistance is seen by the RGM while power opening or closing the count number will go up for the respective detection zone.
Rear Gate Obstacle Detection Zone 7	—	Counts	Displays a counter for each fault detection zone, if an obstruction or excessive resistance is seen by the RGM while power opening or closing the count number will go up for the respective detection zone.

Parameter	System State	Expected Value	Definition
Rear Gate Latch Secondary Switch - Left	—	Inactive/Active	Inactive when endgate is closed. Changes to active as soon as the endgate unlatches.
Rear Gate Latch Secondary Switch - Right	—	Inactive/Active	Inactive when endgate is closed. Changes to active as soon as the endgate unlatches.
Rear Gate Latch Primary Switch - Right	—	Inactive/Active	Inactive when endgate is closed. Changes to active as soon as the endgate unlatches.
Rear Gate Latch Unlatch Switch - Right	—	Inactive/Active	Inactive when endgate is closed. Changes to active once the endgate opens.
Rear Gate Latch Neutral Switch - Left	—	Inactive/Active	Inactive when endgate is closed. Changes briefly to active once endgate unlatches then goes back to inactive.

P16 Instrument Panel Cluster Control Module: Scan Tool Information

Instrument Cluster Scan Tool Data Parameters

Parameter	Expected Value	Description
Operating Conditions: Ignition ON		
Battery Voltage	12–14 V	The scan tool displays Volts. This is the current battery voltage signal.
Key in Ignition Status	Active/Inactive	The scan tool displays Active or Inactive. This is the state of the key in ignition switch.
Driver Information Center Switch	Varies	The scan tool displays Volts. This is the current driver information center switch input voltage.
Driver Information Center Switch	Inactive	The scan tool displays either Inactive, Up, Down, or Menu. This is the state of the driver information center switch.
Reset Switch	Active/Inactive	The scan tool displays Active or Inactive. This is the state of the reset switch.
Ambient Air Temperature	15°C	The scan tool displays outside temperature in °C.
Washer Fluid Level Switch	Open	The scan tool displays either Open, Closed, or Not Available.
Odometer Lock Status	Active/Inactive	The scan tool displays Active or Inactive depending on the state of the odometer.
Engine Speed	0 RPM	The scan tool displays the filtered value of engine speed.
Vehicle Speed	0 km/h	The scan tool displays the filtered vehicle speed value.
Fuel Level Sensor	—	The scan tool displays the filtered value of the fuel level.
Engine Coolant Temperature	—	The scan tool displays the filtered value of the engine coolant temperature.
Engine Oil Pressure	—	The scan tool displays the filtered value of the engine oil pressure.
Head-Up Display Dimming Level	percentage	The scan tool displays the current dimming intensity level.
Head-Up Display Switch	Head-Up Display Movement, Head Up Page Switch, Head-Up Display Dimming Level	The scan tool displays the current HUD button being pushed.
Steering Wheel Control Switches	Left, Select, Right , Volume UP, Volume Down	The scan tool displays the current steering wheel controls button being pushed.

Instrument Cluster Scan Tool Output Controls

Output Control	Description
Instrument Cluster Gauge Sweep	This function is used to command the gauges to sweep from minimum to maximum.
Driver Information Center Dimming	This function is used to command the dimming of the driver information display to Increase or Decrease by 10%.
Instrument Panel Dimmer Switch	This function is used to command the dimming of the instrument cluster to Increase or Decrease by 10%.
Driver Information Center Segments	This function is used to command the driver information center segments ON and OFF.
All Indicators	This function is used to command all the indicators ON or OFF.
Driver Information Center Options	This function is used to command the driver information center buttons using the scan tool.
CAN Bus Configuration Learn	This function is used to Reset the source ID for low speed CAN Bus communications.
Head Up Display Dimming Level	This function is used to command the dimming of the head up display to Increase or Decrease.
Head Up Display Pattern Check	This function is used to command the head up display to display a striped test pattern.

T3 Audio Amplifier: Scan Tool Information

Amplifier Scan Tool Data Parameters

Parameter	Expected Value	Definition
Operating Conditions: Ignition ON		
Power Mode	Run	The scan tool displays Off, Accessory, Run or Crank Request. This is the vehicle power mode status as received via serial data.
Active Noise Cancellation	On	The scan tool displays On or Off. This indicates if the Active Noise Cancellation feature is available and capable of operating.
Engine Speed Signal	Normal	The scan tool displays Normal or Malfunction. This is the status of the dedicated engine speed signal circuit.
Battery Voltage	Varies	The scan tool displays volts. This is the voltage at the input to the amplifier.
Vehicle Speed	0 km/h	The scan tool displays the vehicle speed received by the amplifier in km/h or mph.
Engine Speed	0 RPM	The scan tool displays the current engine speed received by the amplifier in RPM .
Calculated System Temperature	Varies	The scan tool displays the calculated temperature of the amplifier in °C or °F.
Active Noise Cancellation Speaker Output	OK	The scan tool displays OK or Malfunction. This is the status of the amplifier speaker outputs.
Cylinder Deactivation System Command	Varies	The scan tool displays 8 Cylinder Active, Transitioning from 8 to 4, 4 Cylinder Active, Transitioning from 4 to 8, or Malfunction. This is the status of the cylinder deactivation mode as received via serial data. Malfunction is displayed when this data is not being received, or when the engine is not running.
Microphone Status	Normal	The scan tool displays Normal, Clipped, or Malfunction.
Microphone 1 Input Level	Varies	The scan tool displays counts from 0 to 65,535. This is the sound level currently being received by the microphone 1, with higher numbers indicating louder sounds.
Microphone 2 Input Level	Varies	The scan tool displays counts from 0 to 65,535. This is the sound level currently being received by the microphone 2, with higher numbers indicating louder sounds.
Microphone 3 Input Level	Varies	The scan tool displays counts from 0 to 65,535. This is the sound level currently being received by the microphone 3, with higher numbers indicating louder sounds.

Parameter	Expected Value	Definition
Door Status	Varies	The scan tool displays All Closed or One or More Open. This is the current status of the vehicle access door latches as received via serial data.
Folding Top Status	Varies	The scan tool displays Closed, Open, Malfunction, or Normal. This is the current position of the vehicle folding top (if equipped) as received via serial data.
Calibration Part Number 1	Varies	The scan tool displays the software calibration part number 1.
Calibration Part Number 2	Varies	The scan tool displays the software calibration part number 2.
Calibration Part Number 3	Varies	The scan tool displays the software calibration part number 3.
Calibration Part Number 4	Varies	The scan tool displays the software calibration part number 4.
Calibration Part Number 5	Varies	The scan tool displays the software calibration part number 5.
Calibration Part Number 6	Varies	The scan tool displays the software calibration part number 6.
Calibration Part Number 7	Varies	The scan tool displays the software calibration part number 7.
Calibration Part Number 8	Varies	The scan tool displays the software calibration part number 8.
Calibration Part Number 9	Varies	The scan tool displays the software calibration part number 9.
Calibration Part Number 10	Varies	The scan tool displays the software calibration part number 10.
End Model Part Number	Varies	The scan tool displays the end software module part number.
Diagnostic Data Identifier	Varies	Identifies a supplier and system specific data stream used by diagnostic testers to interpret a diagnostic data stream.

T22 Wireless Accessory Charging Module: Scan Tool Information

The T22 Wireless Accessory Charging Module scan tool data parameters list contains all automatic level control related parameters that are available on the scan tool. The list is arranged in alphabetical order. A given parameter may appear in any one of the data lists.

Wireless Accessory Charging Module Scan Tool Data Parameters

Parameter	System State	Expected Value	Description (Range)
Operating Conditions: Ignition ON			
Alignment Status	—	Varies	The scan tool displays the current condition of Radar Alignment.
Charging Current Level	—	Varies	The scan tool displays the state or energy level of charging device being energized by inductive charging coil located under the cup holder (None, Low, Medium, High).
Charging Current Value	—	Varies	The scan tool displays the current in mA being energized by inductive charging coil located under cup holder (0–1000mA).
Wireless Charging Disable History - 1	—	Varies	Indicates why the wireless charging system was disabled.
Wireless Charging Disable History - 2	—	Varies	Indicates why the wireless charging system was disabled.
Wireless Charging Disable History - 3	—	Varies	Indicates why the wireless charging system was disabled.
Wireless Charging Disable History - 4	—	Varies	Indicates why the wireless charging system was disabled.
Wireless Charging Disable History - 5	—	Varies	Indicates why the wireless charging system was disabled.
Wireless Charging Disable History - 6	—	Varies	Indicates why the wireless charging system was disabled.

Parameter	System State	Expected Value	Description (Range)
Wireless Charging Disable History - 7	—	Varies	Indicates why the wireless charging system was disabled.
Wireless Charging Disable History - 8	—	Varies	Indicates why the wireless charging system was disabled.

Diagnostic Information and Procedures

Strategy Based Diagnosis

The goal of Strategy Based Diagnosis is to provide guidance when you create a plan of action for each specific diagnostic situation. Following a similar plan for each diagnostic situation, you will achieve maximum efficiency when you diagnose and repair vehicles. Although each of the Strategy Based Diagnosis steps are numbered, you are not required to complete every step in order to successfully diagnose a customer concern. The first step of your diagnostic process should always be Understand and Verify the Customer's Concern. The final step of your diagnostic process should be to Repair and verify the Fix. Refer to the steps listed below for the correct Strategy Based Diagnosis.

Note: For additional information on the following steps refer to the corresponding numbered paragraphs listed below.

1. Understand and verify the customers concern.
2. Verify the vehicle is not operating as designed:

⇒ **If the vehicle is operating as designed review the suggestions listed below:**

- Check Identical Vehicle
- Customer Misunderstanding of System – Explain operation to customer or refer to owners or service manual
- Customer dissatisfaction – Submit a Field Product Report

⇓ **If the vehicle is not operating as designed**

3. Perform preliminary checks – Visual inspections and operational

⇒ **If the customers concern is found, refer to step 5**

⇓ **If the customers concern is not found**

4. Perform the Diagnostic System Check – Vehicle, determine the diagnostic service category to perform.

⇒ **If the customers concern is found, refer to step 5**

⇓ **If the customers concern is not found**

5. Check for related Bulletins, Recalls and Preliminary Information.

⇒ **If the customers concern is found, refer to step 7**

⇓ **If the customers concern is not found**

Note: If a diagnostic procedure indicates to replace a programmable control module, the control module must be reprogrammed with the latest available software and retested before replacement:

- If updated control module software is available, reprogram the control module and re-test to verify if updated software has corrected the concern. If the updated software has corrected the concern, no further action is required; Do not replace the control module. If the concern persists after programming the control module with the latest software, continue following the diagnostic instructions and replace the control module.
- If updated control module software is not available, continue following the diagnostic instructions and replace the control module if instructed.
- If the scan tool is unable to communicate with the suspected control module, attempt to reestablish communication by removing and reconnecting power to the control module. This may be performed by removing the fuse or fuses powering the control module or by disconnecting the electrical connector(s) at the control module. If communication with the control module is reestablished after removing and reconnecting power, reprogram the control module with the latest software (if available) and re-examine the concern.

6. Follow the diagnostic path listed below:
   - 6.1. Current DTC – Follow DTC Diagnostics
   - 6.2. Symptom no DTC – Follow Symptom Diagnostics
   - 6.3. No published diagnostic – Analyze and develop diagnostics or call Technical Assistance
   - 6.4. Intermittent/History DTC – See diagnostic detail below
7. Isolate the root cause then repair and verify the fix.
8. Re-examine the concern.

⇒ **If the vehicle is not repaired, refer to step 1**

⇓ **If the vehicle is repaired**

9. All OK.

Additional Information

1. Understand and Verify the Customer Concern: The first part of this step is to obtain as much information as possible from the customer. Are there aftermarket accessories on the vehicle? When does the condition occur? Where does the condition occur? How long does the condition last? How often does the condition occur? In order to verify the concern, the technician should be familiar with the normal operation of the system and refer to the owner or service manual for any information needed.
2. Vehicle Operating as Designed: This condition exists when the vehicle is found to operate normally. The condition described by the customer may be normal. Compare with another like vehicle that is operating normally under the same conditions described by the customer. Explain your findings and the operation of the system to the customer. If the customer is dissatisfied submit a Field Product Report.
3. Preliminary Checks: Conduct a thorough visual inspection. Review the service history. Detect unusual sounds or odors. Gather diagnostic trouble code (DTC) information in order to achieve an effective repair.
4. Perform Published Diagnostic System Check-Vehicle: The *Diagnostic System Check - Vehicle 3-167* verifies the proper operation of the system. This will lead the technician in an organized approach to diagnostics and identify what category of diagnostic to perform.
5. Check for related Bulletins, Recalls and Preliminary Information (PI).

Note: When diagnosing DTCs and symptoms that involve an control module, updated software may be available. Before replacing an control module, first determine if any software updates are available. If new software is available, reprogram the control module and reevaluate the concern. In many instances, reprogramming the control module with the latest software may correct a software-related fault and resolve the concern without replacement of the control module.

6. Diagnostic categories:
   - 6.1. Current DTC: Follow the designated DTC diagnostic in order to make an effective repair. Refer to *Diagnostic Trouble Code (DTC) List - Vehicle 3-173*.
   - 6.2. Symptom - No DTC: Select the appropriate symptom diagnostic. Follow the diagnostic steps or suggestions in order to complete the repair. Refer to *Symptoms - Vehicle 3-257*.
   - 6.3. No Published Diagnostics: Analyze the Concern. Develop a plan for the diagnostics. The service manual schematics will help you to see system power, ground, input, and output circuits. You can also identify splices and other areas where multiple circuits are tied together. Look at component locations to see if components, connectors or harnesses may be exposed to extreme temperature, moisture, or corrosives (road salt, battery acid, oil or other fluids). Utilize the wiring diagrams, system description and operation, and system circuit description.
   - 6.4. Intermittent/History DTC: An intermittent condition is one that does not occur continuously, may be difficult to duplicate, and will only occur when certain conditions are met. Generally, an intermittent is caused by faulty electrical connections and wiring, malfunctioning components, electromagnetic/radio frequency interference, driving conditions, or aftermarket equipment. The following approaches/tools may prove to be beneficial in locating and repairing an intermittent condition or history DTC.
     - Combining technicians knowledge with the available service information.
     - Evaluate the symptoms and conditions described by the customer.

       North America – The GM Customer Concern Verification Sheets have been designed to improve communications between the service customer and the technician. The more clearly the technician understands the concern and its symptoms, the more likely the concern will be fixed right the first time. The blank CCVS can be found in GM Global Connect under Service, Service Forms.
     - Follow the suggestions on [Link target (target-id 62112-) not found] .
     - Use a tool with data capturing capabilities like scan tool, digital multi-meter, or (if available) a vehicle data recorder.
7. Isolate the Root Cause then Repair and Verify Fix: After isolating the root cause, make the repairs and validate for the correct operation by performing the *Diagnostic Repair Verification 3-259*. Verifying that the DTC or symptom has been corrected may involve road testing the vehicle.
8. Re-examine the Concern: If a technician cannot successfully find or isolate the concern, a re-evaluation is necessary. Re-verify the concern. The concern could be an intermittent or normal condition.

Diagnostic Procedure Instructions

The following is an instructional overview of all categories which may be included in a diagnostic procedure.

Diagnostic Instructions

- A link to the *Diagnostic System Check - Vehicle 3-167* is provided here. This procedure should be performed prior to performing other diagnostic procedures, as this prevents misdiagnosis where there are integrated system dependencies.
- A link to the *Strategy Based Diagnosis 3-158* is provided here. This provides an overview on how a technician should diagnose a vehicle.
- A link to the *Diagnostic Procedure Instructions 3-160* is provided here. This information is an instructional overview of all categories which may be included in a diagnostic procedure.

DTC Descriptor

Lists all DTCs and descriptors that are diagnosed within the procedure.

If the DTC supports symptom bytes they will either be listed with the DTC or there will be a link to the symptom byte list.

Diagnostic Fault Information

The Diagnostic Fault Information table identifies each circuit that makes up an electrical subsystem and the associated circuit faults. DTCs and symptoms are listed in the table for all circuit fault modes. This information can be used to diagnose an electrical fault, or as a quick visual aid showing how the different DTCs and symptoms apply for the subsystem being diagnosed.

All DTCs and symptoms shown in this table are not necessarily diagnosed during this procedure.

An example table from an engine coolant temperature (ECT) procedure:

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Signal	P0117	P0118, P0119	P0118*, P0119	P0128, P111E
Low Reference	—	P0118, P0119	—	P0128
* Internal control module or component damage may occur if the circuit shorts to B+.				

Typical Scan Tool Data

The Typical Scan Tool Data table identifies a scan tool data parameter and its value in reference to potential circuit faults.

An example table from an ECT procedure:

ECT Sensor

Circuit	Short to Ground	Open	Short to Voltage
Operating Conditions: Engine = Idling— At normal operating temperature. **Parameter Normal Range:** 88 to 105°C (190 to 221°F)			
Signal	140°C (248°F)	−40°C (−40°F)	−40°C (−40°F)
Low Reference	—	−40°C (−40°F)	—

Circuit/System Description

Circuit/System Description identifies circuits, components, and describes how the circuit/system normally functions.

Conditions for Running the DTC

Conditions for Running the DTC, identifies what conditions must be present to allow the diagnostic to run.

Conditions for Setting the DTC

Conditions for Setting the DTC, identifies the conditions that must be present in order to fail the diagnostic and when to set the DTC.

Actions Taken When the DTC Sets

Actions Taken When the DTC sets, identifies the default actions taken when a control module sets a DTC.

Conditions for Clearing the DTC

Conditions for Clearing the DTC, identifies the conditions that must be met in order to clear the DTC.

Diagnostic Aids

Diagnostic Aids are suggestions which explain other methods to diagnose the condition. It also provides unique information about the system to assist the technician in finding and repairing a vehicle condition.

Reference Information

Reference Information includes links providing additional information to be used with the diagnostic procedure.

For example:

- Schematic Reference
- Connector End View Reference
- Component View Reference
- Description and Operation
- Electrical Information Reference
- DTC Type Reference
- Scan Tool Reference
- Special Tools

Circuit/System Verification

The Circuit/System Verification, when supported, needs to be performed prior to the Circuit/System Testing. It will determine the following conditions:

- If a higher priority concern needs to be addressed first (E.g. other DTCs)
- If other conditions are present (E.g. low fluid level)
- If the condition is current
- If the condition is intermittent
- If the system is all Ok

Note: Any diagnostic step that asks if a DTC is “set” refers to a Set, Current, Present, Active DTC status. This does not include any other DTC status. For example History, Not Run, Passed and Failed.

Circuit/System Verification is a non-intrusive procedure outlining how to verify that a system or a portion of a system is functioning correctly. During the verification process, the vehicle is kept intact and tested as a complete system. The verification is used to assist the technician in determining whether a condition is current, intermittent, or not present (All Ok). When a condition is determined to be intermittent a technician can use the [Link target (target-id 62112-) not found] link in Electrical Information Reference for additional testing information.

The technician should be able to identify if the fault is occurring on the input (signal) circuit or on the output (control) circuit when applicable.

Component Codes
The component codes are a language independent method of identifying a common component between different areas in the service information. The component codes work regardless on how the actual component name was translated.

The component codes used on the schematics will have the base code with an extension to identify location or quantity. For example the ABS wheel speed sensors are identified on the schematic with a base code (B5) and a location extension (LF, RF, LR, and RR) as seen below:

- B5LF Wheel Speed Sensor - Left Front
- B5RF Wheel Speed Sensor - Right Front
- B5LR Wheel Speed Sensor - Left Rear
- B5LR Wheel Speed Sensor - Left Rear

The diagnostic procedures will use the base code (B5) for a wheel speed sensor but may or may not use the extension identifying location (LF, RF, LR, and RR).

Example:
Disconnect the harness connector at the appropriate B5 Wheel Speed Sensor.

Or

Disconnect the appropriate electrical connector: B5 Wheel Speed Sensor

This is done so the diagnostic procedure can be common for all four wheel speed sensors and not have to take into account part location or quantity.

When the diagnostic states “the appropriate” it is up to the technician to identify which component is being diagnosed either by the symptom (Driver’s door lock is inoperative) or the DTC descriptor (DTC C0585 04: Left Rear Door Latch Circuit Open).

Circuit/System Testing

Note: Performing the Circuit/System Verification category first will aid in determining if a vehicle condition currently exists.

Circuit/System Testing is a step by step, positive-flow, testing sequence which allows the technician to perform each test step, in sequence, until a fault is detected. If the result of a numbered test step is NOT achieved, the Right Repair Arrow below the failed test will identify what actions need to take place. If the result of a numbered test step is achieved, the normal flow is to proceed to the next numbered test step, as indicated by the Down Pass Arrow.

Intrusive diagnostics are performed to locate the system fault. System harness connections are disconnected from the component or control module to test individual circuit functions. The component or control module will be used to assist in verifying the circuit function. When a test does not pass, the repair steps (Right Repair Arrow) will indicate what circuit faults to test. For example a short to voltage, short to ground, or open/high resistance.

When testing for individual circuit faults, the technician is expected to perform terminal inspections such as connection surfaces and terminal tension at both the harness and the component or control module. When a condition is determined to be intermittent a technician can use the [Link target (target-id 62112-) not found] or [Link target (target-id 62194-) not found] link in Electrical Information Reference for additional information.

The component and control module will also be diagnosed during the test steps. A retest of a component or control module should always be performed before replacement. For example, reconnect all components and control modules and retest the system to verify the condition still exists before replacing components or control modules.

Component Testing

Component Testing may offer a static and/or dynamic component tests. These tests can be used to verify if a component is operating correctly to avoid unnecessary replacement.

Testing control modules in this category will not be offered. In most cases, the control module is used to verify the harness circuits in the Circuit/System Testing category and a retest of the control module should always be performed before replacement.

Repair Instructions

Repair Instructions provides a link to *Diagnostic Repair Verification 3-259*. This link describes how to verify the vehicle is repaired.

All links to repair, replacement, or programming procedures are located here.

Repair Verification

Repair Verification describes how to verify the vehicle is repaired when additional instructions are needed beyond what is in the Diagnostic Repair Verification.

Diagnostic System Check Instructions

The following is an overview of instructions for the general information and 14 step System Verification included in the Diagnostic System Check - Vehicle procedure.

Diagnostic Instructions

A link to *Strategy Based Diagnosis 3-158* is provided as an overview on how a technician should diagnose a vehicle.

A link to the Diagnostic System Check Instructions is provided. This provides an overview of instructions and examples for the general information and 14 step System Verification included in the Diagnostic System Check - Vehicle procedure. The examples in this document are intended to give the technician a general idea of what the test step is referring to. They are not intended to list every possible condition or situation.

Diagnostic Systems Check steps are listed by priority to guide the technician to the appropriate diagnostic procedure to correct the customer concern. There are many ways to determine the priority of diagnosing a vehicle concern. Some faults can cause customer perceived symptoms in areas unrelated to the fault. Using an example from the System Check, after reading DTCs, the technician is asked to verify there are no Electronic Control Unit Internal Performance Faults present. It is important that any internal performance issues are addressed prior to continuing through the System Check. There is no benefit addressing other DTCs that could be set due to an internal fault to a control module. If the fault is present, performing the diagnostic procedure for that fault will likely correct the customer perceived concern and possibly eliminate other DTCs that may be set.

Not all steps of the Diagnostic System Check have to be performed. The Diagnostic System Check tries to prioritize the test steps with the highest priority faults first. The technician is then lead to another document to do the actual diagnosis or repair. The strategy is to repair higher level faults that may be the cause of other system or component level symptoms. Additionally, the Diagnostic System Check can only be used for a single fault at a time. If additional faults are present, the technician must perform the diagnostic system check for each concern until all customer concerns are corrected.

Once a repair has been completed, General Motors diagnostic strategy is to always have the technician verify that the customer concern has been corrected. This is to prevent comebacks and to ensure customer satisfaction with their dealership experience. Therefore a link has been provided to *Diagnostic Repair Verification 3-259* procedure for the technician to verify the customer concern has been corrected.

There are some assumptions made when General Motors prepares service information. They include the following areas which are presumed to function as designed:

- The 12-volt battery is fully charged. General Motors assumes the majority of vehicles brought in for repair will be able to start and be driven into the service stall. If the vehicle has a dead battery, it is slow cranking or for any other reason the technician feels the customer concern may be battery related, a link is provided to [Link target (target-id 37781-) not found] . This procedure will guide the technician through inspecting and verifying the battery functions properly.
- Fuses should not be open. General Motors does not call out in diagnostic procedures to verify a fuse. The technician is expected to find an open fuse when the diagnostic test step states to check for an open circuit condition. Therefore a link has been provided to *Power Distribution Schematics 8-976* and *Electrical Center Identification Views 8-30* for technicians to reference power sources and fuse locations if they feel there may be loss of power due to an open fuse condition.
- Ground circuits are clean, tight, and in the correct location. General Motors assumes that the original ground circuits have not been compromised. The technician is expected to find a poor ground connection when the diagnostic test step states to test the ground circuit for an open/high resistance. Therefore a link has been provided to *Ground Distribution Schematics 8-1001* and *Harness Routing Views 8-769* for technicians to reference ground locations and which ground circuits may be related to the customer concern.
- All connectors/terminals fully seated in the area of concern. General Motors assumes that all connections are properly installed. The technician is expected to find an open or poor connection when the diagnostic test step asks to test the circuit for an open/high resistance. Therefore a link has been provided to *Master Electrical Component List 8-1032* for technicians to reference which connections may be related to the customer concern.
- There are no aftermarket devices that affect the operation of the system. General Motors can only author diagnostic and repair information for vehicle systems and components that are original equipment or genuine GM Accessories. Aftermarket equipment can negatively affect original equipment operation and lead a technician's diagnosis of a concern in the wrong direction. Therefore a link has been provided to [Link target (target-id 310488-) not found] that guides a technician through the possible causes of vehicle problems related to aftermarket accessories.
- The scan tool powers up. General Motors assumes that power is available at the Data Link Connector and the scan tool will power on. Therefore a link has been provided to [Link target (target-id 148078-) not found] if the technician finds that the scan tool does not power on.

Updating Control Module Software

Control module software is an integral part of the operation and function of the control module. More than just the physical component, numerous corrections and enhancements can be changed in the software that will resolve many different faults. Service Information generally uses the term “software” as an indicator of a portion of the control module soft part that can be changed or updated; More specifically, this may be a boot loader, firmware, software, calibration, or other soft part.

As an overall strategy, reprogramming a control module with the most up-to-date software available is the correct diagnostic operation before replacing the control module. If a diagnostic procedure instructs to replace a control module, first determine if updated software is available. If it is, reprogram the control module with the latest software and retest the vehicle to determine if the fault is still present. Simply updating the software in a control module may resolve the concern without the cost or labor of replacing the control module. If programming the control module with the latest software corrects the concern, take no further action. If new software does not resolve the concern or if the control module already has the latest and most up-to-date software, continue with the corrective action identified in the diagnostic procedure.

Diagnostic System Check

1. VERIFY CUSTOMER CONCERN — This step is to obtain as much information as possible from the customer. Are there aftermarket accessories on the vehicle? When does the condition occur? Where does the condition occur? How long does the condition last? How often does the condition occur? Review the service history of the vehicle for previous repairs that could help diagnose the current concern.

   Now that the technician understands the customer concern, they should validate the concern on the vehicle. In order to verify the concern, the technician should be familiar with the normal operation of the system and refer to the owner or service manual for any information needed. Inspect the visible system components for obvious damage or conditions that could cause the concern. Conduct a thorough visual inspection. Detect unusual sounds or odors.

The condition described by the customer may be normal. If the technician finds the vehicle to operate normally, compare with another like vehicle that is operating normally, under the same conditions described by the customer. If this is the case, explain your findings and the operation of the system to the customer. If the customer is dissatisfied, submit a Field Product Report.

2. BULLETIN SEARCH — By searching for related bulletins, recall/field actions and preliminary information documents, a procedure for a known field issue may resolve the customer concern with little or no diagnosis necessary saving the technician diagnostic time.
3. MECHANICAL CONCERNS — This step is designed to take the technician directly to a list of symptom diagnostic procedures. The technician is asked to verify the symptoms exhibited by the system are mechanical in nature and not related to an electrical system, see some examples below. If the technician feels the concern could be related to an electrical system, they should continue through the Diagnostic System Check to verify the electrical functionality of vehicle. If the technician feels the concern is exclusively related to a mechanical system, a link to *Symptoms - Vehicle 3-257* is provided to select the appropriate symptom diagnostic procedure for the customer concern.

   Examples:

   - Brake noise or diagnosing irregular pad wear
   - Water leak diagnosis
   - Engine or transmission fluid leak diagnosis
   - Manual window or door lock diagnosis
   - Vehicle vibration diagnosis
   - Exhaust noise or leak diagnosis
4. VEHICLE POWER UP VERIFICATION — The technician is asked in this step to verify the vehicle powers up. The technician should look for clues that multiple vehicle systems are receiving vehicle power mode messages, such as the cluster waking up, the radio powers on, the HVAC blower is operational, windshield wipers turn on, etc, with the ignition On. This would be a rare condition as both the power mode master and back-up power mode master would have to be inoperable, however, if the vehicle does not power up, a link to [Link target (target-id 148321-) not found] is provided.
5. CONTROL MODULE COMMUNICATION and DTC CHECK — The technician is asked in this step to record the following three pieces of data on the Repair Order; any control module that the scan tool determined is not communicating, any DTC and symptom byte set current or history, and the control module that has set the DTC.

   This is considered a setup step for the rest of the Diagnostic System Check. The technician is not expected to do anything other than record the three pieces of data provided by the scan tool on the Repair Order. This provides the information needed to complete the rest of the diagnostic system check.

   To complete this step, the technician is asked to utilize the scan tool Vehicle DTC Information function. This function will query every possible control module on the vehicle requesting all DTCs. During the DTC query, the scan tool will try to establish communication with each control module. If the scan tool can communicate with the control module during the DTC request, it will display PRESENT and provide the number of DTCs set in the control module. If the scan tool cannot communicate with a control module, it will only display NOT COMMUNICATING. Since the scan tool cannot determine if a given control module should be present or not, the technician is asked in a future step to verify that the vehicle was not built with control modules listed as NOT COMMUNICATING.

   If the scan tool cannot establish communications with ALL of the vehicles control modules, a link to [Link target (target-id 148085-) not found] is provided. A faulty control module or fault with the serial data circuit can cause no communication with all of the control modules on the vehicle. If any control module communicates on the serial data circuit, continue through the Diagnostic System check, as a future step will address any specific non communicating or group of non communicating control modules.

   Once the scan tool has completed the routine, the technician should review each control module that has set a DTC and document them on the Repair Order. When reviewing the DTCs, the technician should take notice if any DTCs are powertrain related, and if so, navigate in the scan tool to the Powertrain area and utilize the Capture Info function. This will upload any Freeze Frame/Failure Records stored in the control module to the scan tool in case the data is lost from the control module. As an example, if the technician commands a Clear DTCs function on a powertrain controller, all diagnostic information stored in the controller is erased. This includes Freeze Frame/Failure Records and Inspection/Maintenance System Status indicators, if required for your region.

6. CONTROL MODULE INTERNAL PERFORMANCE FAULTS — The technician is asked to review the DTCs recorded in step 5 and verify there are no control module internal performance faults set current. This type of fault may be the cause of other symptoms or DTCs displayed by the vehicle. By addressing this fault first, the technician may find the other concerns are resolved. The technician should always follow the diagnostic procedure for these types of faults prior to replacing any control module. If the technician finds a control module has an internal performance fault, a link is provided to *Diagnostic Trouble Code (DTC) List - Vehicle 3-173* to select the appropriate DTC diagnostic procedure.

   Examples:

Note: DTC U3000 is used for both high level control module faults and lower level faults. The fault level is determined by the symptom byte set with the DTC. Examples of some DTC U3000 internal performance fault symptoms are shown below.

- U3000 04 Control Module System Internal Malfunction
- U3000 41 Control Module General Checksum Malfunction
- U3000 49 Control Module Internal Malfunction
- P0606 Control Module Internal Performance
- P0607 Control Module Performance

7. CONTROL MODULE COMMUNICATION VERIFICATION — This step is used to ensure the control modules that are NOT COMMUNICATING were not built on the vehicle. If the technician determines that a control module that is NOT COMMUNICATING should be present, the technician is asked to follow the appropriate diagnostic procedure listed in the [Link target (target-id 148085-) not found] document.
8. COMMUNICATION and POWER MODE FAULTS — This step is asking the technician to look for communication DTCs or DTCs related to control modules powering up based on power mode, communication enable or wake-up circuits. See in the below table some examples of the DTCs the technician should diagnose prior to continuing through the Diagnostic System Check. The technician should review the list of DTCs recorded in step 4 and verify that none of these type of DTCs are present. If so, the technician is referred to the *Diagnostic Trouble Code (DTC) List - Vehicle 3-173* to select the appropriate DTC diagnostic procedure.

   Examples:

Note: DTC U3000 is used for both high level control module faults and lower level faults. The fault level is determined by the symptom byte set with the DTC. Examples of some DTC U3000 communication and power mode faults are shown below.

- U3000 04 Control Module Bus Signal/Message Malfunction
- U0140 Lost Communication with Body Control Module
- U0164 Lost Communication with Heater and Air Conditioning User Interface Control - Front
- U0184 Lost Communication with Radio
- U0402 Invalid Data Received from Transmission Control Module
- U0452 Invalid Data Received from Restraints Control Module
- U001B Gear Shift Control Module Powertrain Sensor Bus Enable
- U300D Ignition Input On/Start
- B1AA3 Run/Crank Relay Coil Control

9. POWER MODE VERIFICATION — This step verifies the Power Mode Master is receiving the proper output state of the ignition switch/push button switch. The technician should use the main power mode input, this being either the ignition key or, on vehicles equipped with Passive Entry Passive Start, the push button switch. The test should not be performed using a key fob, if the MIL is illuminated the powertrain controller may disable this input. The technician is asked to perform the test with the driver door open. This ensures the retained accessory power mode is inactive during this test which could result in different scan tool readings. The technician is only asked to verify the current Power Mode parameter in the power mode data display list. If the parameter does not match the actual ignition switch position, a link is provided to perform the [Link target (target-id 148321-) not found] diagnostic procedure.
10. SERIAL DATA AUTHENTICATION FAULTS — This step verifies that control modules are able to authenticate and verify the legitimacy of certain critical messages on in-vehicle networks. The technician should review the list of DTCs recorded in step 4 and verify that none of these DTCs are present. If so, the technician is referred to the *Diagnostic Trouble Code (DTC) List - Vehicle 3-173* to select the appropriate DTC diagnostic procedure.

    Examples:

    - U1960 Message Authentication Keys Missing or Incomplete
    - U1961 Control Module Security Hardware Internal Malfunction

   - U1962 Unable to Authenticate Serial Data Message
   - U3034 Message Authentication Keys Missing or Incomplete
   - U3035 Unable to Authenticate Serial Data Message

11. PROACTIVE ALERT IDENTIFIERS— The technician is asked in this step to verify there are no Proactive Alert Identifiers set. These identifiers are displayed on the scan tool and will only appear when the OnStar subscription is active and the customer has opted into the Proactive Alert service.
12. ENGINE CRANK and RUN VERIFICATION — Here the technician is asked to verify that the engine cranks and runs. The technician should use the main power mode input, this being either the ignition key or, on vehicles equipped with Passive Entry Passive Start, the push button switch, to complete this step. The test should not be performed using a key fob, if the MIL is illuminated the powertrain controller may disable this input. The technician should know at this point whether the engine cranks and runs without having to actually performing this test step. One of the follow has probably already occurred and this step can be skipped: The technician drove the vehicle into the stall or verified when checking the Crank and Run parameter in step 8. If the technician has not already somehow verified the engine cranks in previous steps, the technician should perform this test step. Regardless of how this step was performed, if the engine does not crank, a link is provided to *Engine Does Not Crank 3-258* or if the engine cranks but does not run, a link is provided to *Engine Cranks But Does Not Run 3-259* for the technician to choose the correct diagnostic procedure for the actual engine application being used.
13. REMAINING DTC REVIEW — Here the technician is asked to review any remaining DTCs that were not addressed in previous steps. The technician is asked first to verify there are no control module supply voltage, system voltage or 5 V circuit DTCs present. Control modules, systems or components with insufficient or zero voltage can cause one or multiple symptoms to exist on the vehicle. Control module voltage issues could also be the cause of failures during a programming event. The technician should correct voltage issues prior to addressing any programming or configuration DTCs. The technician should then check for any ECU programming, setup or configuration DTCs. By programming software or configuring a control module, the technician could correct the customer concern unobtrusively. The remaining DTCs, which are usually specific system or component faults, are diagnosed last. They can include ECU input and output circuit DTCs or individual circuit faults that usually cause single symptoms or failure modes on the vehicle and can be fixed following the proper DTC diagnostic procedure. In general, the technician should think about what DTCs or faults could be caused by another DTC or fault. A failed sensor may set a component DTC and then the system may set a DTC indicating the system cannot operate properly. By correcting the sensor fault, the system may now operate properly and the system level DTC will transition to history. Refer to the examples within each category below to understand the differences between these DTCs. If DTCs of these type are current, the technician is referred to *Diagnostic Trouble Code (DTC) List - Vehicle 3-173* to choose the correct DTC diagnostic procedure.

13.1. Voltage DTCs

Note: DTC U3000 is used for both high level control module faults and lower level faults. The fault level is determined by the symptom byte set with the DTC. Examples of some DTC U3000 voltage faults are shown below.

- U3000 16 Control Module Circuit Low Voltage
- U3000 17 Control Module Circuit High Voltage
- B19F4 Vehicle 12V Charging System
- P0560 System Voltage
- P0651 Sensor Reference 2 Circuit
- U3006 Control Module Power 1 Circuit

13.2. Programming, Setup, Configuration or Software Performance DTCs

Note: DTC U3000 is used for both high level control module faults and lower level faults. The fault level is determined by the symptom byte set with the DTC. Examples of some DTC U3000 programming, setup, configuration, or software faults are shown below.

- U3000 51 Control Module Not Programmed
- U3000 54 Control Module Missing Calibration
- U3000 55 Control Module Not Configured
- C05D4 Brake Master Cylinder Piston Position Sensor Calibration Not Learned
- P0602 Control Module Not Programmed
- P0630 VIN Not Programmed or Mismatched - Powertrain Control Module (PCM)

13.3. Component related DTCs

Note: DTC U3000 is used for both high level control module faults and lower level faults. The fault level is determined by the symptom byte set with the DTC. Examples of some DTC U3000 component faults are shown below.

- U3000 4A Control Module Incorrect Component Installed
- B0013 Co-Driver Knee Module High Control
- B15A7 Instrument Panel Accent Lighting Control
- C0502 Left Front Wheel Speed Sensor Circuit Low Input
- P0535 Air Conditioning Evaporator Temperature Sensor Circuit
- P0131 Heated Oxygen Sensor Circuit Low
- P0712 Transmission Fluid Temperature Sensor Circuit Low

13.4. System related DTCs

Note: DTC U3000 is used for both high level control module faults and lower level faults. The fault level is determined by the symptom byte set with the DTC. Examples of some DTC U3000 system related faults are shown below.

- U3000 9A Control Module Incorrect Component or System Operating Conditions Exceeded
- B1A04 Front View Camera - Windshield
- C003F Wheel Speed Sensors Direction Correlation
- C2A21 Park Brake Actuator Position Unknown
- P0101 Mass Airflow Sensor Performance
- P175E Transmission Control System - Shift Limiting Active

13.5. Any other remaining DTCs — The technician should diagnose and correct any other DTCs that are left that were not from the categories above.

14. EMISSION RELATED INSPECTION/MAINTENANCE TESTING CONCERNS — Several regions require that a vehicle pass on-board diagnostic system tests and the inspection/maintenance emission tests in order to renew license plates or vehicle registration. This is accomplished by viewing the Inspection/Maintenance System Status display on a scan tool. Using a scan tool, the technician can observe the Inspection/Maintenance System Status in order to verify that the vehicle meets the criteria that comply with the local area requirements. If inspection and maintenance checks are required in your region, and the customer concern is related to not passing an Inspection/Maintenance test, a link is provided to *Inspection/Maintenance System Check 3-259* where the technician can choose the appropriate Inspection/Maintenance System Check for the actual engine application being used.
15. SYMPTOM DIAGNOSIS — At this step, the diagnostics are assuming that the only information the technician has available to diagnose the customer concern are symptoms of a problem. There are no DTCs set current or history. There may be a Driver Information Center display message or a system indicator to aid in identifying the root cause. The technician should evaluate the symptoms and conditions described by the customer and perform the symptoms diagnostics for the area of customer concern. A link is provided to *Symptoms - Vehicle 3-257* which contains a list of all symptoms related to this service manual publication.

Diagnostic Starting Point - Vehicle

Begin the system diagnosis with *Diagnostic System Check - Vehicle 3-167*. The Diagnostic System Check - Vehicle will provide a complete strategy to locate and repair a mechanical or electrical vehicle fault. Not following this strategy may cause additional diagnostic time and/or misdiagnosis.

The Diagnostic System Check - Vehicle will provide the following strategy:

- When to verify the customer concern and identify related bulletins, recalls and preliminary information
- When to identify a control module that is not communicating, a control module that has set a DTC, and the DTC diagnostic priority
- When to address power mode concerns
- When to verify the engine cranks and runs
- When to diagnose symptom related concerns

Diagnostic System Check - Vehicle

Diagnostic Instructions

- Review *Strategy Based Diagnosis 3-158* for an overview of the diagnostic approach.
- *Diagnostic System Check Instructions 3-162* provides an overview of each diagnostic step.
- Continue through the Diagnostic System Check until you are directed to follow a particular diagnostic or repair procedure. Once a repair has been completed, perform the *Diagnostic Repair Verification 3-259* and verify the customer concern has been corrected.

The diagnostic procedures within this manual are developed on the assumption that the following areas function as designed:

- The 12 V battery is fully charged and cables are clean and tight. Refer to: [Link target (target-id 37781-) not found] .
- Fuses are not open. Refer to: *Power Distribution Schematics 8-976* and *Electrical Center Identification Views 8-30*.
- Ground circuits for the area of customer concern are clean, tight, and in the correct location. Refer to: *Ground Distribution Schematics 8-1001* and *Harness Routing Views 8-769*.
- All connectors/terminals fully seated in the area of concern. Refer to: *Master Electrical Component List 8-1032*.
- There are no aftermarket devices that affect the operation of the system. Refer to: [Link target (target-id 310488-) not found] .
- The scan tool powers up. Refer to: [Link target (target-id 148078-) not found] .

Updating Control Module Software

For control modules that are able to be reprogrammed, updated software may become available as a part of normal bug correction, feature updates, and control module diagnostic enhancement. In the course of normal fault diagnosis, if a diagnostic procedure indicates to replace a programmable control module, the control module must first be reprogrammed with the latest available software and retested before replacement:

- If updated control module software is available, reprogram the control module and re-test to verify if updated software has corrected the concern. If the updated software has corrected the concern, no further action is required; Do not replace the control module. If the concern persists after programming the control module with the latest software, continue following the diagnostic instructions.
- If updated control module software is not available, continue following the diagnostic instructions.

Diagnostic System Check

1. VERIFY CUSTOMER CONCERN — Understand and validate the customer concern. Inspect the visible system components for obvious damage or conditions that may cause the concern.
2. BULLETIN SEARCH — Check for related bulletins, recall/field actions and preliminary information.
3. MECHANICAL CONCERNS — Verify the symptom is not exclusively a mechanical concern.

⇒ **If the symptom is exclusively a mechanical concern**

Refer to: *Symptoms - Vehicle 3-257*.

⇓ **If the symptom is not a mechanical concern**

Note:

- Do not clear any DTCs unless instructed to do so by a diagnostic procedure. If any DTC is Powertrain related, select Capture Info to store DTC and Freeze Frame/Failure Records to the scan tool.
- Changes in vehicle power mode can be determined by the indicators on the S38 On/Off Vehicle Switch. The indicator should match the selected power mode and change as the power mode is changed.

4. VEHICLE POWER UP VERIFICATION — Vehicle in Service Mode, verify the vehicle powers up.

⇒ **If the vehicle does not power up**

Refer to: [Link target (target-id 148321-) not found] .

⇓ **If the vehicle powers up**

Note: When checking for DTCs and determining what diagnostic actions should be taken, it is important to understand if the DTC is a current DTC or a history DTC. It is not uncommon for vehicles to arrive for service with a DTC that is history and the underlying fault condition no longer present. Refer to *DTC Status Information 3-171* to help determine which DTCs are current and should be diagnosed as such, and which DTCs are not current and should not be considered for diagnosis.

5. CONTROL MODULE COMMUNICATION and DTC CHECK — Using a scan tool, perform the Vehicle DTC Information function and verify at least one control module communicates with the scan tool. Record on the Repair Order the following information:
   - Any control module that is not communicating.
   - Any DTC, including symptom byte, and the control module that has set the DTC.

⇒ **If the scan tool does not communicate with any control module on the vehicle**

Refer to: [Link target (target-id 148085-) not found] .

⇓ **If the scan tool communicates with any control module**

6. CONTROL MODULE INTERNAL PERFORMANCE FAULTS — Verify there are no current control module Internal Hardware Performance DTCs set.

⇒ **If any DTC of this type is set**

Refer to: *Diagnostic Trouble Code (DTC) List - Vehicle 3-173*.

⇓ **If no DTC of this type is set**

Note: If the scan tool is unable to communicate with a control module, attempt to reestablish communication by removing and reconnecting power to the control module. This action will typically be performed in the course of normal fault diagnosis but may also be performed by removing the fuse or fuses powering the control module or by disconnecting the electrical connector(s) at the control module. If communication with the control module is reestablished after removing and reconnecting power, reprogram the control module with the latest software (if available) and re-examine the concern. Do not replace the control module without first determining if new software is available and, if so, programming the control module with the new software to determine if the software has corrected the concern.

7. CONTROL MODULE COMMUNICATION VERIFICATION — Verify the vehicle is equipped with any control module identified as not communicating on the scan tool. For a list of all control modules the vehicle may be equipped with, refer to: [Link target (target-id 148085-) not found] . With all non-communicating control module(s) identified, select the appropriate Data Communication schematic to determine the RPO(s) associated with the control module and verify the RPO is or is not present on the vehicle being diagnosed. All control modules should be communicating, as equipped.

⇒ **If the vehicle is equipped with a control module that is not communicating**

Refer to: [Link target (target-id 148085-) not found] . Select the appropriate Scan Tool Does Not Communicate with Device on CAN link in the Diagnostic Procedure column.

⇓ **If all control modules the vehicle is built with are communicating**

8. COMMUNICATION and POWER MODE FAULTS — Verify there are no current control module Power Mode or Communication DTCs set.

⇒ **If any DTC of this type is set**

Refer to: *Diagnostic Trouble Code (DTC) List - Vehicle 3-173*.

⇓ **If no DTC of this type is set**

Note: The engine may start during this test. Ensure the vehicle is out of gear and the parking brake is applied. Turn the engine OFF as soon as the crank power mode parameter has been observed.

9. POWER MODE VERIFICATION — Driver door open, observe each scan tool Power Mode data parameter while cycling through all power modes. Verify all Power Mode data parameters match the actual ignition switch/push button switch selection.

⇒ **If any Power Mode data parameter does not match**

Refer to: [Link target (target-id 148321-) not found] .

⇓ **If all Power Mode data parameters match**

10. SERIAL DATA AUTHENTICATION FAULTS - Verify DTC U1960, U1961, U1962, U3034, or U3035 is not set.

⇒ **If any of the DTCs are set**

Refer to: *Diagnostic Trouble Code (DTC) List - Vehicle 3-173*.

⇓ **If none of the DTCs are set**

11. PROACTIVE ALERT IDENTIFIERS — The technician is asked in this step to verify there are no Proactive Alert Identifiers set. These identifiers are displayed on the scan tool and will only appear when the OnStar subscription is active and the customer has opted into the Proactive Alert service.

⇒ **If any Proactive Alert Identifier is set**

Refer to: *Proactive Alerts List 3-259*

⇓ **If no Proactive Alert Identifier is set**

12. ENGINE CRANK and RUN VERIFICATION — Verify that the engine cranks and runs.

⇒ **If the engine does not crank**

Refer to: *Engine Does Not Crank 3-258*.

⇒ **If the engine does not run**

Refer to: *Engine Cranks But Does Not Run 3-259*.

⇓ **If the engine cranks and runs**

13. REMAINING DTC REVIEW — Verify there are no other DTCs set.

⇒ **If other DTCs are set**

Diagnose them in the order listed below. Refer to *Diagnostic Trouble Code (DTC) List - Vehicle 3-173*.

13.1. Voltage DTCs

13.2. Programming, Setup or Configuration or Software Performance DTCs

13.3. Component related DTCs

13.4. System related DTCs

13.5. Any remaining DTCs

⇓ **If no other DTCs are set**

14. EMISSION RELATED INSPECTION/MAINTENANCE TESTING CONCERNS — If inspection and maintenance checks are required in your region, verify the customer concern is not related to inspection/maintenance testing.

⇒ **If the customer concern is related to inspection/maintenance testing**

Refer to: *Inspection/Maintenance System Check 3-259*.

⇓ **If the customer concern is not related to inspection/maintenance testing**

15. SYMPTOM DIAGNOSIS — Diagnose any remaining customer concern. Refer to: *Symptoms - Vehicle 3-257*.

DTC Status Information

Diagnostic Trouble Codes (DTCs) are status indicators of the vehicle's self-diagnostic and reporting capability. Each DTC represents the status of a particular internal test within a control module. Given appropriate conditions, the control module will begin actively monitoring conditions specified by the diagnostic. These are identified and referred to as Conditions for Running the DTC in service information. Each DTC has an associated status, identifying the state of the control module diagnostic. These statuses are identified when viewing DTC information on the scan tool and are described below.

DTC Status

Decoded Value	Description
Not Failed	Test has completed at least once this operating cycle and has passed successfully each time
Current	Test has completed since the last DTC clear, has met the threshold to be stored in long term memory, and has failed the most recent completed test. Test may not have run yet this operation cycle.
History	Test has completed since the last DTC clear, has met the threshold to be stored in long term memory, and has passed the most recent completed test. Test may not have run yet this operation cycle.
Pending	Test has completed and failed at least once in the current or previous operation cycle.
Test Not Complete this Operating Cycle	Test has completed at least once since DTC clear but has not completed yet this operation cycle. Test may have failed since clear but has not met the threshold to be stored in long term memory.
Test Not Complete Since DTC Cleared	Test has not completed successfully since the DTC was last cleared.
Failed Since DTC Cleared	Test has completed since the last DTC clear and failed at least once but has not met the threshold to be stored in long term memory and has not failed during the current or previous operation cycle.

This Operating Cycle

Decoded Value	Description
Failed	Test has completed at least once this operation cycle and has failed at least once.
Not Failed	Test has completed at least once this operation cycle and has passed each time.
Passed and Failed	Test has completed and failed at least once this operation cycle, but the most recent test passed.
Test Not Complete for this DTC	Test has not completed yet this operation cycle.

Last Test

Decoded Value	Description
Passed	Most recent test completed and passed.
Failed	Most recent test completed and failed.
Not Complete Since DTC Cleared	Test has not completed since DTC clear.

Since DTC Clear

Decoded Value	Description
Failed	Test has completed at least once since DTC was cleared and has failed at least once, including the most recent test.
Passed and Failed	Test has completed at least once since DTC was cleared and the most recent test passed, but not all tests have passed.
Not Failed	Test has completed at least once since DTC was cleared and every test has passed.
Test Not Complete for this DTC	Test has not completed yet since DTC was cleared.

Warning Indicator

Decoded Value	Description
Requested	A malfunction indicator has been commanded to be illuminated as a result of this DTC.
Not Requested	A malfunction indicator has not been requested as a result of this DTC.

Diagnosing History DTCs

It is very important to understand DTC status and its relationship to diagnosing a vehicle. If a DTC status is History, this means that the fault is not currently present on the vehicle. In any instance of a history DTC, diagnosis using a DTC diagnostic procedure in service information should not be attempted if not directly related to the customer complaint. Every diagnostic is written only for an active fault with a current DTC. Following a diagnostic procedure when only a history DTC is present will likely result in a misdiagnosis. This is foundational to *Strategy Based Diagnosis 3-158* and outlined as part of *Diagnostic System Check - Vehicle 3-167*.

If a DTC is only presented as a history DTC and is related to the customer complaint, it may be used as a guide or indicator for replicating the condition that caused the DTC to set. Observing the Conditions for Running the DTC in a DTC diagnostic procedure may help in recreating the conditions necessary for the DTC to run. Information within the DTC diagnostic procedure, such as the Fault Information table or Conditions for Setting the DTC, may also be helpful in recreating an intermittent DTC. Refer to Additional Information in *Strategy Based Diagnosis 3-158* for more detail in diagnosing intermittent concerns.

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Emissions Related DTCs

Action Taken When the DTC Sets – Type A

- The control module illuminates the malfunction indicator lamp (MIL) when the diagnostic runs and fails.
- The control module records the operating conditions at the time the diagnostic fails. The control module stores this information in the Freeze Frame/Failure Records.

Action Taken When the DTC Sets – Type B

- The control module illuminates the MIL on the second consecutive ignition cycle that the diagnostic runs and fails.
- The control module records the operating conditions at the time the diagnostic fails. The first time the diagnostic fails, the control module stores this information in the Failure Records. If the diagnostic reports a failure on the second consecutive ignition cycle, the control module records the operating conditions at the time of the failure. The control module writes the operating conditions to the Freeze Frame and updates the Failure Records.
- The following applies to misfire DTCs:
  - If the control module detects a low level or an emission level misfire condition during 2 consecutive trips, the control module illuminates the MIL.
  - If the control module detects a high level or catalyst damaging misfire, the control module flashes the MIL at a rate of once per second.
  - If the control module detects a misfire during 2 non-consecutive trips, the stored conditions are compared with the current conditions. The control module illuminates the MIL when the following conditions occur:
    - The engine load is within 20 percent of the previous test that failed.
    - The engine speed is within 375 RPM of the previous test that failed.
    - The engine coolant temperature is in the same range of the previous test that failed.
- The following applies to fuel trim DTCs:
  - If the control module detects a fuel trim condition during 2 consecutive trips, the control module illuminates the MIL.
  - If the control module detects a fuel trim condition during 2 non-consecutive trips, the stored conditions are compared with the current conditions. The control module illuminates the MIL when the following conditions occur:
    - The engine load is within 20 percent of the previous test that failed.
    - The engine speed is within 375 RPM of the previous test that failed.
    - The engine coolant temperature is in the same range of the previous test that failed.

Conditions for Clearing the MIL/DTC – Type A or Type B

- The control module turns OFF the MIL after 4 consecutive ignition cycles that the diagnostic runs and does not fail.

- A current DTC, Last Test Failed, clears when the diagnostic runs and passes.
- A history DTC clears after 40 consecutive warm-up cycles, if no failures are reported by this or any other emission related diagnostic.
- Clear the MIL and the DTC with a scan tool.

Non-Emissions Related DTCs

Action Taken When the DTC Sets – Type C

- The control module stores the DTC information into memory when the diagnostic runs and fails.
- The MIL will not illuminate.
- The control module records the operating conditions at the time the diagnostic fails. The control module stores this information in the Failure Records.
- The driver information center, if equipped, may display a message.

Conditions for Clearing the DTC – Type C

- A current DTC Last Test Failed clears when the diagnostic runs and passes.
- A history DTC clears after 40 consecutive warm-up cycles, if no failures are reported by this or any other non-emission related diagnostic.
- Clear the DTC with a scan tool.

Diagnostic Trouble Code (DTC) List - Vehicle

This master list includes all applicable diagnostic trouble codes in alphanumeric order.

Diagnostic Trouble Code (DTC) List - Vehicle

DTC	Diagnostic Procedure
B0001	Supplemental Restraints - [Link target (target-id 289883-) not found]
B0002	Supplemental Restraints - [Link target (target-id 289883-) not found]
B0010	Supplemental Restraints - [Link target (target-id 289884-) not found]
B0011	Supplemental Restraints - [Link target (target-id 289884-) not found]
B0021	Supplemental Restraints - [Link target (target-id 317288-) not found]
B0029	Supplemental Restraints - [Link target (target-id 317288-) not found]
B0070	Supplemental Restraints - [Link target (target-id 317289-) not found]
B0072	Supplemental Restraints - [Link target (target-id 317289-) not found]
B007E	Supplemental Restraints - [Link target (target-id 313882-) not found]
B007F	Supplemental Restraints - [Link target (target-id 313882-) not found]
B0090	Supplemental Restraints - [Link target (target-id 317522-) not found]
B0091	Supplemental Restraints - [Link target (target-id 317522-) not found]
B0092	Supplemental Restraints - [Link target (target-id 317522-) not found]
B0093	Supplemental Restraints - [Link target (target-id 317522-) not found]
B0094	Supplemental Restraints - [Link target (target-id 317522-) not found]
B0095	Supplemental Restraints - [Link target (target-id 317522-) not found]
B0096	Supplemental Restraints - [Link target (target-id 317522-) not found]
B0097	Supplemental Restraints - [Link target (target-id 317522-) not found]
B0098	Supplemental Restraints - [Link target (target-id 317522-) not found]

DTC	Diagnostic Procedure
B0126	Driver Monitoring - [Link target (target-id 327949-) not found]
B012C	Power Outlets - [Link target (target-id 338801-) not found]
B071F	Displays and Gauges - [Link target (target-id 183624-) not found]
B1008	Horns and Pedestrian Alerts - [Link target (target-id 315457-) not found]
B100C	Trailering Systems - [Link target (target-id 326388-) not found]
B1023	Wipers and Washers - [Link target (target-id 317708-) not found]
B1033	Cellular, Entertainment, and Navigation - [Link target (target-id 319390-) not found]
B1034	Cellular, Entertainment, and Navigation - [Link target (target-id 319390-) not found]
B1038	Vehicle Access - [Link target (target-id 316927-) not found]
B1048	Lighting - [Link target (target-id 317465-) not found]
B1049	Lighting - [Link target (target-id 317466-) not found]
B1066	Fixed and Moveable Windows - [Link target (target-id 315458-) not found]
B107E	Vehicle Access - [Link target (target-id 317528-) not found]
B107F	Vehicle Access - [Link target (target-id 317528-) not found]
B108E	Lighting - [Link target (target-id 313551-) not found]
B1090	Power Seats - [Link target (target-id 324035-) not found]
B1091	Power Seats - [Link target (target-id 324035-) not found]
B1092	Power Seats - [Link target (target-id 324035-) not found]
B1093	Power Seats - [Link target (target-id 324035-) not found]
B1094	Power Seats - [Link target (target-id 324035-) not found]
B1095	Power Seats - [Link target (target-id 324035-) not found]
B1096	Power Seats - [Link target (target-id 324036-) not found]
B1097	Power Seats - [Link target (target-id 324036-) not found]
B1098	Power Seats - [Link target (target-id 324036-) not found]
B109C	Power Seats - [Link target (target-id 324036-) not found]
B109D	Power Seats - [Link target (target-id 324036-) not found]
B109E	Power Seats - [Link target (target-id 324036-) not found]
B10A9	Trailering Systems - [Link target (target-id 325943-) not found]
B10B4	Supplemental Restraints - [Link target (target-id 317523-) not found]
B10BD	Supplemental Restraints - [Link target (target-id 313886-) not found]
B10FA	HVAC - Automatic - [Link target (target-id 318791-) not found]
B1105	Power Seats - [Link target (target-id 317270-) not found]
B110A	Displays and Gauges - [Link target (target-id 312300-) not found]
B1114	Cellular, Entertainment, and Navigation - [Link target (target-id 313041-) not found]
B113C	Theft Deterrent - [Link target (target-id 320486-) not found]
B1141	HVAC - Automatic - [Link target (target-id 318791-) not found]
B115E	Vehicle Access - [Link target (target-id 317532-) not found]
B115F	Vehicle Access - [Link target (target-id 317532-) not found]
B11A2	Vehicle Access - [Link target (target-id 317530-) not found]
B11A3	Vehicle Access - [Link target (target-id 317530-) not found]
B11A4	Vehicle Access - [Link target (target-id 317531-) not found]
B11A5	Vehicle Access - [Link target (target-id 317531-) not found]

DTC	Diagnostic Procedure
B11D1	Lighting - [Link target (target-id 317876-) not found]
B11D2	Lighting - [Link target (target-id 317876-) not found]
B120C	Supplemental Restraints - [Link target (target-id 317523-) not found]
B1236	Lighting - [Link target (target-id 313554-) not found]
B1236	Image Display Cameras - [Link target (target-id 319392-) not found]
B125D	Vehicle Access - [Link target (target-id 317533-) not found]
B1267	Wipers and Washers - [Link target (target-id 317709-) not found]
B1270	Driver Assistance Systems - [Link target (target-id 332121-) not found]
B1271	Driver Assistance Systems - [Link target (target-id 332121-) not found]
B12CC	Seat Heating and Cooling - [Link target (target-id 317279-) not found]
B12D4	Supplemental Restraints - [Link target (target-id 317524-) not found]
B12D5	Supplemental Restraints - [Link target (target-id 317524-) not found]
B12FA	Wipers and Washers - [Link target (target-id 316884-) not found]
B132B	Parking Assistance Systems - [Link target (target-id 297192-) not found]
B132C	Parking Assistance Systems - [Link target (target-id 297192-) not found]
B132D	Parking Assistance Systems - [Link target (target-id 297192-) not found]
B132E	Parking Assistance Systems - [Link target (target-id 297192-) not found]
B1338	Seat Heating and Cooling - [Link target (target-id 317279-) not found]
B1339	Seat Heating and Cooling - [Link target (target-id 317279-) not found]
B133A	Seat Heating and Cooling - [Link target (target-id 317279-) not found]
B1346	Cellular, Entertainment, and Navigation - [Link target (target-id 313801-) not found]
B1349	Parking Assistance Systems - [Link target (target-id 317615-) not found]
B135D	Displays and Gauges - [Link target (target-id 312301-) not found]
B1388	Driver Assistance Systems - [Link target (target-id 331168-) not found]
B1389	Driver Assistance Systems - [Link target (target-id 331168-) not found]
B13A9	Supplemental Restraints - [Link target (target-id 329393-) not found]
B13AA	Cellular, Entertainment, and Navigation - [Link target (target-id 313043-) not found]
B13AB	Cellular, Entertainment, and Navigation - [Link target (target-id 317598-) not found]
B13AC	Driver Assistance Systems - [Link target (target-id 297199-) not found]
B13AD	Driver Assistance Systems - [Link target (target-id 297200-) not found]
B13AE	Parking Assistance Systems - [Link target (target-id 297196-) not found]
B13AF	Parking Assistance Systems - [Link target (target-id 297196-) not found]
B13B0	Parking Assistance Systems - [Link target (target-id 297193-) not found]
B13B1	Parking Assistance Systems - [Link target (target-id 297193-) not found]
B13E7	Horns and Pedestrian Alerts - [Link target (target-id 313548-) not found]
B13ED	Cellular, Entertainment, and Navigation - [Link target (target-id 326974-) not found]
B1442	Remote Functions - [Link target (target-id 319783-) not found]
B1444	Remote Functions - [Link target (target-id 319784-) not found]
B1451	Remote Functions - [Link target (target-id 319786-) not found]
B1491	Supplemental Restraints - [Link target (target-id 317525-) not found]
B1511	Remote Functions - [Link target (target-id 319787-) not found]
B1513	Remote Functions - [Link target (target-id 319788-) not found]

DTC	Diagnostic Procedure
B1586	Vehicle Access - [Link target (target-id 347029-) not found]
B1589	Vehicle Access - [Link target (target-id 347544-) not found]
B158A	Vehicle Access - [Link target (target-id 347544-) not found]
B158B	Vehicle Access - [Link target (target-id 347545-) not found]
B1594	Image Display Cameras - [Link target (target-id 361892-) not found]
B1595	Image Display Cameras - [Link target (target-id 309440-) not found]
B1597	Image Display Cameras - [Link target (target-id 309441-) not found]
B1598	Image Display Cameras - [Link target (target-id 309442-) not found]
B1599	Driver Monitoring - [Link target (target-id 327976-) not found]
B15AF	Cellular, Entertainment, and Navigation - [Link target (target-id 313045-) not found]
B15BD	Displays and Gauges - [Link target (target-id 312302-) not found]
B15DF	Supplemental Restraints - [Link target (target-id 317291-) not found]
B15E3	Supplemental Restraints - [Link target (target-id 317291-) not found]
B15EE	Immobilizer - [Link target (target-id 320484-) not found]
B1618	Cellular, Entertainment, and Navigation - [Link target (target-id 313047-) not found]
B16C5	Vehicle Access - [Link target (target-id 313566-) not found]
B170C	Seat Heating and Cooling - [Link target (target-id 317280-) not found]
B170E	Seat Heating and Cooling - [Link target (target-id 317280-) not found]
B1710	Vehicle Access - [Link target (target-id 316933-) not found]
B1711	Vehicle Access - [Link target (target-id 316933-) not found]
B171C	Vehicle Access - [Link target (target-id 317538-) not found]
B1737	Cellular, Entertainment, and Navigation - [Link target (target-id 304104-) not found]
B174E	Cellular, Entertainment, and Navigation - [Link target (target-id 324214-) not found]
B176A	Vehicle Access - [Link target (target-id 316934-) not found]
B178C	Cellular, Entertainment, and Navigation - [Link target (target-id 313049-) not found]
B17F0	Supplemental Restraints - [Link target (target-id 328903-) not found]
B17F2	Supplemental Restraints - [Link target (target-id 328903-) not found]
B17FE	Vehicle Access - [Link target (target-id 317538-) not found]
B1800	Vehicle Access - [Link target (target-id 317533-) not found]
B1802	Vehicle Access - [Link target (target-id 317531-) not found]
B1803	Vehicle Access - [Link target (target-id 317538-) not found]
B1804	Vehicle Access - [Link target (target-id 317530-) not found]
B1805	Vehicle Access - [Link target (target-id 317533-) not found]
B1835	Lighting - [Link target (target-id 317470-) not found]
B1836	Lighting - [Link target (target-id 317471-) not found]
B1837	Lighting - [Link target (target-id 313557-) not found]
B187A	Seat Heating and Cooling - [Link target (target-id 327569-) not found]
B187B	Seat Heating and Cooling - [Link target (target-id 327569-) not found]
B187C	Seat Heating and Cooling - [Link target (target-id 327569-) not found]
B187D	Seat Heating and Cooling - [Link target (target-id 327569-) not found]
B187E	Trailering Systems - [Link target (target-id 326389-) not found]
B1918	Lighting - [Link target (target-id 317472-) not found]

DTC	Diagnostic Procedure
B1952	Fixed and Moveable Windows - [Link target (target-id 317545-) not found]
B1953	Fixed and Moveable Windows - [Link target (target-id 323948-) not found]
B1954	Fixed and Moveable Windows - [Link target (target-id 323949-) not found]
B1955	Fixed and Moveable Windows - [Link target (target-id 323950-) not found]
B1956	Fixed and Moveable Windows - [Link target (target-id 349387-) not found]
B1957	Fixed and Moveable Windows - [Link target (target-id 349387-) not found]
B195A	Lighting - [Link target (target-id 331609-) not found]
B1960	Cellular, Entertainment, and Navigation - [Link target (target-id 319390-) not found]
B1960	Cellular, Entertainment, and Navigation - [Link target (target-id 304095-) not found]
B1961	Cellular, Entertainment, and Navigation - [Link target (target-id 319390-) not found]
B1961	Cellular, Entertainment, and Navigation - [Link target (target-id 304095-) not found]
B1962	Cellular, Entertainment, and Navigation - [Link target (target-id 319390-) not found]
B1962	Cellular, Entertainment, and Navigation - [Link target (target-id 304095-) not found]
B1963	Cellular, Entertainment, and Navigation - [Link target (target-id 319390-) not found]
B1963	Cellular, Entertainment, and Navigation - [Link target (target-id 304095-) not found]
B1964	Cellular, Entertainment, and Navigation - [Link target (target-id 317602-) not found]
B1965	Cellular, Entertainment, and Navigation - [Link target (target-id 313050-) not found]
B196A	Displays and Gauges - [Link target (target-id 309454-) not found]
B196D	Power Seats - [Link target (target-id 317272-) not found]
B196E	Power Seats - [Link target (target-id 320495-) not found]
B196F	Power Seats - [Link target (target-id 317273-) not found]
B1970	Power Seats - [Link target (target-id 320496-) not found]
B1977	Immobilizer - [Link target (target-id 313612-) not found]
B197D	Immobilizer - [Link target (target-id 313618-) not found]
B197F	Immobilizer - [Link target (target-id 313620-) not found]
B1980	Immobilizer - [Link target (target-id 313621-) not found]
B1981	Immobilizer - [Link target (target-id 313622-) not found]
B1987	Immobilizer - [Link target (target-id 313623-) not found]
B1989	Immobilizer - [Link target (target-id 313625-) not found]
B198A	Immobilizer - [Link target (target-id 313626-) not found]
B198B	Wipers and Washers - [Link target (target-id 316885-) not found]
B198D	Displays and Gauges - [Link target (target-id 309455-) not found]
B1991	Lighting - [Link target (target-id 313648-) not found]
B1994	Lighting - [Link target (target-id 317879-) not found]
B1995	Lighting - [Link target (target-id 317879-) not found]
B1996	Lighting - [Link target (target-id 317880-) not found]
B1997	Lighting - [Link target (target-id 317880-) not found]
B1998	Lighting - [Link target (target-id 317881-) not found]
B1999	Lighting - [Link target (target-id 317881-) not found]
B199A	Lighting - [Link target (target-id 317882-) not found]
B199B	Lighting - [Link target (target-id 317882-) not found]
B199C	Lighting - [Link target (target-id 317883-) not found]

DTC	Diagnostic Procedure
B199D	Lighting - [Link target (target-id 317883-) not found]
B19A0	Lighting - [Link target (target-id 313663-) not found]
B19A1	Lighting - [Link target (target-id 317885-) not found]
B19A2	Lighting - [Link target (target-id 317885-) not found]
B19A3	Lighting - [Link target (target-id 313559-) not found]
B19A4	Lighting - [Link target (target-id 313559-) not found]
B19B0	Displays and Gauges - [Link target (target-id 313904-) not found]
B19B1	Cellular, Entertainment, and Navigation - [Link target (target-id 319000-) not found]
B19B6	Power Seats - [Link target (target-id 317276-) not found]
B19BA	Lighting - [Link target (target-id 317476-) not found]
B19BB	Parking Assistance Systems - [Link target (target-id 297191-) not found]
B19BC	Parking Assistance Systems - [Link target (target-id 297191-) not found]
B19BD	Parking Assistance Systems - [Link target (target-id 297191-) not found]
B19BE	Parking Assistance Systems - [Link target (target-id 297191-) not found]
B19C2	Seat Heating and Cooling - [Link target (target-id 317281-) not found]
B19C3	Seat Heating and Cooling - [Link target (target-id 317281-) not found]
B19C5	Lighting - [Link target (target-id 313668-) not found]
B19C8	Vehicle Access - [Link target (target-id 317262-) not found]
B19C9	Vehicle Access - [Link target (target-id 317262-) not found]
B19CA	Seat Heating and Cooling - [Link target (target-id 317282-) not found]
B19CB	Seat Heating and Cooling - [Link target (target-id 317282-) not found]
B19CC	Seat Heating and Cooling - [Link target (target-id 317282-) not found]
B19CD	Seat Heating and Cooling - [Link target (target-id 317282-) not found]
B19CE	Seat Heating and Cooling - [Link target (target-id 327580-) not found]
B19CF	Seat Heating and Cooling - [Link target (target-id 327580-) not found]
B19D0	Seat Heating and Cooling - [Link target (target-id 327580-) not found]
B19D1	Seat Heating and Cooling - [Link target (target-id 327580-) not found]
B19D6	Seat Heating and Cooling - [Link target (target-id 317283-) not found]
B19D7	Seat Heating and Cooling - [Link target (target-id 327566-) not found]
B19D9	Sunroof - [Link target (target-id 313609-) not found]
B19DA	Cellular, Entertainment, and Navigation - [Link target (target-id 313051-) not found]
B19F2	Steering Wheel and Column - [Link target (target-id 317603-) not found]
B19F4	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314836-) not found]
B1A04	Driver Assistance Systems - [Link target (target-id 310121-) not found]
B1A05	Driver Assistance Systems - [Link target (target-id 310122-) not found]
B1A09	Data Communications - [Link target (target-id 317009-) not found]
B1A1B	Data Communications - [Link target (target-id 297097-) not found]
B1A1D	Data Communications - [Link target (target-id 317028-) not found]
B1A1F	Data Communications - [Link target (target-id 317030-) not found]
B1A23	Data Communications - [Link target (target-id 317034-) not found]
B1A25	Data Communications - [Link target (target-id 317036-) not found]
B1A2C	HVAC - Automatic - [Link target (target-id 347808-) not found]

DTC	Diagnostic Procedure
B1A2C	HVAC - Manual - [Link target (target-id 348702-) not found]
B1A2F	Lighting - [Link target (target-id 317490-) not found]
B1A30	Parking Assistance Systems - [Link target (target-id 317616-) not found]
B1A33	Supplemental Restraints - [Link target (target-id 313892-) not found]
B1A34	Supplemental Restraints - [Link target (target-id 317293-) not found]
B1A35	Supplemental Restraints - [Link target (target-id 317294-) not found]
B1A36	Cellular, Entertainment, and Navigation - [Link target (target-id 313052-) not found]
B1A37	Secondary and Configurable Customer Controls - [Link target (target-id 323237-) not found]
B1A4B	Power Outlets - [Link target (target-id 338328-) not found]
B1A4C	Steering Wheel and Column - [Link target (target-id 317604-) not found]
B1A50	Displays and Gauges - [Link target (target-id 309456-) not found]
B1A57	Interior Trim and Paneling - [Link target (target-id 321209-) not found]
B1A5E	Image Display Cameras - [Link target (target-id 319520-) not found]
B1A62	Image Display Cameras - [Link target (target-id 361892-) not found]
B1A65	Power Seats - [Link target (target-id 317277-) not found]
B1A66	Power Seats - [Link target (target-id 317277-) not found]
B1A67	Power Seats - [Link target (target-id 317277-) not found]
B1A68	Image Display Cameras - [Link target (target-id 309444-) not found]
B1A69	Image Display Cameras - [Link target (target-id 309445-) not found]
B1A6A	Image Display Cameras - [Link target (target-id 309446-) not found]
B1A6C	Image Display Cameras - [Link target (target-id 309447-) not found]
B1A6D	Trailering Systems - [Link target (target-id 325945-) not found]
B1A6E	Trailering Systems - [Link target (target-id 325945-) not found]
B1A6F	Trailering Systems - [Link target (target-id 325948-) not found]
B1A70	Trailering Systems - [Link target (target-id 325948-) not found]
B1A71	Trailering Systems - [Link target (target-id 325949-) not found]
B1A72	Trailering Systems - [Link target (target-id 325950-) not found]
B1A73	Trailering Systems - [Link target (target-id 325951-) not found]
B1A75	Lighting - [Link target (target-id 319494-) not found]
B1A75	Trailering Systems - [Link target (target-id 325953-) not found]
B1A76	Wiring Systems and Power Management - [Link target (target-id 317723-) not found]
B1A78	Power Outlets - [Link target (target-id 331014-) not found]
B1A79	Power Outlets - [Link target (target-id 338329-) not found]
B1A7A	Supplemental Restraints - [Link target (target-id 317295-) not found]
B1A81	Lighting - [Link target (target-id 313562-) not found]
B1A82	Power Seats - [Link target (target-id 324036-) not found]
B1A83	Power Seats - [Link target (target-id 324036-) not found]
B1A84	Power Seats - [Link target (target-id 324035-) not found]
B1A85	Power Seats - [Link target (target-id 324035-) not found]
B1A95	Cellular, Entertainment, and Navigation - [Link target (target-id 323936-) not found]
B1A96	Cellular, Entertainment, and Navigation - [Link target (target-id 323936-) not found]
B1A99	Cellular, Entertainment, and Navigation - [Link target (target-id 323938-) not found]

DTC	Diagnostic Procedure
B1A9A	Cellular, Entertainment, and Navigation - [Link target (target-id 323938-) not found]
B1A9B	Image Display Cameras - [Link target (target-id 361892-) not found]
B1A9B	Image Display Cameras - [Link target (target-id 309448-) not found]
B1A9C	Image Display Cameras - [Link target (target-id 309449-) not found]
B1A9D	Image Display Cameras - [Link target (target-id 309450-) not found]
B1A9E	Image Display Cameras - [Link target (target-id 309451-) not found]
B1AA3	Wiring Systems and Power Management - [Link target (target-id 313605-) not found]
B1AB0	Trailering Systems - [Link target (target-id 325955-) not found]
B1AB4	Power Seats - [Link target (target-id 331819-) not found]
B1ABB	Vehicle Access - [Link target (target-id 347133-) not found]
B1AC1	Power Seats - [Link target (target-id 348652-) not found]
B1AC2	Wiring Systems and Power Management - [Link target (target-id 313601-) not found]
B1AC3	Wiring Systems and Power Management - [Link target (target-id 313602-) not found]
B1AD0	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 327526-) not found]
B1AD2	Seat Belts - [Link target (target-id 330173-) not found]
B1AD3	Seat Belts - [Link target (target-id 317300-) not found]
B1ADD	Seat Heating and Cooling - [Link target (target-id 327567-) not found]
B1ADE	Seat Heating and Cooling - [Link target (target-id 327567-) not found]
B1ADF	Remote Functions - [Link target (target-id 319790-) not found]
B1AE6	Supplemental Restraints - [Link target (target-id 335228-) not found]
B1AEE	Remote Functions - [Link target (target-id 319791-) not found]
B1B0A	Frame and Underbody - [Link target (target-id 325180-) not found]
B1B0B	Frame and Underbody - [Link target (target-id 325180-) not found]
B1B12	Wiring Systems and Power Management - [Link target (target-id 317724-) not found]
B1B13	Fixed and Moveable Windows - [Link target (target-id 332471-) not found]
B1B15	Wiring Systems and Power Management - [Link target (target-id 317726-) not found]
B1B19	Cellular, Entertainment, and Navigation - [Link target (target-id 319001-) not found]
B1B24	Driver Monitoring - [Link target (target-id 327977-) not found]
B1B2F	Cellular, Entertainment, and Navigation - [Link target (target-id 317735-) not found]
B1B38	Driver Assistance Systems - [Link target (target-id 320653-) not found]
B1B39	Driver Assistance Systems - [Link target (target-id 320654-) not found]
B1B3A	Driver Assistance Systems - [Link target (target-id 320655-) not found]
B1B3B	Driver Assistance Systems - [Link target (target-id 320656-) not found]
B1B3C	Driver Assistance Systems - [Link target (target-id 320657-) not found]
B1B42	Wiring Systems and Power Management - [Link target (target-id 322002-) not found]
B1B43	Driver Assistance Systems - [Link target (target-id 328987-) not found]
B1B44	Driver Assistance Systems - [Link target (target-id 328988-) not found]
B1B45	Driver Assistance Systems - [Link target (target-id 328989-) not found]
B1B46	Driver Assistance Systems - [Link target (target-id 328990-) not found]
B1B47	Driver Assistance Systems - [Link target (target-id 328991-) not found]
B1B48	Driver Assistance Systems - [Link target (target-id 328992-) not found]
B1B49	Driver Assistance Systems - [Link target (target-id 328993-) not found]

DTC	Diagnostic Procedure
B1B4A	Driver Assistance Systems - [Link target (target-id 328994-) not found]
B1B4B	Vehicle Access - [Link target (target-id 316933-) not found]
B1B4D	Image Display Cameras - [Link target (target-id 333111-) not found]
B1B4E	Image Display Cameras - [Link target (target-id 332633-) not found]
B1B4F	Image Display Cameras - [Link target (target-id 332634-) not found]
B1B50	Image Display Cameras - [Link target (target-id 332635-) not found]
B1B51	Image Display Cameras - [Link target (target-id 332636-) not found]
B1B52	Image Display Cameras - [Link target (target-id 332637-) not found]
B1B55	Trailering Systems - [Link target (target-id 325956-) not found]
B1B56	Trailering Systems - [Link target (target-id 325958-) not found]
B1B57	Trailering Systems - [Link target (target-id 325958-) not found]
B1B58	Trailering Systems - [Link target (target-id 325960-) not found]
B1B5C	Vehicle Access - [Link target (target-id 333026-) not found]
B1B65	Driver Assistance Systems - [Link target (target-id 328995-) not found]
B1B66	Driver Assistance Systems - [Link target (target-id 328995-) not found]
B1B6E	Vehicle Access - [Link target (target-id 333036-) not found]
B1B70	Vehicle Access - [Link target (target-id 333036-) not found]
B1B71	Vehicle Access - [Link target (target-id 333036-) not found]
B1B72	Vehicle Access - [Link target (target-id 333036-) not found]
B1B73	Vehicle Access - [Link target (target-id 333037-) not found]
B1B74	Vehicle Access - [Link target (target-id 333027-) not found]
B1B75	Vehicle Access - [Link target (target-id 333028-) not found]
B1B79	Cellular, Entertainment, and Navigation - [Link target (target-id 333272-) not found]
B1B83	Trailering Systems - [Link target (target-id 325961-) not found]
B1B84	Vehicle Access - [Link target (target-id 333028-) not found]
B1BA5	Driver Assistance Systems - [Link target (target-id 328996-) not found]
B1BB3	Driver Assistance Systems - [Link target (target-id 328997-) not found]
B1BB5	Trailering Systems - [Link target (target-id 325943-) not found]
B1BB6	Wiring Systems and Power Management - [Link target (target-id 332638-) not found]
B1BE7	Lighting - [Link target (target-id 340107-) not found]
B1BE8	Lighting - [Link target (target-id 340107-) not found]
B1BEC	Driver Monitoring - [Link target (target-id 327978-) not found]
B1BED	Driver Monitoring - [Link target (target-id 327986-) not found]
B1C09	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 200414-) not found]
B1C0A	Vehicle Access - [Link target (target-id 325974-) not found]
B1C0B	Lighting - [Link target (target-id 347534-) not found]
B1C0C	Lighting - [Link target (target-id 347534-) not found]
B1C0D	Lighting - [Link target (target-id 345993-) not found]
B1C57	Vehicle Access - [Link target (target-id 333039-) not found]
B1C58	Vehicle Access - [Link target (target-id 347133-) not found]
B1C59	Vehicle Access - [Link target (target-id 333036-) not found]
B1CC6	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]

DTC	Diagnostic Procedure
B1CC7	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CC8	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CC9	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CCA	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CCB	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CCC	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CCD	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CCE	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CCF	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CD0	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CD1	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CD2	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CD3	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CD4	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CD5	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CD6	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CD7	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CD8	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CD9	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CDA	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CDB	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CDC	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CDD	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CDE	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CDF	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CE0	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CE1	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CE2	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B1CE3	Wiring Systems and Power Management - [Link target (target-id 348761-) not found]
B272D	Rear Drive Axle - [Link target (target-id 282299-) not found]
B2A00	Vehicle Access - [Link target (target-id 313568-) not found]
B2A01	HVAC - Automatic - [Link target (target-id 320816-) not found]
B2A01	HVAC - Manual - [Link target (target-id 337961-) not found]
B2A02	HVAC - Automatic - [Link target (target-id 320816-) not found]
B2A02	HVAC - Manual - [Link target (target-id 337961-) not found]
B2A03	HVAC - Automatic - [Link target (target-id 320816-) not found]
B2A03	HVAC - Manual - [Link target (target-id 337961-) not found]
B2A04	HVAC - Automatic - [Link target (target-id 320816-) not found]
B2A04	HVAC - Manual - [Link target (target-id 337961-) not found]
B2A05	HVAC - Automatic - [Link target (target-id 320816-) not found]
B2A05	HVAC - Manual - [Link target (target-id 337961-) not found]
B2A16	HVAC - Automatic - [Link target (target-id 320821-) not found]

DTC	Diagnostic Procedure
B2A16	HVAC - Manual - [Link target (target-id 337962-) not found]
B2A17	HVAC - Automatic - [Link target (target-id 320821-) not found]
B2A17	HVAC - Manual - [Link target (target-id 337962-) not found]
B2A18	HVAC - Automatic - [Link target (target-id 320821-) not found]
B2A18	HVAC - Manual - [Link target (target-id 337962-) not found]
B2A19	HVAC - Automatic - [Link target (target-id 320821-) not found]
B2A19	HVAC - Manual - [Link target (target-id 337962-) not found]
B2A1A	HVAC - Automatic - [Link target (target-id 320822-) not found]
B2A1A	HVAC - Manual - [Link target (target-id 337963-) not found]
B2A1B	HVAC - Automatic - [Link target (target-id 320822-) not found]
B2A1B	HVAC - Manual - [Link target (target-id 337963-) not found]
B2A1C	HVAC - Automatic - [Link target (target-id 320822-) not found]
B2A1C	HVAC - Manual - [Link target (target-id 337963-) not found]
B2A1D	HVAC - Automatic - [Link target (target-id 320822-) not found]
B2A1D	HVAC - Manual - [Link target (target-id 337963-) not found]
B2A1E	HVAC - Automatic - [Link target (target-id 320823-) not found]
B2A1E	HVAC - Manual - [Link target (target-id 337964-) not found]
B2A1F	HVAC - Automatic - [Link target (target-id 320823-) not found]
B2A1F	HVAC - Manual - [Link target (target-id 337964-) not found]
B2A20	HVAC - Automatic - [Link target (target-id 320823-) not found]
B2A20	HVAC - Manual - [Link target (target-id 337964-) not found]
B2A21	HVAC - Automatic - [Link target (target-id 320823-) not found]
B2A21	HVAC - Manual - [Link target (target-id 337964-) not found]
B2A36	HVAC - Automatic - [Link target (target-id 320829-) not found]
B2A37	HVAC - Automatic - [Link target (target-id 320829-) not found]
B2A38	HVAC - Automatic - [Link target (target-id 320829-) not found]
B2A39	HVAC - Automatic - [Link target (target-id 320829-) not found]
B2A3E	HVAC - Automatic - [Link target (target-id 320831-) not found]
B2A3F	HVAC - Automatic - [Link target (target-id 320831-) not found]
B2A40	HVAC - Automatic - [Link target (target-id 320831-) not found]
B2A41	HVAC - Automatic - [Link target (target-id 320831-) not found]
B2A42	HVAC - Automatic - [Link target (target-id 320832-) not found]
B2A43	HVAC - Automatic - [Link target (target-id 320832-) not found]
B2A44	HVAC - Automatic - [Link target (target-id 320832-) not found]
B2A45	HVAC - Automatic - [Link target (target-id 320832-) not found]
B2A4E	HVAC - Manual - [Link target (target-id 347483-) not found]
B2A4F	HVAC - Manual - [Link target (target-id 347483-) not found]
B2A50	HVAC - Manual - [Link target (target-id 347483-) not found]
B2A51	HVAC - Manual - [Link target (target-id 347483-) not found]
B2A67	HVAC - Automatic - [Link target (target-id 320842-) not found]
B2A67	HVAC - Manual - [Link target (target-id 337967-) not found]
B2A68	HVAC - Automatic - [Link target (target-id 320842-) not found]

DTC	Diagnostic Procedure
B2A68	HVAC - Manual - [Link target (target-id 337967-) not found]
B2A69	HVAC - Automatic - [Link target (target-id 320842-) not found]
B2A69	HVAC - Manual - [Link target (target-id 337967-) not found]
B2A6A	HVAC - Automatic - [Link target (target-id 320842-) not found]
B2A6A	HVAC - Manual - [Link target (target-id 337967-) not found]
B2A6B	HVAC - Automatic - [Link target (target-id 320843-) not found]
B2A6B	HVAC - Manual - [Link target (target-id 337968-) not found]
B2A6C	HVAC - Automatic - [Link target (target-id 320843-) not found]
B2A6C	HVAC - Manual - [Link target (target-id 337968-) not found]
B2A6D	HVAC - Automatic - [Link target (target-id 320843-) not found]
B2A6D	HVAC - Manual - [Link target (target-id 337968-) not found]
B2A6E	HVAC - Automatic - [Link target (target-id 320843-) not found]
B2A6E	HVAC - Manual - [Link target (target-id 337968-) not found]
B2A73	HVAC - Automatic - [Link target (target-id 320845-) not found]
B2A73	HVAC - Manual - [Link target (target-id 343518-) not found]
B2A74	HVAC - Automatic - [Link target (target-id 320845-) not found]
B2A74	HVAC - Manual - [Link target (target-id 343518-) not found]
B2A75	HVAC - Automatic - [Link target (target-id 320845-) not found]
B2A75	HVAC - Manual - [Link target (target-id 343518-) not found]
B2A76	HVAC - Automatic - [Link target (target-id 320845-) not found]
B2A76	HVAC - Manual - [Link target (target-id 343518-) not found]
B2A7B	HVAC - Automatic - [Link target (target-id 320847-) not found]
B2A7B	HVAC - Manual - [Link target (target-id 343519-) not found]
B2A7C	HVAC - Automatic - [Link target (target-id 320847-) not found]
B2A7C	HVAC - Manual - [Link target (target-id 343519-) not found]
B2A7D	HVAC - Automatic - [Link target (target-id 320847-) not found]
B2A7D	HVAC - Manual - [Link target (target-id 343519-) not found]
B2A7E	HVAC - Automatic - [Link target (target-id 320847-) not found]
B2A7E	HVAC - Manual - [Link target (target-id 343519-) not found]
B2A86	HVAC - Automatic - [Link target (target-id 317682-) not found]
B2A87	HVAC - Automatic - [Link target (target-id 320850-) not found]
B2A88	HVAC - Automatic - [Link target (target-id 320850-) not found]
B2A89	HVAC - Automatic - [Link target (target-id 320850-) not found]
B2A8A	HVAC - Automatic - [Link target (target-id 320850-) not found]
B2A8B	HVAC - Automatic - [Link target (target-id 320851-) not found]
B2A8C	HVAC - Automatic - [Link target (target-id 320851-) not found]
B2A8D	HVAC - Automatic - [Link target (target-id 320851-) not found]
B2A8E	HVAC - Automatic - [Link target (target-id 320851-) not found]
B2A8F	HVAC - Automatic - [Link target (target-id 320852-) not found]
B2A90	HVAC - Automatic - [Link target (target-id 320852-) not found]
B2A91	HVAC - Automatic - [Link target (target-id 320852-) not found]
B2A92	HVAC - Automatic - [Link target (target-id 320852-) not found]

DTC	Diagnostic Procedure
B2A93	HVAC - Automatic - [Link target (target-id 320853-) not found]
B2A94	HVAC - Automatic - [Link target (target-id 320853-) not found]
B2A95	HVAC - Automatic - [Link target (target-id 320853-) not found]
B2A96	HVAC - Automatic - [Link target (target-id 320853-) not found]
B2A97	HVAC - Automatic - [Link target (target-id 320854-) not found]
B2A98	HVAC - Automatic - [Link target (target-id 320854-) not found]
B2A99	HVAC - Automatic - [Link target (target-id 320854-) not found]
B2A9A	HVAC - Automatic - [Link target (target-id 320854-) not found]
B2A9B	HVAC - Automatic - [Link target (target-id 320855-) not found]
B2A9C	HVAC - Automatic - [Link target (target-id 320855-) not found]
B2A9D	HVAC - Automatic - [Link target (target-id 320855-) not found]
B2A9E	HVAC - Automatic - [Link target (target-id 320855-) not found]
B2AA7	HVAC - Manual - [Link target (target-id 347494-) not found]
B2AA8	HVAC - Manual - [Link target (target-id 347494-) not found]
B2AA9	HVAC - Manual - [Link target (target-id 347494-) not found]
B2AAA	HVAC - Manual - [Link target (target-id 347494-) not found]
B2AEF	HVAC - Automatic - [Link target (target-id 317704-) not found]
B2AEF	HVAC - Manual - [Link target (target-id 337971-) not found]
B2AF0	HVAC - Automatic - [Link target (target-id 317704-) not found]
B2AF0	HVAC - Manual - [Link target (target-id 337971-) not found]
B2AF1	HVAC - Automatic - [Link target (target-id 317704-) not found]
B2AF1	HVAC - Manual - [Link target (target-id 337971-) not found]
B2AF2	HVAC - Automatic - [Link target (target-id 317704-) not found]
B2AF2	HVAC - Manual - [Link target (target-id 337971-) not found]
B2AF3	HVAC - Automatic - [Link target (target-id 317704-) not found]
B2AF3	HVAC - Manual - [Link target (target-id 337971-) not found]
B2AF4	HVAC - Automatic - [Link target (target-id 317704-) not found]
B2AF4	HVAC - Manual - [Link target (target-id 337971-) not found]
B2AF5	HVAC - Automatic - [Link target (target-id 317705-) not found]
B2AF6	HVAC - Automatic - [Link target (target-id 317705-) not found]
B2AF7	HVAC - Automatic - [Link target (target-id 317705-) not found]
B2AF8	HVAC - Automatic - [Link target (target-id 317705-) not found]
B2AF9	HVAC - Automatic - [Link target (target-id 317705-) not found]
B2AFA	HVAC - Automatic - [Link target (target-id 317705-) not found]
B2AFB	HVAC - Automatic - [Link target (target-id 317706-) not found]
B2AFC	HVAC - Automatic - [Link target (target-id 317706-) not found]
B2AFD	HVAC - Automatic - [Link target (target-id 317706-) not found]
B2AFE	HVAC - Automatic - [Link target (target-id 317706-) not found]
B2AFF	HVAC - Automatic - [Link target (target-id 321874-) not found]
B2AFF	HVAC - Manual - [Link target (target-id 337974-) not found]
B2B00	HVAC - Automatic - [Link target (target-id 321874-) not found]
B2B00	HVAC - Manual - [Link target (target-id 337974-) not found]

DTC	Diagnostic Procedure
B2B01	HVAC - Automatic - [Link target (target-id 321874-) not found]
B2B01	HVAC - Manual - [Link target (target-id 337974-) not found]
B2B02	HVAC - Automatic - [Link target (target-id 317701-) not found]
B2B02	HVAC - Manual - [Link target (target-id 337975-) not found]
B2B03	HVAC - Automatic - [Link target (target-id 317701-) not found]
B2B03	HVAC - Manual - [Link target (target-id 337975-) not found]
B2B05	HVAC - Automatic - [Link target (target-id 321289-) not found]
B2B05	HVAC - Manual - [Link target (target-id 337976-) not found]
B2B06	HVAC - Automatic - [Link target (target-id 321290-) not found]
B2B07	HVAC - Automatic - [Link target (target-id 321291-) not found]
B2B07	HVAC - Manual - [Link target (target-id 337978-) not found]
B2B09	HVAC - Automatic - [Link target (target-id 321293-) not found]
B2B09	HVAC - Manual - [Link target (target-id 337979-) not found]
B2B0B	HVAC - Automatic - [Link target (target-id 317701-) not found]
B2B0B	HVAC - Manual - [Link target (target-id 337975-) not found]
B2B0C	HVAC - Automatic - [Link target (target-id 317701-) not found]
B2B0C	HVAC - Manual - [Link target (target-id 337975-) not found]
B2B11	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 303006-) not found]
B2B12	Data Communications - [Link target (target-id 301773-) not found]
B2B13	Data Communications - [Link target (target-id 301773-) not found]
B2B16	HVAC - Automatic - [Link target (target-id 335092-) not found]
B2B16	HVAC - Manual - [Link target (target-id 337980-) not found]
B2B22	HVAC - Automatic - [Link target (target-id 321291-) not found]
B2B22	HVAC - Manual - [Link target (target-id 337978-) not found]
B2B23	HVAC - Automatic - [Link target (target-id 321291-) not found]
B2B23	HVAC - Manual - [Link target (target-id 337978-) not found]
B2B24	HVAC - Automatic - [Link target (target-id 321291-) not found]
B2B24	HVAC - Manual - [Link target (target-id 337978-) not found]
B2B28	HVAC - Automatic - [Link target (target-id 321289-) not found]
B2B28	HVAC - Manual - [Link target (target-id 337976-) not found]
B2B29	HVAC - Automatic - [Link target (target-id 321289-) not found]
B2B29	HVAC - Manual - [Link target (target-id 337976-) not found]
B2B2A	HVAC - Automatic - [Link target (target-id 321289-) not found]
B2B2A	HVAC - Manual - [Link target (target-id 337976-) not found]
B2B2B	HVAC - Automatic - [Link target (target-id 321290-) not found]
B2B2C	HVAC - Automatic - [Link target (target-id 321290-) not found]
B2B2D	HVAC - Automatic - [Link target (target-id 321290-) not found]
B2B2E	HVAC - Automatic - [Link target (target-id 321293-) not found]
B2B2E	HVAC - Manual - [Link target (target-id 337979-) not found]
B2B2F	HVAC - Automatic - [Link target (target-id 321293-) not found]
B2B2F	HVAC - Manual - [Link target (target-id 337979-) not found]
B2B30	HVAC - Automatic - [Link target (target-id 321293-) not found]

DTC	Diagnostic Procedure
B2B30	HVAC - Manual - [Link target (target-id 337979-) not found]
B2B9B	Displays and Gauges - [Link target (target-id 323128-) not found]
B2B9B	Electronic Transmission Range Select - [Link target (target-id 326138-) not found]
B2BA1	Driver Assistance Systems - [Link target (target-id 328998-) not found]
B2BA2	Wiring Systems and Power Management - [Link target (target-id 321482-) not found]
B2BA3	Wiring Systems and Power Management - [Link target (target-id 321482-) not found]
C0001	Antilock Brake System - [Link target (target-id 261542-) not found]
C0002	Antilock Brake System - [Link target (target-id 261542-) not found]
C0003	Antilock Brake System - [Link target (target-id 261542-) not found]
C0004	Antilock Brake System - [Link target (target-id 261542-) not found]
C0010	Antilock Brake System - [Link target (target-id 261542-) not found]
C0011	Antilock Brake System - [Link target (target-id 261542-) not found]
C0014	Antilock Brake System - [Link target (target-id 261542-) not found]
C0015	Antilock Brake System - [Link target (target-id 261542-) not found]
C0018	Antilock Brake System - [Link target (target-id 261542-) not found]
C0019	Antilock Brake System - [Link target (target-id 261542-) not found]
C001C	Antilock Brake System - [Link target (target-id 261542-) not found]
C001D	Antilock Brake System - [Link target (target-id 261542-) not found]
C0021	Hydraulic Brakes - [Link target (target-id 301649-) not found]
C0024	Antilock Brake System - [Link target (target-id 127367-) not found]
C003F	Antilock Brake System - [Link target (target-id 310825-) not found]
C0049	Hydraulic Brakes - [Link target (target-id 301650-) not found]
C004A	Disc Brakes - [Link target (target-id 313905-) not found]
C004B	Hydraulic Brakes - [Link target (target-id 325748-) not found]
C0051	Antilock Brake System - [Link target (target-id 1508-) not found]
C0051	Power Steering - [Link target (target-id 297198-) not found]
C0061	Antilock Brake System - [Link target (target-id 309335-) not found]
C0061	Driver Assistance Systems - [Link target (target-id 328999-) not found]
C0062	Antilock Brake System - [Link target (target-id 309335-) not found]
C0062	Driver Assistance Systems - [Link target (target-id 328999-) not found]
C0063	Antilock Brake System - [Link target (target-id 309335-) not found]
C0063	Driver Assistance Systems - [Link target (target-id 328999-) not found]
C006A	Supplemental Restraints - [Link target (target-id 329408-) not found]
C0072	Antilock Brake System - [Link target (target-id 301656-) not found]
C00C4	Driver Assistance Systems - [Link target (target-id 354941-) not found]
C00C5	Driver Assistance Systems - [Link target (target-id 354942-) not found]
C0500	Antilock Brake System - [Link target (target-id 272224-) not found]
C0501	Antilock Brake System - [Link target (target-id 272224-) not found]
C0502	Antilock Brake System - [Link target (target-id 272224-) not found]
C0503	Antilock Brake System - [Link target (target-id 272224-) not found]
C0504	Antilock Brake System - [Link target (target-id 272224-) not found]
C0505	Antilock Brake System - [Link target (target-id 302672-) not found]

DTC	Diagnostic Procedure
C0506	Antilock Brake System - [Link target (target-id 272224-) not found]
C0507	Antilock Brake System - [Link target (target-id 272224-) not found]
C0508	Antilock Brake System - [Link target (target-id 272224-) not found]
C0509	Antilock Brake System - [Link target (target-id 272224-) not found]
C050A	Antilock Brake System - [Link target (target-id 272224-) not found]
C050B	Antilock Brake System - [Link target (target-id 302672-) not found]
C050C	Antilock Brake System - [Link target (target-id 272224-) not found]
C050D	Antilock Brake System - [Link target (target-id 272224-) not found]
C050E	Antilock Brake System - [Link target (target-id 272224-) not found]
C050F	Antilock Brake System - [Link target (target-id 272224-) not found]
C0510	Antilock Brake System - [Link target (target-id 272224-) not found]
C0511	Antilock Brake System - [Link target (target-id 302672-) not found]
C0512	Antilock Brake System - [Link target (target-id 272224-) not found]
C0513	Antilock Brake System - [Link target (target-id 272224-) not found]
C0514	Antilock Brake System - [Link target (target-id 272224-) not found]
C0515	Antilock Brake System - [Link target (target-id 272224-) not found]
C0516	Antilock Brake System - [Link target (target-id 272224-) not found]
C0517	Antilock Brake System - [Link target (target-id 302672-) not found]
C0520	Driver Assistance Systems - [Link target (target-id 329000-) not found]
C052A	Power Steering - [Link target (target-id 333347-) not found]
C053B	Antilock Brake System - [Link target (target-id 307000-) not found]
C053D	Antilock Brake System - [Link target (target-id 302608-) not found]
C053E	Antilock Brake System - [Link target (target-id 302608-) not found]
C053F	Antilock Brake System - [Link target (target-id 302608-) not found]
C0546	Data Communications - [Link target (target-id 332895-) not found]
C0551	Antilock Brake System - [Link target (target-id 309335-) not found]
C0552	Antilock Brake System - [Link target (target-id 332586-) not found]
C0553	Antilock Brake System - [Link target (target-id 332586-) not found]
C0554	Antilock Brake System - [Link target (target-id 332586-) not found]
C0555	Antilock Brake System - [Link target (target-id 272226-) not found]
C0556	Antilock Brake System - [Link target (target-id 272226-) not found]
C0557	Antilock Brake System - [Link target (target-id 272226-) not found]
C0558	Antilock Brake System - [Link target (target-id 272226-) not found]
C055F	Antilock Brake System - [Link target (target-id 304966-) not found]
C0560	Antilock Brake System - [Link target (target-id 272227-) not found]
C0571	Antilock Brake System - [Link target (target-id 272228-) not found]
C0572	Antilock Brake System - [Link target (target-id 272228-) not found]
C0574	Antilock Brake System - [Link target (target-id 272228-) not found]
C0579	Hydraulic Brakes - [Link target (target-id 351764-) not found]
C057A	Hydraulic Brakes - [Link target (target-id 351764-) not found]
C057D	Hydraulic Brakes - [Link target (target-id 351764-) not found]
C057F	Hydraulic Brakes - [Link target (target-id 327694-) not found]

DTC	Diagnostic Procedure
C0580	Hydraulic Brakes - [Link target (target-id 327694-) not found]
C0582	Hydraulic Brakes - [Link target (target-id 327694-) not found]
C058A	Hydraulic Brakes - [Link target (target-id 301767-) not found]
C058E	Hydraulic Brakes - [Link target (target-id 301767-) not found]
C0590	Hydraulic Brakes - [Link target (target-id 327694-) not found]
C0591	Hydraulic Brakes - [Link target (target-id 327694-) not found]
C0594	Hydraulic Brakes - [Link target (target-id 301767-) not found]
C0595	Hydraulic Brakes - [Link target (target-id 301767-) not found]
C0596	Hydraulic Brakes - [Link target (target-id 301767-) not found]
C059B	Antilock Brake System - [Link target (target-id 272227-) not found]
C05A3	Antilock Brake System - [Link target (target-id 272230-) not found]
C05A4	Antilock Brake System - [Link target (target-id 272230-) not found]
C05B0	Hydraulic Brakes - [Link target (target-id 310748-) not found]
C05BB	Hydraulic Brakes - [Link target (target-id 312947-) not found]
C05C2	Hydraulic Brakes - [Link target (target-id 301670-) not found]
C05CA	Antilock Brake System - [Link target (target-id 343664-) not found]
C05CB	Antilock Brake System - [Link target (target-id 343664-) not found]
C05CC	Antilock Brake System - [Link target (target-id 343664-) not found]
C05CD	Antilock Brake System - [Link target (target-id 343664-) not found]
C05CE	Antilock Brake System - [Link target (target-id 343664-) not found]
C05CF	Antilock Brake System - [Link target (target-id 343664-) not found]
C05D0	Antilock Brake System - [Link target (target-id 302614-) not found]
C05D1	Antilock Brake System - [Link target (target-id 302615-) not found]
C05D2	Antilock Brake System - [Link target (target-id 302616-) not found]
C05D3	Antilock Brake System - [Link target (target-id 302617-) not found]
C05D4	Antilock Brake System - [Link target (target-id 302618-) not found]
C05D5	Antilock Brake System - [Link target (target-id 302619-) not found]
C05D6	Power Steering - [Link target (target-id 333345-) not found]
C05D7	Shift Lock Control - [Link target (target-id 313637-) not found]
C05DD	Transfer Case - MP 3015 - [Link target (target-id 325241-) not found]
C05DD	Transfer Case - MP 3025 - [Link target (target-id 325245-) not found]
C05FB	Transfer Case - MP 3015 - [Link target (target-id 300826-) not found]
C05FB	Transfer Case - MP 3025 - [Link target (target-id 300827-) not found]
C05FF	Transfer Case - MP 3015 - [Link target (target-id 306748-) not found]
C05FF	Transfer Case - MP 3025 - [Link target (target-id 306749-) not found]
C0605	Power Steering - [Link target (target-id 350265-) not found]
C0609	Park Brake - [Link target (target-id 302982-) not found]
C060B	Park Brake - [Link target (target-id 306987-) not found]
C0610	Park Brake - [Link target (target-id 306988-) not found]
C0616	Park Brake - [Link target (target-id 301674-) not found]
C0632	Transfer Case - MP 3015 - [Link target (target-id 347186-) not found]
C0632	Transfer Case - MP 3025 - [Link target (target-id 347187-) not found]

DTC	Diagnostic Procedure
C0697	Antilock Brake System - [Link target (target-id 332586-) not found]
C0698	Antilock Brake System - [Link target (target-id 332586-) not found]
C0699	Antilock Brake System - [Link target (target-id 332586-) not found]
C1034	Suspension Controls - [Link target (target-id 316883-) not found]
C1035	Suspension Controls - [Link target (target-id 316883-) not found]
C1036	Suspension Controls - [Link target (target-id 316883-) not found]
C1037	Suspension Controls - [Link target (target-id 316883-) not found]
C103C	Suspension Controls - [Link target (target-id 362815-) not found]
C103D	Suspension Controls - [Link target (target-id 362815-) not found]
C103E	Suspension Controls - [Link target (target-id 362815-) not found]
C107D	Antilock Brake System - [Link target (target-id 320571-) not found]
C10BA	Transfer Case - MP 3015 - [Link target (target-id 325242-) not found]
C10BA	Transfer Case - MP 3025 - [Link target (target-id 325246-) not found]
C10CC	Frame and Underbody - [Link target (target-id 356859-) not found]
C10CD	Frame and Underbody - [Link target (target-id 356859-) not found]
C10CE	Steering Wheel and Column - [Link target (target-id 317605-) not found]
C10DA	Lighting - [Link target (target-id 317493-) not found]
C10EE	Antilock Brake System - [Link target (target-id 304967-) not found]
C1114	Trailering Systems - [Link target (target-id 325998-) not found]
C1119	Power Steering - [Link target (target-id 313799-) not found]
C1122	Antilock Brake System - [Link target (target-id 171102-) not found]
C1123	Antilock Brake System - [Link target (target-id 171102-) not found]
C1133	Frame and Underbody - [Link target (target-id 325183-) not found]
C1134	Frame and Underbody - [Link target (target-id 325183-) not found]
C1146	Power Steering - [Link target (target-id 297201-) not found]
C114F	Steering Wheel and Column - [Link target (target-id 347270-) not found]
C1158	Trailering Systems - [Link target (target-id 326009-) not found]
C1159	Steering Wheel and Column - [Link target (target-id 317607-) not found]
C115E	Transfer Case - MP 3015 - [Link target (target-id 325249-) not found]
C115E	Transfer Case - MP 3025 - [Link target (target-id 325247-) not found]
C1162	Transfer Case - MP 3015 - [Link target (target-id 309959-) not found]
C1162	Transfer Case - MP 3025 - [Link target (target-id 309874-) not found]
C1168	Power Steering - [Link target (target-id 317736-) not found]
C116A	Power Steering - [Link target (target-id 317738-) not found]
C116B	Disc Brakes - [Link target (target-id 301556-) not found]
C116C	Disc Brakes - [Link target (target-id 301557-) not found]
C116D	Tire Pressure Monitoring - [Link target (target-id 313635-) not found]
C116E	Transfer Case - MP 3015 - [Link target (target-id 325244-) not found]
C116E	Transfer Case - MP 3025 - [Link target (target-id 325248-) not found]
C116F	Transfer Case - MP 3015 - [Link target (target-id 325242-) not found]
C116F	Transfer Case - MP 3025 - [Link target (target-id 325246-) not found]
C1170	Transfer Case - MP 3015 - [Link target (target-id 325249-) not found]

DTC	Diagnostic Procedure
C1170	Transfer Case - MP 3025 - [Link target (target-id 325247-) not found]
C1171	Tire Pressure Monitoring - [Link target (target-id 314982-) not found]
C1172	Tire Pressure Monitoring - [Link target (target-id 314982-) not found]
C1173	Tire Pressure Monitoring - [Link target (target-id 314982-) not found]
C1174	Tire Pressure Monitoring - [Link target (target-id 314982-) not found]
C1178	Steering Wheel and Column - [Link target (target-id 315482-) not found]
C1180	Frame and Underbody - [Link target (target-id 328943-) not found]
C1181	Frame and Underbody - [Link target (target-id 328943-) not found]
C1182	Frame and Underbody - [Link target (target-id 328943-) not found]
C1183	Frame and Underbody - [Link target (target-id 328943-) not found]
C118D	Transfer Case - MP 3015 - [Link target (target-id 325242-) not found]
C118D	Transfer Case - MP 3025 - [Link target (target-id 325246-) not found]
C119C	Transfer Case - MP 3015 - [Link target (target-id 325242-) not found]
C119C	Transfer Case - MP 3025 - [Link target (target-id 325246-) not found]
C11A1	Power Steering - [Link target (target-id 333349-) not found]
C11A2	Power Steering - [Link target (target-id 333349-) not found]
C11A4	Transfer Case - MP 3015 - [Link target (target-id 300357-) not found]
C11A4	Transfer Case - MP 3025 - [Link target (target-id 300372-) not found]
C11A5	Rear Drive Axle - [Link target (target-id 282300-) not found]
C11A6	Power Steering - [Link target (target-id 333350-) not found]
C11A8	Power Steering - [Link target (target-id 333351-) not found]
C11A9	Transfer Case - MP 3015 - [Link target (target-id 347176-) not found]
C11A9	Transfer Case - MP 3025 - [Link target (target-id 327124-) not found]
C11AD	Transfer Case - MP 3015 - [Link target (target-id 300360-) not found]
C11AD	Transfer Case - MP 3025 - [Link target (target-id 300375-) not found]
C11B0	Front Drive Axle - [Link target (target-id 282290-) not found]
C11B3	Transfer Case - MP 3015 - [Link target (target-id 300363-) not found]
C11B3	Transfer Case - MP 3025 - [Link target (target-id 300378-) not found]
C11B9	Transfer Case - MP 3015 - [Link target (target-id 300826-) not found]
C11B9	Transfer Case - MP 3025 - [Link target (target-id 300827-) not found]
C1201	Automatic Transmission - 10L80 - [Link target (target-id 312077-) not found]
C1211	Antilock Brake System - [Link target (target-id 1550-) not found]
C124F	Antilock Brake System - [Link target (target-id 228994-) not found]
C1250	Antilock Brake System - [Link target (target-id 228994-) not found]
C1251	Antilock Brake System - [Link target (target-id 228994-) not found]
C1252	Antilock Brake System - [Link target (target-id 267540-) not found]
C1253	Antilock Brake System - [Link target (target-id 267540-) not found]
C1254	Antilock Brake System - [Link target (target-id 267540-) not found]
C1280	Park Brake - [Link target (target-id 255091-) not found]
C1281	Park Brake - [Link target (target-id 255091-) not found]
C1304	Lighting - [Link target (target-id 317495-) not found]
C1308	Front Drive Axle - [Link target (target-id 282294-) not found]

DTC	Diagnostic Procedure
C1309	Rear Drive Axle - [Link target (target-id 282303-) not found]
C1445	Antilock Brake System - [Link target (target-id 272247-) not found]
C1595	Trailering Systems - [Link target (target-id 326013-) not found]
C1596	Trailering Systems - [Link target (target-id 326014-) not found]
C159A	Rear Drive Axle - [Link target (target-id 282305-) not found]
C159B	Front Drive Axle - [Link target (target-id 282296-) not found]
C159C	Trailering Systems - [Link target (target-id 326015-) not found]
C159D	Trailering Systems - [Link target (target-id 326016-) not found]
C159E	Trailering Systems - [Link target (target-id 326016-) not found]
C159F	Trailering Systems - [Link target (target-id 326016-) not found]
C15A0	Trailering Systems - [Link target (target-id 326016-) not found]
C15A1	Trailering Systems - [Link target (target-id 326016-) not found]
C15A2	Trailering Systems - [Link target (target-id 326016-) not found]
C15A3	Parking Assistance Systems - [Link target (target-id 310221-) not found]
C15A6	Trailering Systems - [Link target (target-id 326017-) not found]
C15A9	Transfer Case - MP 3015 - [Link target (target-id 300363-) not found]
C15A9	Transfer Case - MP 3025 - [Link target (target-id 300378-) not found]
C15AA	Transfer Case - MP 3015 - [Link target (target-id 300360-) not found]
C15AA	Transfer Case - MP 3025 - [Link target (target-id 300375-) not found]
C15AB	Transfer Case - MP 3015 - [Link target (target-id 300826-) not found]
C15AB	Transfer Case - MP 3025 - [Link target (target-id 300827-) not found]
C15AC	Transfer Case - MP 3015 - [Link target (target-id 306748-) not found]
C15AC	Transfer Case - MP 3025 - [Link target (target-id 306749-) not found]
C15C1	Transfer Case - MP 3015 - [Link target (target-id 300826-) not found]
C15C1	Transfer Case - MP 3025 - [Link target (target-id 300827-) not found]
C15C6	Antilock Brake System - [Link target (target-id 307843-) not found]
C15C7	Hydraulic Brakes - [Link target (target-id 310750-) not found]
C15D4	Antilock Brake System - [Link target (target-id 321957-) not found]
C2A01	Antilock Brake System - [Link target (target-id 310825-) not found]
C2A02	Antilock Brake System - [Link target (target-id 310825-) not found]
C2A03	Antilock Brake System - [Link target (target-id 310825-) not found]
C2A04	Antilock Brake System - [Link target (target-id 310825-) not found]
C2A07	Antilock Brake System - [Link target (target-id 302623-) not found]
C2A08	Antilock Brake System - [Link target (target-id 309963-) not found]
C2A0A	Antilock Brake System - [Link target (target-id 324293-) not found]
C2A13	Antilock Brake System - [Link target (target-id 304969-) not found]
C2A14	Antilock Brake System - [Link target (target-id 304969-) not found]
C2A17	Hydraulic Brakes - [Link target (target-id 310751-) not found]
C2A1A	Antilock Brake System - [Link target (target-id 304970-) not found]
C2A1A	Hydraulic Brakes - [Link target (target-id 312948-) not found]
C2A1B	Hydraulic Brakes - [Link target (target-id 312949-) not found]
C2A1C	Hydraulic Brakes - [Link target (target-id 310752-) not found]

DTC	Diagnostic Procedure
C2A1D	Park Brake - [Link target (target-id 303014-) not found]
C2A1E	Antilock Brake System - [Link target (target-id 304971-) not found]
C2A21	Park Brake - [Link target (target-id 309644-) not found]
C2A22	Hydraulic Brakes - [Link target (target-id 310754-) not found]
C2A3B	Hydraulic Brakes - [Link target (target-id 354261-) not found]
P0010	Engine Controls and Fuel - 2.7L - [Link target (target-id 305826-) not found]
P0010	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 294312-) not found]
P0011	Engine Controls and Fuel - 2.7L - [Link target (target-id 305826-) not found]
P0011	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 294312-) not found]
P0012	Engine Controls and Fuel - 2.7L - [Link target (target-id 305826-) not found]
P0013	Engine Controls and Fuel - 2.7L - [Link target (target-id 305826-) not found]
P0014	Engine Controls and Fuel - 2.7L - [Link target (target-id 305826-) not found]
P0016	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307167-) not found]
P0016	Engine Controls and Fuel - 2.7L - [Link target (target-id 306016-) not found]
P0016	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 228017-) not found]
P0017	Engine Controls and Fuel - 2.7L - [Link target (target-id 306016-) not found]
P001A	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P001B	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P001C	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P002A	Engine Controls and Fuel - 2.7L - [Link target (target-id 328871-) not found]
P002B	Engine Controls and Fuel - 2.7L - [Link target (target-id 328871-) not found]
P002C	Engine Controls and Fuel - 2.7L - [Link target (target-id 328871-) not found]
P0033	Engine Controls and Fuel - 2.7L - [Link target (target-id 305956-) not found]
P0034	Engine Controls and Fuel - 2.7L - [Link target (target-id 305956-) not found]
P0035	Engine Controls and Fuel - 2.7L - [Link target (target-id 305956-) not found]
P003A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 314843-) not found]
P003C	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P003D	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P0045	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347030-) not found]
P0046	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 335071-) not found]
P0047	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347030-) not found]
P0048	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347030-) not found]
P005A	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P0068	Engine Controls and Fuel - 2.7L - [Link target (target-id 333427-) not found]
P0068	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333303-) not found]
P006E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347030-) not found]
P0071	Displays and Gauges - [Link target (target-id 268233-) not found]
P0072	Displays and Gauges - [Link target (target-id 268233-) not found]
P0073	Displays and Gauges - [Link target (target-id 268233-) not found]
P0074	Displays and Gauges - [Link target (target-id 268233-) not found]
P007B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313003-) not found]
P007C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313004-) not found]

DTC	Diagnostic Procedure
P007D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313004-) not found]
P007E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313004-) not found]
P0087	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 346946-) not found]
P0089	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 346946-) not found]
P0089	Engine Controls and Fuel - 2.7L - [Link target (target-id 305888-) not found]
P0089	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 297085-) not found]
P0090	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 310012-) not found]
P0090	Engine Controls and Fuel - 2.7L - [Link target (target-id 329294-) not found]
P0090	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 329292-) not found]
P0091	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 310012-) not found]
P0091	Engine Controls and Fuel - 2.7L - [Link target (target-id 329294-) not found]
P0091	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 329292-) not found]
P0092	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 310012-) not found]
P0092	Engine Controls and Fuel - 2.7L - [Link target (target-id 329294-) not found]
P0092	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 329292-) not found]
P0096	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307796-) not found]
P0096	Engine Controls and Fuel - 2.7L - [Link target (target-id 305896-) not found]
P0096	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 228194-) not found]
P0097	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313005-) not found]
P0097	Engine Controls and Fuel - 2.7L - [Link target (target-id 310244-) not found]
P0097	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 306991-) not found]
P0098	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313005-) not found]
P0098	Engine Controls and Fuel - 2.7L - [Link target (target-id 310244-) not found]
P0098	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 306991-) not found]
P0099	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313005-) not found]
P0099	Engine Controls and Fuel - 2.7L - [Link target (target-id 310244-) not found]
P0099	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 306991-) not found]
P00B2	Engine Heating and Cooling - [Link target (target-id 341328-) not found]
P00B3	Engine Heating and Cooling - [Link target (target-id 304123-) not found]
P00B4	Engine Heating and Cooling - [Link target (target-id 304123-) not found]
P00B5	Engine Heating and Cooling - [Link target (target-id 304123-) not found]
P00C6	Engine Controls and Fuel - 2.7L - [Link target (target-id 305888-) not found]
P00C6	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 297085-) not found]
P00C7	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327454-) not found]
P00C7	Engine Controls and Fuel - 2.7L - [Link target (target-id 305823-) not found]
P00C7	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 266248-) not found]
P00C9	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 310012-) not found]
P00C9	Engine Controls and Fuel - 2.7L - [Link target (target-id 329294-) not found]
P00C9	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 329292-) not found]
P00CA	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 310012-) not found]
P00CA	Engine Controls and Fuel - 2.7L - [Link target (target-id 329294-) not found]
P00CA	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 329292-) not found]

DTC	Diagnostic Procedure
P00DF	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313006-) not found]
P00E0	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313008-) not found]
P00E1	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313008-) not found]
P00E2	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313008-) not found]
P00E9	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307796-) not found]
P00E9	Engine Controls and Fuel - 2.7L - [Link target (target-id 305896-) not found]
P00EA	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307743-) not found]
P00EA	Engine Controls and Fuel - 2.7L - [Link target (target-id 305829-) not found]
P00EB	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307743-) not found]
P00EB	Engine Controls and Fuel - 2.7L - [Link target (target-id 305829-) not found]
P00EC	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307743-) not found]
P00EC	Engine Controls and Fuel - 2.7L - [Link target (target-id 305829-) not found]
P00F4	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313005-) not found]
P00F4	Engine Controls and Fuel - 2.7L - [Link target (target-id 310244-) not found]
P00F4	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 306991-) not found]
P00F5	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313005-) not found]
P00F5	Engine Controls and Fuel - 2.7L - [Link target (target-id 310244-) not found]
P00F5	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 306991-) not found]
P00F6	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313005-) not found]
P00F6	Engine Controls and Fuel - 2.7L - [Link target (target-id 310244-) not found]
P00F6	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 306991-) not found]
P00FF	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327564-) not found]
P00FF	Engine Controls and Fuel - 2.7L - [Link target (target-id 323782-) not found]
P00FF	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 276019-) not found]
P0101	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307582-) not found]
P0101	Engine Controls and Fuel - 2.7L - [Link target (target-id 333427-) not found]
P0101	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333303-) not found]
P0102	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 362333-) not found]
P0102	Engine Controls and Fuel - 2.7L - [Link target (target-id 326137-) not found]
P0102	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 323319-) not found]
P0103	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 362333-) not found]
P0103	Engine Controls and Fuel - 2.7L - [Link target (target-id 326137-) not found]
P0103	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 323319-) not found]
P0106	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307076-) not found]
P0106	Engine Controls and Fuel - 2.7L - [Link target (target-id 333427-) not found]
P0106	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333303-) not found]
P0107	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307076-) not found]
P0107	Engine Controls and Fuel - 2.7L - [Link target (target-id 306143-) not found]
P0107	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 228008-) not found]
P0108	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307076-) not found]
P0108	Engine Controls and Fuel - 2.7L - [Link target (target-id 306143-) not found]
P0108	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 228008-) not found]

DTC	Diagnostic Procedure
P0111	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307796-) not found]
P0111	Engine Controls and Fuel - 2.7L - [Link target (target-id 305896-) not found]
P0111	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 228194-) not found]
P0112	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313005-) not found]
P0112	Engine Controls and Fuel - 2.7L - [Link target (target-id 310244-) not found]
P0112	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 306991-) not found]
P0113	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313005-) not found]
P0113	Engine Controls and Fuel - 2.7L - [Link target (target-id 310244-) not found]
P0113	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 306991-) not found]
P0114	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313005-) not found]
P0114	Engine Controls and Fuel - 2.7L - [Link target (target-id 310244-) not found]
P0114	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 306991-) not found]
P0116	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 346975-) not found]
P0117	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327012-) not found]
P0118	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327012-) not found]
P0119	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327012-) not found]
P0121	Engine Controls and Fuel - 2.7L - [Link target (target-id 333427-) not found]
P0121	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333303-) not found]
P0122	Engine Controls and Fuel - 2.7L - [Link target (target-id 332874-) not found]
P0122	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 332809-) not found]
P0123	Engine Controls and Fuel - 2.7L - [Link target (target-id 332874-) not found]
P0123	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 332809-) not found]
P0128	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 314808-) not found]
P0171	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307664-) not found]
P0172	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307664-) not found]
P0178	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333292-) not found]
P0179	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333292-) not found]
P017B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347037-) not found]
P017C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347037-) not found]
P017D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347037-) not found]
P017E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347037-) not found]
P0181	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307335-) not found]
P0182	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307335-) not found]
P0182	Engine Controls and Fuel - 2.7L - [Link target (target-id 323120-) not found]
P0182	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324301-) not found]
P0183	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307335-) not found]
P0183	Engine Controls and Fuel - 2.7L - [Link target (target-id 323120-) not found]
P0183	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324301-) not found]
P0184	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307335-) not found]
P0186	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327458-) not found]
P0187	Engine Controls and Fuel - 2.7L - [Link target (target-id 323120-) not found]
P0187	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324301-) not found]

DTC	Diagnostic Procedure
P0188	Engine Controls and Fuel - 2.7L - [Link target (target-id 323120-) not found]
P0188	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324301-) not found]
P018B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307185-) not found]
P018B	Engine Controls and Fuel - 2.7L - [Link target (target-id 306147-) not found]
P018B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227846-) not found]
P018C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307185-) not found]
P018C	Engine Controls and Fuel - 2.7L - [Link target (target-id 306147-) not found]
P018C	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227846-) not found]
P018D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307185-) not found]
P018D	Engine Controls and Fuel - 2.7L - [Link target (target-id 306147-) not found]
P018D	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227846-) not found]
P0191	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327458-) not found]
P0191	Engine Controls and Fuel - 2.7L - [Link target (target-id 323120-) not found]
P0191	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324301-) not found]
P0192	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327458-) not found]
P0192	Engine Controls and Fuel - 2.7L - [Link target (target-id 323120-) not found]
P0192	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324301-) not found]
P0193	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327458-) not found]
P0196	Displays and Gauges - [Link target (target-id 309839-) not found]
P0197	Displays and Gauges - [Link target (target-id 309839-) not found]
P0198	Displays and Gauges - [Link target (target-id 309839-) not found]
P0199	Displays and Gauges - [Link target (target-id 309839-) not found]
P01BB	Displays and Gauges - [Link target (target-id 301798-) not found]
P01BC	Displays and Gauges - [Link target (target-id 301798-) not found]
P01BD	Displays and Gauges - [Link target (target-id 301798-) not found]
P01CB	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309300-) not found]
P01CC	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309300-) not found]
P01CD	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309300-) not found]
P01CE	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309300-) not found]
P01CF	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309300-) not found]
P01D0	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309300-) not found]
P01D1	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309300-) not found]
P01D2	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309300-) not found]
P01D3	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309300-) not found]
P01D4	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309300-) not found]
P01D5	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309300-) not found]
P01D6	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309300-) not found]
P01F0	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 314808-) not found]
P0201	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P0201	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P0201	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0202	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]

DTC	Diagnostic Procedure
P0202	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P0202	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0203	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P0203	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P0203	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0204	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P0204	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P0204	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0205	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P0205	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0206	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P0206	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0207	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0208	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P020A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309302-) not found]
P020B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309302-) not found]
P020C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309302-) not found]
P020D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309302-) not found]
P020E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309302-) not found]
P020F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309302-) not found]
P0216	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307637-) not found]
P0222	Engine Controls and Fuel - 2.7L - [Link target (target-id 332874-) not found]
P0222	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 332809-) not found]
P0223	Engine Controls and Fuel - 2.7L - [Link target (target-id 332874-) not found]
P0223	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 332809-) not found]
P0234	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307319-) not found]
P0236	Engine Controls and Fuel - 2.7L - [Link target (target-id 333427-) not found]
P0237	Engine Controls and Fuel - 2.7L - [Link target (target-id 306156-) not found]
P0238	Engine Controls and Fuel - 2.7L - [Link target (target-id 306156-) not found]
P0245	Engine Controls and Fuel - 2.7L - [Link target (target-id 310249-) not found]
P0246	Engine Controls and Fuel - 2.7L - [Link target (target-id 310249-) not found]
P0261	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P0261	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P0261	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0262	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P0262	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P0262	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0264	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P0264	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P0264	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0265	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P0265	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]

DTC	Diagnostic Procedure
P0265	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0267	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P0267	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P0267	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0268	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P0268	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P0268	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P026A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307409-) not found]
P026B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P026B	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P026B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P026C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307493-) not found]
P026D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307493-) not found]
P026E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 328386-) not found]
P0270	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P0270	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P0270	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0271	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P0271	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P0271	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0273	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P0273	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0274	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P0274	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0276	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P0276	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0277	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P0277	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0279	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0280	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0282	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0283	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P0299	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307319-) not found]
P0299	Engine Controls and Fuel - 2.7L - [Link target (target-id 310250-) not found]
P02CC	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309304-) not found]
P02CD	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309304-) not found]
P02CE	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309304-) not found]
P02CF	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309304-) not found]
P02D0	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309304-) not found]
P02D1	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309304-) not found]
P02D2	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309304-) not found]
P02D3	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309304-) not found]

DTC	Diagnostic Procedure
P02D4	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309304-) not found]
P02D5	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309304-) not found]
P02D6	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309304-) not found]
P02D7	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309304-) not found]
P02E0	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347499-) not found]
P02E1	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307798-) not found]
P02E2	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347499-) not found]
P02E3	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347499-) not found]
P02E5	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307798-) not found]
P02E8	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313014-) not found]
P02E9	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313014-) not found]
P02EB	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347499-) not found]
P02EE	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P02EE	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P02EF	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P02EF	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P02F0	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P02F0	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P02F1	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P02F1	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P02F2	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P02F3	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P02F4	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P02F5	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P0300	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 311938-) not found]
P0300	Engine Controls and Fuel - 2.7L - [Link target (target-id 305839-) not found]
P0300	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227972-) not found]
P0301	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 311938-) not found]
P0301	Engine Controls and Fuel - 2.7L - [Link target (target-id 305839-) not found]
P0301	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227972-) not found]
P0302	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 311938-) not found]
P0302	Engine Controls and Fuel - 2.7L - [Link target (target-id 305839-) not found]
P0302	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227972-) not found]
P0303	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 311938-) not found]
P0303	Engine Controls and Fuel - 2.7L - [Link target (target-id 305839-) not found]
P0303	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227972-) not found]
P0304	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 311938-) not found]
P0304	Engine Controls and Fuel - 2.7L - [Link target (target-id 305839-) not found]
P0304	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227972-) not found]
P0305	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 311938-) not found]
P0305	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227972-) not found]
P0306	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 311938-) not found]

DTC	Diagnostic Procedure
P0306	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227972-) not found]
P0307	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227972-) not found]
P0308	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227972-) not found]
P0315	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307499-) not found]
P0315	Engine Controls and Fuel - 2.7L - [Link target (target-id 306044-) not found]
P0315	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227702-) not found]
P0324	Engine Controls and Fuel - 2.7L - [Link target (target-id 306060-) not found]
P0324	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227713-) not found]
P0325	Engine Controls and Fuel - 2.7L - [Link target (target-id 306060-) not found]
P0325	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227713-) not found]
P0326	Engine Controls and Fuel - 2.7L - [Link target (target-id 306060-) not found]
P0326	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227713-) not found]
P0327	Engine Controls and Fuel - 2.7L - [Link target (target-id 306060-) not found]
P0327	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227713-) not found]
P0328	Engine Controls and Fuel - 2.7L - [Link target (target-id 306060-) not found]
P0328	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227713-) not found]
P0329	Engine Controls and Fuel - 2.7L - [Link target (target-id 306060-) not found]
P032A	Engine Controls and Fuel - 2.7L - [Link target (target-id 306060-) not found]
P032B	Engine Controls and Fuel - 2.7L - [Link target (target-id 306060-) not found]
P032C	Engine Controls and Fuel - 2.7L - [Link target (target-id 306060-) not found]
P032D	Engine Controls and Fuel - 2.7L - [Link target (target-id 306060-) not found]
P032E	Engine Controls and Fuel - 2.7L - [Link target (target-id 306060-) not found]
P032F	Engine Controls and Fuel - 2.7L - [Link target (target-id 306060-) not found]
P0330	Engine Controls and Fuel - 2.7L - [Link target (target-id 306060-) not found]
P0330	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227713-) not found]
P0331	Engine Controls and Fuel - 2.7L - [Link target (target-id 306060-) not found]
P0331	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227713-) not found]
P0332	Engine Controls and Fuel - 2.7L - [Link target (target-id 306060-) not found]
P0332	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227713-) not found]
P0333	Engine Controls and Fuel - 2.7L - [Link target (target-id 306060-) not found]
P0333	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227713-) not found]
P0335	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307702-) not found]
P0335	Engine Controls and Fuel - 2.7L - [Link target (target-id 306037-) not found]
P0335	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227797-) not found]
P0336	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307702-) not found]
P0336	Engine Controls and Fuel - 2.7L - [Link target (target-id 306037-) not found]
P0336	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227797-) not found]
P0340	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307116-) not found]
P0340	Engine Controls and Fuel - 2.7L - [Link target (target-id 306068-) not found]
P0340	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227862-) not found]
P0341	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307116-) not found]
P0341	Engine Controls and Fuel - 2.7L - [Link target (target-id 306068-) not found]

DTC	Diagnostic Procedure
P0341	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227862-) not found]
P034A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 311939-) not found]
P034A	Engine Controls and Fuel - 2.7L - [Link target (target-id 305998-) not found]
P034A	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 276020-) not found]
P034B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 311939-) not found]
P034B	Engine Controls and Fuel - 2.7L - [Link target (target-id 305998-) not found]
P034B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 276020-) not found]
P034F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338023-) not found]
P0351	Engine Controls and Fuel - 2.7L - [Link target (target-id 305820-) not found]
P0351	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P0352	Engine Controls and Fuel - 2.7L - [Link target (target-id 305820-) not found]
P0352	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P0353	Engine Controls and Fuel - 2.7L - [Link target (target-id 305820-) not found]
P0353	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P0354	Engine Controls and Fuel - 2.7L - [Link target (target-id 305820-) not found]
P0354	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P0355	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P0356	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P0357	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P0358	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P0365	Engine Controls and Fuel - 2.7L - [Link target (target-id 306068-) not found]
P0366	Engine Controls and Fuel - 2.7L - [Link target (target-id 306068-) not found]
P037A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307808-) not found]
P037B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307808-) not found]
P037C	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P037E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 326224-) not found]
P037F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 326224-) not found]
P0381	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307808-) not found]
P03EC	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P03ED	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P03EE	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P03EF	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P03F0	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P03F1	Engine Controls and Fuel - 2.7L - [Link target (target-id 328871-) not found]
P03F2	Engine Controls and Fuel - 2.7L - [Link target (target-id 328871-) not found]
P03F3	Engine Controls and Fuel - 2.7L - [Link target (target-id 328871-) not found]
P03F4	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P0401	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347082-) not found]
P0402	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347082-) not found]
P0403	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350315-) not found]
P0404	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338023-) not found]
P0405	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347034-) not found]

DTC	Diagnostic Procedure
P0406	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347034-) not found]
P041B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347570-) not found]
P041C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347570-) not found]
P041D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347570-) not found]
P041E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347570-) not found]
P0421	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307619-) not found]
P042E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338023-) not found]
P0442	Engine Controls and Fuel - 2.7L - [Link target (target-id 306061-) not found]
P0442	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 302583-) not found]
P0443	Engine Controls and Fuel - 2.7L - [Link target (target-id 305870-) not found]
P0443	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 253845-) not found]
P0446	Engine Controls and Fuel - 2.7L - [Link target (target-id 305877-) not found]
P0446	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227750-) not found]
P0449	Engine Controls and Fuel - 2.7L - [Link target (target-id 305871-) not found]
P0449	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 253846-) not found]
P044C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347034-) not found]
P044D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347034-) not found]
P0451	Engine Controls and Fuel - 2.7L - [Link target (target-id 305878-) not found]
P0451	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227716-) not found]
P0452	Engine Controls and Fuel - 2.7L - [Link target (target-id 305878-) not found]
P0452	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227716-) not found]
P0453	Engine Controls and Fuel - 2.7L - [Link target (target-id 305878-) not found]
P0453	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227716-) not found]
P0454	Engine Controls and Fuel - 2.7L - [Link target (target-id 305878-) not found]
P0454	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227716-) not found]
P0455	Engine Controls and Fuel - 2.7L - [Link target (target-id 306061-) not found]
P0455	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 302583-) not found]
P0458	Engine Controls and Fuel - 2.7L - [Link target (target-id 305870-) not found]
P0458	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 253845-) not found]
P0459	Engine Controls and Fuel - 2.7L - [Link target (target-id 305870-) not found]
P0459	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 253845-) not found]
P045A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350315-) not found]
P045B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313393-) not found]
P045C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350315-) not found]
P045D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350315-) not found]
P045E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313393-) not found]
P0461	Displays and Gauges - [Link target (target-id 200973-) not found]
P0462	Displays and Gauges - [Link target (target-id 200973-) not found]
P0463	Displays and Gauges - [Link target (target-id 200973-) not found]
P0464	Displays and Gauges - [Link target (target-id 200973-) not found]
P0475	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347128-) not found]
P0476	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350352-) not found]

DTC	Diagnostic Procedure
P0477	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347128-) not found]
P0478	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347128-) not found]
P0489	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350315-) not found]
P048A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350352-) not found]
P048D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313844-) not found]
P048E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313844-) not found]
P0490	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350315-) not found]
P0496	Engine Controls and Fuel - 2.7L - [Link target (target-id 320980-) not found]
P0496	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227884-) not found]
P0498	Engine Controls and Fuel - 2.7L - [Link target (target-id 305871-) not found]
P0498	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 253846-) not found]
P0499	Engine Controls and Fuel - 2.7L - [Link target (target-id 305871-) not found]
P0499	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 253846-) not found]
P049B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347082-) not found]
P049C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347082-) not found]
P049D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307760-) not found]
P049E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313395-) not found]
P04CF	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327020-) not found]
P04D0	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327020-) not found]
P04D1	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327020-) not found]
P04D2	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327020-) not found]
P04DB	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313016-) not found]
P04DB	Engine Controls and Fuel - 2.7L - [Link target (target-id 348394-) not found]
P04E2	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313016-) not found]
P04E2	Engine Controls and Fuel - 2.7L - [Link target (target-id 348394-) not found]
P04E3	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313016-) not found]
P04E3	Engine Controls and Fuel - 2.7L - [Link target (target-id 348394-) not found]
P04FA	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350315-) not found]
P04FB	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313016-) not found]
P04FB	Engine Controls and Fuel - 2.7L - [Link target (target-id 348394-) not found]
P0506	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307144-) not found]
P0506	Engine Controls and Fuel - 2.7L - [Link target (target-id 306148-) not found]
P0506	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227941-) not found]
P0507	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307144-) not found]
P0507	Engine Controls and Fuel - 2.7L - [Link target (target-id 306148-) not found]
P0507	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227941-) not found]
P050D	Engine Controls and Fuel - 2.7L - [Link target (target-id 306021-) not found]
P050D	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 229167-) not found]
P0513	Immobilizer - [Link target (target-id 156476-) not found]
P0521	Displays and Gauges - [Link target (target-id 161095-) not found]
P0522	Displays and Gauges - [Link target (target-id 161095-) not found]
P0523	Displays and Gauges - [Link target (target-id 161095-) not found]

DTC	Diagnostic Procedure
P0532	HVAC - Automatic - [Link target (target-id 69299-) not found]
P0532	HVAC - Manual - [Link target (target-id 75796-) not found]
P0533	HVAC - Automatic - [Link target (target-id 69299-) not found]
P0533	HVAC - Manual - [Link target (target-id 75796-) not found]
P0535	HVAC - Automatic - [Link target (target-id 317707-) not found]
P0535	HVAC - Manual - [Link target (target-id 337981-) not found]
P0537	HVAC - Automatic - [Link target (target-id 317707-) not found]
P0537	HVAC - Manual - [Link target (target-id 337981-) not found]
P0538	HVAC - Automatic - [Link target (target-id 317707-) not found]
P0538	HVAC - Manual - [Link target (target-id 337981-) not found]
P0545	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347083-) not found]
P0546	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347083-) not found]
P054E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307473-) not found]
P054F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307473-) not found]
P0560	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 303008-) not found]
P0561	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 303008-) not found]
P0562	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 303008-) not found]
P0563	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 303008-) not found]
P0564	Cruise Control - [Link target (target-id 355188-) not found]
P0565	Cruise Control - [Link target (target-id 355188-) not found]
P0567	Cruise Control - [Link target (target-id 355188-) not found]
P0568	Cruise Control - [Link target (target-id 355188-) not found]
P056C	Cruise Control - [Link target (target-id 355188-) not found]
P057B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307738-) not found]
P057B	Engine Controls and Fuel - 2.7L - [Link target (target-id 306195-) not found]
P057B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 272841-) not found]
P057C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307738-) not found]
P057C	Engine Controls and Fuel - 2.7L - [Link target (target-id 306195-) not found]
P057C	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 272841-) not found]
P057D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307738-) not found]
P057D	Engine Controls and Fuel - 2.7L - [Link target (target-id 306195-) not found]
P057D	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 272841-) not found]
P057E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307738-) not found]
P057E	Engine Controls and Fuel - 2.7L - [Link target (target-id 306195-) not found]
P057E	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 272841-) not found]
P0580	Cruise Control - [Link target (target-id 355188-) not found]
P0581	Cruise Control - [Link target (target-id 355188-) not found]
P0589	Cruise Control - [Link target (target-id 355188-) not found]
P058A	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314847-) not found]
P058B	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314847-) not found]
P058C	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314847-) not found]
P058D	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314847-) not found]

DTC	Diagnostic Procedure
P058E	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314847-) not found]
P058F	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314847-) not found]
P0592	Cruise Control - [Link target (target-id 355188-) not found]
P0593	Cruise Control - [Link target (target-id 355188-) not found]
P059F	Bumpers and Fascias - [Link target (target-id 354234-) not found]
P05AE	Bumpers and Fascias - [Link target (target-id 354235-) not found]
P05CC	Engine Controls and Fuel - 2.7L - [Link target (target-id 305821-) not found]
P05CE	Engine Controls and Fuel - 2.7L - [Link target (target-id 305821-) not found]
P05D1	Secondary and Configurable Customer Controls - [Link target (target-id 323238-) not found]
P05D2	Secondary and Configurable Customer Controls - [Link target (target-id 323238-) not found]
P05D3	Secondary and Configurable Customer Controls - [Link target (target-id 323238-) not found]
P05EC	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P05EC	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P05EC	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P05FD	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347030-) not found]
P0601	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P0601	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P0601	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P0601	Data Communications - [Link target (target-id 272300-) not found]
P0601	Driver Assistance Systems - [Link target (target-id 299160-) not found]
P0601	Automatic Transmission - 10L80 - [Link target (target-id 350264-) not found]
P0601	Automatic Transmission - 8L80 - [Link target (target-id 347431-) not found]
P0602	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P0602	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P0602	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P0602	Data Communications - [Link target (target-id 272300-) not found]
P0602	Driver Assistance Systems - [Link target (target-id 299161-) not found]
P0602	Automatic Transmission - 10L80 - [Link target (target-id 350264-) not found]
P0602	Automatic Transmission - 8L80 - [Link target (target-id 347431-) not found]
P0603	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P0603	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P0603	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P0603	Data Communications - [Link target (target-id 272300-) not found]
P0603	Driver Assistance Systems - [Link target (target-id 299162-) not found]
P0603	Automatic Transmission - 10L80 - [Link target (target-id 350264-) not found]
P0603	Automatic Transmission - 8L80 - [Link target (target-id 347431-) not found]
P0604	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P0604	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P0604	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P0604	Data Communications - [Link target (target-id 272300-) not found]
P0604	Driver Assistance Systems - [Link target (target-id 299163-) not found]
P0604	Automatic Transmission - 10L80 - [Link target (target-id 350264-) not found]

DTC	Diagnostic Procedure
P0604	Automatic Transmission - 8L80 - [Link target (target-id 347431-) not found]
P0605	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P0605	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P0605	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P0605	Data Communications - [Link target (target-id 272300-) not found]
P0606	Antilock Brake System - [Link target (target-id 349588-) not found]
P0606	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P0606	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P0606	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P0606	Data Communications - [Link target (target-id 272300-) not found]
P0606	Driver Assistance Systems - [Link target (target-id 299164-) not found]
P0606	Automatic Transmission - 10L80 - [Link target (target-id 350264-) not found]
P0606	Automatic Transmission - 8L80 - [Link target (target-id 347431-) not found]
P0607	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P0607	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P0607	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P0607	Data Communications - [Link target (target-id 272300-) not found]
P0607	Driver Assistance Systems - [Link target (target-id 329001-) not found]
P0607	Automatic Transmission - 10L80 - [Link target (target-id 350264-) not found]
P0607	Automatic Transmission - 8L80 - [Link target (target-id 347431-) not found]
P060A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P060A	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P060A	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P060A	Data Communications - [Link target (target-id 272300-) not found]
P060A	Driver Assistance Systems - [Link target (target-id 329002-) not found]
P060A	Automatic Transmission - 8L80 - [Link target (target-id 347431-) not found]
P060B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P060B	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P060B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P060B	Data Communications - [Link target (target-id 272300-) not found]
P060C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P060C	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P060C	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P060C	Data Communications - [Link target (target-id 272300-) not found]
P060C	Automatic Transmission - 10L80 - [Link target (target-id 350264-) not found]
P060C	Automatic Transmission - 8L80 - [Link target (target-id 347431-) not found]
P060D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P060D	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P060D	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P0610	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P0610	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P0610	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]

DTC	Diagnostic Procedure
P0610	Data Communications - [Link target (target-id 272300-) not found]
P0615	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 147526-) not found]
P0616	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 147526-) not found]
P0617	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 147526-) not found]
P061C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P061C	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P061C	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P0621	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 37806-) not found]
P0622	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 37807-) not found]
P0627	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 310025-) not found]
P0627	Engine Controls and Fuel - 2.7L - [Link target (target-id 305890-) not found]
P0627	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 327483-) not found]
P0628	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 310025-) not found]
P0628	Engine Controls and Fuel - 2.7L - [Link target (target-id 305890-) not found]
P0628	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 327483-) not found]
P0629	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 310025-) not found]
P0629	Engine Controls and Fuel - 2.7L - [Link target (target-id 305890-) not found]
P0629	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 327483-) not found]
P062B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P062B	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P062B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P062D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307794-) not found]
P062F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P062F	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P062F	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P062F	Data Communications - [Link target (target-id 272300-) not found]
P062F	Driver Assistance Systems - [Link target (target-id 299153-) not found]
P062F	Automatic Transmission - 10L80 - [Link target (target-id 350264-) not found]
P062F	Automatic Transmission - 8L80 - [Link target (target-id 347431-) not found]
P0630	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P0630	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P0630	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P0630	Data Communications - [Link target (target-id 272300-) not found]
P0633	Immobilizer - [Link target (target-id 142528-) not found]
P0634	Data Communications - [Link target (target-id 272300-) not found]
P0641	Antilock Brake System - [Link target (target-id 359723-) not found]
P0641	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307713-) not found]
P0641	Engine Controls and Fuel - 2.7L - [Link target (target-id 306149-) not found]
P0641	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227878-) not found]
P0641	Wiring Systems and Power Management - [Link target (target-id 327177-) not found]
P0645	HVAC - Automatic - [Link target (target-id 69300-) not found]
P0645	HVAC - Manual - [Link target (target-id 119567-) not found]

DTC	Diagnostic Procedure
P0646	HVAC - Automatic - [Link target (target-id 69300-) not found]
P0646	HVAC - Manual - [Link target (target-id 119567-) not found]
P0647	HVAC - Automatic - [Link target (target-id 69300-) not found]
P0647	HVAC - Manual - [Link target (target-id 119567-) not found]
P064D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P064D	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P064D	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P064E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P064E	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P064E	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P064F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P064F	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P064F	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P064F	Data Communications - [Link target (target-id 272300-) not found]
P0651	Antilock Brake System - [Link target (target-id 359723-) not found]
P0651	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307713-) not found]
P0651	Engine Controls and Fuel - 2.7L - [Link target (target-id 306149-) not found]
P0651	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227878-) not found]
P0651	Wiring Systems and Power Management - [Link target (target-id 327177-) not found]
P0658	Automatic Transmission - 10L80 - [Link target (target-id 300998-) not found]
P0658	Automatic Transmission - 8L80 - [Link target (target-id 323922-) not found]
P0659	Automatic Transmission - 10L80 - [Link target (target-id 300998-) not found]
P0659	Automatic Transmission - 8L80 - [Link target (target-id 323922-) not found]
P066A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309306-) not found]
P066B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309306-) not found]
P066C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309306-) not found]
P066D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309306-) not found]
P066E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309306-) not found]
P066F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309306-) not found]
P0671	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309306-) not found]
P0672	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309306-) not found]
P0673	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309306-) not found]
P0674	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309306-) not found]
P0675	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309306-) not found]
P0676	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309306-) not found]
P067A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309306-) not found]
P067B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309306-) not found]
P067C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309306-) not found]
P067D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309306-) not found]
P067E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309306-) not found]
P067F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309306-) not found]
P0685	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307071-) not found]

DTC	Diagnostic Procedure
P0685	Engine Controls and Fuel - 2.7L - [Link target (target-id 309648-) not found]
P0685	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 301450-) not found]
P0686	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307071-) not found]
P0686	Engine Controls and Fuel - 2.7L - [Link target (target-id 309648-) not found]
P0686	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 301450-) not found]
P0687	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307071-) not found]
P0687	Engine Controls and Fuel - 2.7L - [Link target (target-id 309648-) not found]
P0687	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 301450-) not found]
P0689	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307071-) not found]
P0689	Engine Controls and Fuel - 2.7L - [Link target (target-id 309648-) not found]
P0689	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 301450-) not found]
P0690	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307071-) not found]
P0690	Engine Controls and Fuel - 2.7L - [Link target (target-id 309648-) not found]
P0690	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 301450-) not found]
P0697	Antilock Brake System - [Link target (target-id 359723-) not found]
P0697	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307713-) not found]
P0697	Engine Controls and Fuel - 2.7L - [Link target (target-id 306149-) not found]
P0697	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227878-) not found]
P0697	Wiring Systems and Power Management - [Link target (target-id 327177-) not found]
P069E	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 276019-) not found]
P06A3	Antilock Brake System - [Link target (target-id 359723-) not found]
P06A3	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307713-) not found]
P06A3	Engine Controls and Fuel - 2.7L - [Link target (target-id 306149-) not found]
P06A3	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227878-) not found]
P06A3	Wiring Systems and Power Management - [Link target (target-id 327177-) not found]
P06AF	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309307-) not found]
P06AF	Engine Controls and Fuel - 2.7L - [Link target (target-id 329711-) not found]
P06AF	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 327557-) not found]
P06AF	Automatic Transmission - 10L80 - [Link target (target-id 312855-) not found]
P06B6	Engine Controls and Fuel - 2.7L - [Link target (target-id 306060-) not found]
P06B6	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227713-) not found]
P06B7	Engine Controls and Fuel - 2.7L - [Link target (target-id 306060-) not found]
P06B7	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227713-) not found]
P06B8	Data Communications - [Link target (target-id 272300-) not found]
P06C5	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309308-) not found]
P06C6	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309308-) not found]
P06C7	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309308-) not found]
P06C8	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309308-) not found]
P06C9	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309308-) not found]
P06CA	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309308-) not found]
P06D1	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P06D1	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]

DTC	Diagnostic Procedure
P06D1	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P06DA	Engine Mechanical - 3.0L Diesel - [Link target (target-id 311941-) not found]
P06DA	Engine Mechanical - 2.7L - [Link target (target-id 310673-) not found]
P06DA	Engine Mechanical - 5.3L, 6.2L - [Link target (target-id 294343-) not found]
P06DB	Engine Mechanical - 3.0L Diesel - [Link target (target-id 311941-) not found]
P06DB	Engine Mechanical - 2.7L - [Link target (target-id 310673-) not found]
P06DB	Engine Mechanical - 5.3L, 6.2L - [Link target (target-id 294343-) not found]
P06DC	Engine Mechanical - 3.0L Diesel - [Link target (target-id 311941-) not found]
P06DC	Engine Mechanical - 2.7L - [Link target (target-id 310673-) not found]
P06DC	Engine Mechanical - 5.3L, 6.2L - [Link target (target-id 294343-) not found]
P06DD	Engine Mechanical - 3.0L Diesel - [Link target (target-id 311941-) not found]
P06DD	Engine Mechanical - 2.7L - [Link target (target-id 310673-) not found]
P06DD	Engine Mechanical - 5.3L, 6.2L - [Link target (target-id 294343-) not found]
P06EC	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 276019-) not found]
P0700	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327564-) not found]
P0700	Engine Controls and Fuel - 2.7L - [Link target (target-id 323782-) not found]
P0700	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 276019-) not found]
P0707	Automatic Transmission - 10L80 - [Link target (target-id 278292-) not found]
P0707	Automatic Transmission - 8L80 - [Link target (target-id 312997-) not found]
P0708	Automatic Transmission - 10L80 - [Link target (target-id 278292-) not found]
P0708	Automatic Transmission - 8L80 - [Link target (target-id 312997-) not found]
P0711	Automatic Transmission - 10L80 - [Link target (target-id 278293-) not found]
P0711	Automatic Transmission - 8L80 - [Link target (target-id 260447-) not found]
P0712	Automatic Transmission - 10L80 - [Link target (target-id 278293-) not found]
P0712	Automatic Transmission - 8L80 - [Link target (target-id 260447-) not found]
P0713	Automatic Transmission - 10L80 - [Link target (target-id 278293-) not found]
P0713	Automatic Transmission - 8L80 - [Link target (target-id 260447-) not found]
P0716	Automatic Transmission - 10L80 - [Link target (target-id 284257-) not found]
P0716	Automatic Transmission - 8L80 - [Link target (target-id 321295-) not found]
P0717	Automatic Transmission - 10L80 - [Link target (target-id 284257-) not found]
P0717	Automatic Transmission - 8L80 - [Link target (target-id 321295-) not found]
P0721	Automatic Transmission - 10L80 - [Link target (target-id 346948-) not found]
P0721	Automatic Transmission - 8L80 - [Link target (target-id 350525-) not found]
P0722	Automatic Transmission - 10L80 - [Link target (target-id 346948-) not found]
P0722	Automatic Transmission - 8L80 - [Link target (target-id 350525-) not found]
P0723	Automatic Transmission - 10L80 - [Link target (target-id 346948-) not found]
P0723	Automatic Transmission - 8L80 - [Link target (target-id 350525-) not found]
P073D	Electronic Transmission Range Select - [Link target (target-id 325570-) not found]
P073E	Electronic Transmission Range Select - [Link target (target-id 325570-) not found]
P0741	Automatic Transmission - 10L80 - [Link target (target-id 284324-) not found]
P0746	Automatic Transmission - 10L80 - [Link target (target-id 278297-) not found]
P0746	Automatic Transmission - 8L80 - [Link target (target-id 263724-) not found]

DTC	Diagnostic Procedure
P0747	Automatic Transmission - 10L80 - [Link target (target-id 278297-) not found]
P0747	Automatic Transmission - 8L80 - [Link target (target-id 263724-) not found]
P0776	Automatic Transmission - 10L80 - [Link target (target-id 278298-) not found]
P0776	Automatic Transmission - 8L80 - [Link target (target-id 260429-) not found]
P0777	Automatic Transmission - 10L80 - [Link target (target-id 278298-) not found]
P0777	Automatic Transmission - 8L80 - [Link target (target-id 260429-) not found]
P077C	Automatic Transmission - 10L80 - [Link target (target-id 346948-) not found]
P077C	Automatic Transmission - 8L80 - [Link target (target-id 350525-) not found]
P077D	Automatic Transmission - 10L80 - [Link target (target-id 346948-) not found]
P077D	Automatic Transmission - 8L80 - [Link target (target-id 350525-) not found]
P0796	Automatic Transmission - 10L80 - [Link target (target-id 278299-) not found]
P0796	Automatic Transmission - 8L80 - [Link target (target-id 260380-) not found]
P0797	Automatic Transmission - 10L80 - [Link target (target-id 278299-) not found]
P0797	Automatic Transmission - 8L80 - [Link target (target-id 260380-) not found]
P07B3	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P07B4	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P07B5	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P07B9	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P07BA	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P07BB	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P07BE	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P07BF	Automatic Transmission - 10L80 - [Link target (target-id 284257-) not found]
P07BF	Automatic Transmission - 8L80 - [Link target (target-id 321295-) not found]
P07C0	Automatic Transmission - 10L80 - [Link target (target-id 284257-) not found]
P07C0	Automatic Transmission - 8L80 - [Link target (target-id 321295-) not found]
P07E4	Electronic Transmission Range Select - [Link target (target-id 325570-) not found]
P07E5	Electronic Transmission Range Select - [Link target (target-id 325570-) not found]
P0800	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 276019-) not found]
P0815	Automatic Transmission - 10L80 - [Link target (target-id 321006-) not found]
P0815	Automatic Transmission - 8L80 - [Link target (target-id 331393-) not found]
P0816	Automatic Transmission - 10L80 - [Link target (target-id 321006-) not found]
P0816	Automatic Transmission - 8L80 - [Link target (target-id 331393-) not found]
P0826	Automatic Transmission - 10L80 - [Link target (target-id 321006-) not found]
P0826	Automatic Transmission - 8L80 - [Link target (target-id 331393-) not found]
P082A	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P082B	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P082C	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P082D	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P082E	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P082F	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P0841	Automatic Transmission - 8L80 - [Link target (target-id 347419-) not found]
P0842	Automatic Transmission - 8L80 - [Link target (target-id 347419-) not found]

DTC	Diagnostic Procedure
P0843	Automatic Transmission - 8L80 - [Link target (target-id 347419-) not found]
P0856	Antilock Brake System - [Link target (target-id 165434-) not found]
P089B	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P089C	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P089D	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P08A0	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P08A1	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P08A2	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P08FF	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P08FF	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P08FF	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P095E	Engine Heating and Cooling - [Link target (target-id 350313-) not found]
P0960	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P0960	Automatic Transmission - 8L80 - [Link target (target-id 323923-) not found]
P0962	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P0962	Automatic Transmission - 8L80 - [Link target (target-id 323923-) not found]
P0963	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P0963	Automatic Transmission - 8L80 - [Link target (target-id 323923-) not found]
P0964	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P0964	Automatic Transmission - 8L80 - [Link target (target-id 323923-) not found]
P0966	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P0966	Automatic Transmission - 8L80 - [Link target (target-id 323923-) not found]
P0967	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P0967	Automatic Transmission - 8L80 - [Link target (target-id 323923-) not found]
P0968	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P0968	Automatic Transmission - 8L80 - [Link target (target-id 323923-) not found]
P0970	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P0970	Automatic Transmission - 8L80 - [Link target (target-id 323923-) not found]
P0971	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P0971	Automatic Transmission - 8L80 - [Link target (target-id 323923-) not found]
P0A7B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 276019-) not found]
P0AC4	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 276019-) not found]
P0CA1	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 276019-) not found]
P0E32	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 334682-) not found]
P0E33	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 334682-) not found]
P0E34	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 334682-) not found]
P0E37	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 334684-) not found]
P0E38	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 334684-) not found]
P0E39	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 334684-) not found]
P0FFF	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 355759-) not found]
P1005	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307795-) not found]
P1005	Engine Controls and Fuel - 2.7L - [Link target (target-id 310703-) not found]

DTC	Diagnostic Procedure
P1005	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 309964-) not found]
P1006	Engine Heating and Cooling - [Link target (target-id 330897-) not found]
P100B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 314843-) not found]
P100C	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 280530-) not found]
P100D	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 280530-) not found]
P100F	Engine Heating and Cooling - [Link target (target-id 330897-) not found]
P1010	Engine Heating and Cooling - [Link target (target-id 350313-) not found]
P1018	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
P1019	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
P1029	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309309-) not found]
P1029	Engine Controls and Fuel - 2.7L - [Link target (target-id 310647-) not found]
P1029	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 327484-) not found]
P102A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309309-) not found]
P102A	Engine Controls and Fuel - 2.7L - [Link target (target-id 310647-) not found]
P102A	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 327484-) not found]
P102B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309309-) not found]
P102B	Engine Controls and Fuel - 2.7L - [Link target (target-id 310647-) not found]
P102B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 327484-) not found]
P1037	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307723-) not found]
P1038	Engine Controls and Fuel - 2.7L - [Link target (target-id 310249-) not found]
P103A	Engine Controls and Fuel - 2.7L - [Link target (target-id 310249-) not found]
P103D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]
P103D	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]
P103D	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P1048	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307532-) not found]
P1049	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307532-) not found]
P1089	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307495-) not found]
P1098	Engine Heating and Cooling - [Link target (target-id 351643-) not found]
P109F	Engine Heating and Cooling - [Link target (target-id 351643-) not found]
P10A1	Engine Heating and Cooling - [Link target (target-id 351643-) not found]
P10A3	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P10A3	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P10A4	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P10A4	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P10A5	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P10A5	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P10A6	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P10A6	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P10A7	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P10A7	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P10A8	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P10A8	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]

DTC	Diagnostic Procedure
P10A9	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P10A9	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P10AA	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P10AA	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P10AB	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P10AC	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P10AD	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P10AE	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P10AF	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P10B0	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P10B1	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P10B2	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P10BA	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 328386-) not found]
P10BC	Engine Controls and Fuel - 2.7L - [Link target (target-id 310251-) not found]
P10BC	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333002-) not found]
P10C0	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347128-) not found]
P10C1	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313019-) not found]
P10C6	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]
P10C6	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]
P10C6	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P10C9	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313852-) not found]
P10CA	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313852-) not found]
P10D1	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307633-) not found]
P10D5	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313003-) not found]
P10D6	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313004-) not found]
P10D7	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313004-) not found]
P10D8	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313004-) not found]
P10D9	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313853-) not found]
P10DA	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313854-) not found]
P10DB	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313854-) not found]
P10DC	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313855-) not found]
P10DD	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313855-) not found]
P10E6	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 310012-) not found]
P10E7	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 310012-) not found]
P10E8	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 310012-) not found]
P10E8	Engine Controls and Fuel - 2.7L - [Link target (target-id 329294-) not found]
P10EA	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 310012-) not found]
P10EB	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347128-) not found]
P10EC	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313019-) not found]
P10ED	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313019-) not found]
P10F3	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313856-) not found]
P10F4	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309311-) not found]

DTC	Diagnostic Procedure
P10F5	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]
P10F5	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]
P10F5	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P1101	Engine Controls and Fuel - 2.7L - [Link target (target-id 333427-) not found]
P1101	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333303-) not found]
P111F	Engine Controls and Fuel - 2.7L - [Link target (target-id 323120-) not found]
P111F	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324301-) not found]
P113B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347083-) not found]
P113C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347083-) not found]
P113D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347083-) not found]
P115E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P115F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P1160	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P116A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P116B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P116C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P116D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P116E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P116F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P1176	Engine Controls and Fuel - 2.7L - [Link target (target-id 305791-) not found]
P1176	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304085-) not found]
P1177	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 311940-) not found]
P1177	Engine Controls and Fuel - 2.7L - [Link target (target-id 305791-) not found]
P1177	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304085-) not found]
P1178	Engine Controls and Fuel - 2.7L - [Link target (target-id 357069-) not found]
P1178	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304112-) not found]
P117A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]
P117A	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]
P117A	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P117F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347037-) not found]
P118B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350376-) not found]
P118E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313400-) not found]
P118F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313401-) not found]
P1192	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P1193	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P1194	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P1196	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313401-) not found]
P1199	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327454-) not found]
P119A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P119B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P119C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P119D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]

DTC	Diagnostic Procedure
P119E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P119F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P11BE	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P11BF	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P11C0	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P11C5	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P11C6	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P11C7	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P11C8	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P11CC	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P11D0	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P11D1	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P11D2	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P11D3	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P11D5	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P11D8	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P11D9	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P11DA	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P11DB	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P11FC	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P11FD	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P11FE	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P11FF	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]
P11FF	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]
P11FF	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P122B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347499-) not found]
P122C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347499-) not found]
P122D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307455-) not found]
P1248	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P1248	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P1248	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P1249	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P1249	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P1249	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P124A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P124A	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P124A	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P124B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P124B	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P124B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P124C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P124C	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]

DTC	Diagnostic Procedure
P124D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P124D	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P124E	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P124F	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P1255	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307750-) not found]
P1255	Engine Controls and Fuel - 2.7L - [Link target (target-id 306086-) not found]
P1255	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227882-) not found]
P126E	Engine Controls and Fuel - 2.7L - [Link target (target-id 323120-) not found]
P126E	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324301-) not found]
P126F	Engine Controls and Fuel - 2.7L - [Link target (target-id 323120-) not found]
P126F	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324301-) not found]
P127C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327458-) not found]
P127C	Engine Controls and Fuel - 2.7L - [Link target (target-id 323120-) not found]
P127C	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324301-) not found]
P127D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327458-) not found]
P128A	Engine Controls and Fuel - 2.7L - [Link target (target-id 323120-) not found]
P128A	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324301-) not found]
P128B	Engine Controls and Fuel - 2.7L - [Link target (target-id 323120-) not found]
P128B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324301-) not found]
P128C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]
P128C	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]
P128C	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P128D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]
P128D	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]
P128D	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P128F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]
P128F	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]
P128F	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P129B	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 182379-) not found]
P129C	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 182379-) not found]
P129F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307446-) not found]
P129F	Engine Controls and Fuel - 2.7L - [Link target (target-id 310226-) not found]
P129F	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227990-) not found]
P12A6	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 310025-) not found]
P12A6	Engine Controls and Fuel - 2.7L - [Link target (target-id 305890-) not found]
P12A6	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 327483-) not found]
P131B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
P131C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
P131E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 364446-) not found]
P134C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P134C	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P134C	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]

DTC	Diagnostic Procedure
P135A	Engine Controls and Fuel - 2.7L - [Link target (target-id 306057-) not found]
P135A	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 228219-) not found]
P135B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 228219-) not found]
P135C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]
P135C	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]
P135C	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P1387	Engine Heating and Cooling - [Link target (target-id 341330-) not found]
P1388	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P1389	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P138A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P138C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350384-) not found]
P138D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347070-) not found]
P138E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347070-) not found]
P138F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350384-) not found]
P13B1	Engine Mechanical - 3.0L Diesel - [Link target (target-id 311941-) not found]
P13B1	Engine Mechanical - 2.7L - [Link target (target-id 310673-) not found]
P1402	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350315-) not found]
P1407	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350315-) not found]
P140B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307114-) not found]
P140C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307114-) not found]
P140F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350315-) not found]
P1419	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350315-) not found]
P141A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350315-) not found]
P141B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350315-) not found]
P141C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350315-) not found]
P1425	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347499-) not found]
P1428	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327137-) not found]
P142A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350162-) not found]
P1434	Displays and Gauges - [Link target (target-id 280602-) not found]
P143C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313862-) not found]
P143E	Displays and Gauges - [Link target (target-id 280603-) not found]
P1465	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 304031-) not found]
P1466	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 304031-) not found]
P1467	Engine Controls and Fuel - 2.7L - [Link target (target-id 310705-) not found]
P1468	Engine Controls and Fuel - 2.7L - [Link target (target-id 310705-) not found]
P1469	Engine Controls and Fuel - 2.7L - [Link target (target-id 310705-) not found]
P146A	Engine Controls and Fuel - 2.7L - [Link target (target-id 310705-) not found]
P146B	Engine Controls and Fuel - 2.7L - [Link target (target-id 320982-) not found]
P146C	Engine Controls and Fuel - 2.7L - [Link target (target-id 320980-) not found]
P146D	Engine Controls and Fuel - 2.7L - [Link target (target-id 320983-) not found]
P146E	Engine Controls and Fuel - 2.7L - [Link target (target-id 320983-) not found]
P146F	Engine Controls and Fuel - 2.7L - [Link target (target-id 320983-) not found]

DTC	Diagnostic Procedure
P1473	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350376-) not found]
P1475	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350376-) not found]
P1476	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350376-) not found]
P147B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350376-) not found]
P148E	Engine Controls and Fuel - 2.7L - [Link target (target-id 310705-) not found]
P148F	Engine Controls and Fuel - 2.7L - [Link target (target-id 310705-) not found]
P1490	Engine Controls and Fuel - 2.7L - [Link target (target-id 310705-) not found]
P1497	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350376-) not found]
P1498	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350376-) not found]
P149A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 346975-) not found]
P149F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313863-) not found]
P14A0	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]
P14A0	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]
P14A0	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P14A4	Engine Controls and Fuel - 2.7L - [Link target (target-id 310705-) not found]
P14A5	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313864-) not found]
P14A6	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313864-) not found]
P14A7	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P14A8	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P14A9	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P14AA	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P14AB	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P14AC	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P14AD	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P14AE	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P14AF	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P14B0	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P14B1	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P14B2	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P14B3	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P14B4	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P14B6	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]
P14B6	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]
P14B6	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P14CD	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]
P14CD	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]
P14CD	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P14D4	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]
P14D4	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]
P14D4	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P14D5	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]
P14D5	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]

DTC	Diagnostic Procedure
P14D5	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P14D6	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]
P14D6	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]
P14D6	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P14D9	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P14DA	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P150C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]
P150C	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]
P150C	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P1516	Engine Controls and Fuel - 2.7L - [Link target (target-id 306006-) not found]
P1516	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227727-) not found]
P153B	HVAC - Automatic - [Link target (target-id 317707-) not found]
P153B	HVAC - Manual - [Link target (target-id 337981-) not found]
P155A	Cruise Control - [Link target (target-id 355188-) not found]
P155B	Cruise Control - [Link target (target-id 355188-) not found]
P155C	Cruise Control - [Link target (target-id 355188-) not found]
P157A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309640-) not found]
P1589	Driver Assistance Systems - [Link target (target-id 329008-) not found]
P15F8	Antilock Brake System - [Link target (target-id 227356-) not found]
P15FD	Antilock Brake System - [Link target (target-id 272641-) not found]
P15FE	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P15FF	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 272217-) not found]
P160A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P160A	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P160A	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P160D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P160D	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P160D	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P160E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P160E	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P160E	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P161C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P161C	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P161C	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P162C	Cruise Control - [Link target (target-id 355188-) not found]
P163A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 310012-) not found]
P163A	Engine Controls and Fuel - 2.7L - [Link target (target-id 329294-) not found]
P163A	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 329292-) not found]
P163B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 324160-) not found]
P1682	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307071-) not found]
P1682	Engine Controls and Fuel - 2.7L - [Link target (target-id 309648-) not found]
P1682	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 301450-) not found]

DTC	Diagnostic Procedure
P169F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347030-) not found]
P16A7	Engine Controls and Fuel - 2.7L - [Link target (target-id 309648-) not found]
P16A7	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 301450-) not found]
P16AF	Engine Controls and Fuel - 2.7L - [Link target (target-id 309648-) not found]
P16AF	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 301450-) not found]
P16B3	Engine Controls and Fuel - 2.7L - [Link target (target-id 309648-) not found]
P16B3	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 301450-) not found]
P16BC	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307071-) not found]
P16BC	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 301450-) not found]
P16BD	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307071-) not found]
P16BD	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 301450-) not found]
P16BF	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307071-) not found]
P16BF	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 301450-) not found]
P16D4	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314848-) not found]
P16D5	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314848-) not found]
P16D6	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314848-) not found]
P16D7	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309640-) not found]
P16D7	Engine Controls and Fuel - 2.7L - [Link target (target-id 305893-) not found]
P16D7	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 327488-) not found]
P16D8	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309640-) not found]
P16D8	Engine Controls and Fuel - 2.7L - [Link target (target-id 305893-) not found]
P16D8	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 327488-) not found]
P16D9	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309640-) not found]
P16D9	Engine Controls and Fuel - 2.7L - [Link target (target-id 305893-) not found]
P16D9	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 327488-) not found]
P16E1	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314850-) not found]
P16E2	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314850-) not found]
P16E3	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 314850-) not found]
P16E9	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P16E9	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P16E9	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P16E9	Data Communications - [Link target (target-id 272300-) not found]
P16EA	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P16EA	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P16EA	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P16EA	Data Communications - [Link target (target-id 272300-) not found]
P16EB	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P16EB	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P16EB	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P16EB	Data Communications - [Link target (target-id 272300-) not found]
P16EC	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P16EC	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]

DTC	Diagnostic Procedure
P16EC	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P16EC	Data Communications - [Link target (target-id 272300-) not found]
P16ED	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P16ED	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P16ED	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P16ED	Data Communications - [Link target (target-id 272300-) not found]
P16EE	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P16EE	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P16EE	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P16EE	Data Communications - [Link target (target-id 272300-) not found]
P16EF	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P16EF	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P16EF	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P16EF	Data Communications - [Link target (target-id 272300-) not found]
P16F0	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P16F0	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P16F0	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P16F0	Data Communications - [Link target (target-id 272300-) not found]
P16F0	Driver Assistance Systems - [Link target (target-id 299166-) not found]
P16F1	Data Communications - [Link target (target-id 272300-) not found]
P16F2	Data Communications - [Link target (target-id 272300-) not found]
P16F3	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P16F3	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P16F3	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P16F3	Data Communications - [Link target (target-id 272300-) not found]
P16F3	Driver Assistance Systems - [Link target (target-id 329009-) not found]
P16F4	Electronic Transmission Range Select - [Link target (target-id 325570-) not found]
P16F9	Data Communications - [Link target (target-id 272300-) not found]
P16FA	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347030-) not found]
P16FD	Data Communications - [Link target (target-id 272300-) not found]
P16FD	Driver Assistance Systems - [Link target (target-id 329010-) not found]
P16FE	Data Communications - [Link target (target-id 272300-) not found]
P16FE	Driver Assistance Systems - [Link target (target-id 329010-) not found]
P1700	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 276019-) not found]
P172A	Automatic Transmission - 10L80 - [Link target (target-id 346948-) not found]
P172A	Automatic Transmission - 8L80 - [Link target (target-id 350525-) not found]
P175E	Automatic Transmission - 10L80 - [Link target (target-id 289033-) not found]
P175E	Automatic Transmission - 8L80 - [Link target (target-id 320798-) not found]
P1762	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]
P1762	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]
P1762	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P176B	Automatic Transmission - 10L80 - [Link target (target-id 284259-) not found]

DTC	Diagnostic Procedure
P176B	Automatic Transmission - 8L80 - [Link target (target-id 321298-) not found]
P176C	Automatic Transmission - 10L80 - [Link target (target-id 284259-) not found]
P176C	Automatic Transmission - 8L80 - [Link target (target-id 321298-) not found]
P176D	Automatic Transmission - 10L80 - [Link target (target-id 284259-) not found]
P176D	Automatic Transmission - 8L80 - [Link target (target-id 321298-) not found]
P1783	Automatic Transmission - 10L80 - [Link target (target-id 284257-) not found]
P1783	Automatic Transmission - 8L80 - [Link target (target-id 321295-) not found]
P1787	Electronic Transmission Range Select - [Link target (target-id 325570-) not found]
P1789	Electronic Transmission Range Select - [Link target (target-id 325570-) not found]
P178F	Automatic Transmission - 10L80 - [Link target (target-id 284259-) not found]
P178F	Automatic Transmission - 8L80 - [Link target (target-id 321298-) not found]
P17A3	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P17A4	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P17A5	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P17A6	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P17A7	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P17A8	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P17A9	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P17C5	Automatic Transmission - 10L80 - [Link target (target-id 284260-) not found]
P17C6	Automatic Transmission - 10L80 - [Link target (target-id 284260-) not found]
P17CC	Automatic Transmission - 10L80 - [Link target (target-id 284260-) not found]
P17CD	Automatic Transmission - 10L80 - [Link target (target-id 284260-) not found]
P17CE	Automatic Transmission - 10L80 - [Link target (target-id 284257-) not found]
P17CE	Automatic Transmission - 8L80 - [Link target (target-id 321295-) not found]
P17D3	Automatic Transmission - 10L80 - [Link target (target-id 284259-) not found]
P17D3	Automatic Transmission - 8L80 - [Link target (target-id 321298-) not found]
P17D4	Transfer Case - MP 3015 - [Link target (target-id 302594-) not found]
P17D4	Transfer Case - MP 3025 - [Link target (target-id 302595-) not found]
P17D6	Automatic Transmission - 10L80 - [Link target (target-id 284260-) not found]
P17D8	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P17D9	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P17DA	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P17DB	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P17DD	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 321613-) not found]
P17DE	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 321613-) not found]
P17DF	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 321613-) not found]
P17E0	Electronic Transmission Range Select - [Link target (target-id 317601-) not found]
P17E1	Electronic Transmission Range Select - [Link target (target-id 317601-) not found]
P17F3	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P17F4	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P17F5	Automatic Transmission - 10L80 - [Link target (target-id 312078-) not found]
P17F6	Automatic Transmission - 10L80 - [Link target (target-id 312078-) not found]

DTC	Diagnostic Procedure
P17F7	Automatic Transmission - 10L80 - [Link target (target-id 312078-) not found]
P17FA	Automatic Transmission - 10L80 - [Link target (target-id 312078-) not found]
P17FB	Automatic Transmission - 10L80 - [Link target (target-id 312078-) not found]
P17FC	Automatic Transmission - 10L80 - [Link target (target-id 312078-) not found]
P185F	Transfer Case - MP 3015 - [Link target (target-id 302594-) not found]
P185F	Transfer Case - MP 3025 - [Link target (target-id 302595-) not found]
P187D	Automatic Transmission - 10L80 - [Link target (target-id 312081-) not found]
P187E	Automatic Transmission - 10L80 - [Link target (target-id 312081-) not found]
P188B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]
P188B	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]
P188B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P189C	Automatic Transmission - 10L80 - [Link target (target-id 312082-) not found]
P189D	Electronic Transmission Range Select - [Link target (target-id 364442-) not found]
P18A1	Automatic Transmission - 10L80 - [Link target (target-id 316795-) not found]
P18A2	Automatic Transmission - 10L80 - [Link target (target-id 312857-) not found]
P18A3	Automatic Transmission - 10L80 - [Link target (target-id 312857-) not found]
P18A4	Automatic Transmission - 10L80 - [Link target (target-id 312857-) not found]
P18A8	Automatic Transmission - 10L80 - [Link target (target-id 312080-) not found]
P18AA	Automatic Transmission - 10L80 - [Link target (target-id 316795-) not found]
P18AB	Automatic Transmission - 10L80 - [Link target (target-id 316795-) not found]
P18AE	Automatic Transmission - 10L80 - [Link target (target-id 323134-) not found]
P18E7	Automatic Transmission - 10L80 - [Link target (target-id 312081-) not found]
P18E8	Automatic Transmission - 10L80 - [Link target (target-id 312081-) not found]
P1911	Electronic Transmission Range Select - [Link target (target-id 346845-) not found]
P1981	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350376-) not found]
P1C30	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347078-) not found]
P1E00	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 276019-) not found]
P2002	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307221-) not found]
P2006	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 335594-) not found]
P2008	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313019-) not found]
P2009	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313019-) not found]
P200A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 315274-) not found]
P200B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313019-) not found]
P200C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307570-) not found]
P200D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313019-) not found]
P200E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307324-) not found]
P200F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313019-) not found]
P2010	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313019-) not found]
P2016	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313022-) not found]
P2017	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313022-) not found]
P201B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313019-) not found]
P2032	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347083-) not found]

DTC	Diagnostic Procedure
P2033	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347083-) not found]
P203B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
P203C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
P203D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
P2047	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307532-) not found]
P2048	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307532-) not found]
P2049	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307532-) not found]
P204B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313852-) not found]
P204C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313852-) not found]
P204D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313852-) not found]
P204E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313852-) not found]
P2053	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347070-) not found]
P2054	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347070-) not found]
P2055	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347070-) not found]
P205B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313865-) not found]
P205C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313865-) not found]
P205D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313865-) not found]
P205E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313865-) not found]
P206B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
P206C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
P206D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
P2080	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347083-) not found]
P2081	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347083-) not found]
P2084	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347083-) not found]
P2085	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347083-) not found]
P2088	Engine Controls and Fuel - 2.7L - [Link target (target-id 305826-) not found]
P2088	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 294312-) not found]
P2089	Engine Controls and Fuel - 2.7L - [Link target (target-id 305826-) not found]
P2089	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 294312-) not found]
P208A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313863-) not found]
P208A	Engine Controls and Fuel - 2.7L - [Link target (target-id 305826-) not found]
P208B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313863-) not found]
P208B	Engine Controls and Fuel - 2.7L - [Link target (target-id 305826-) not found]
P208C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313863-) not found]
P208C	Engine Controls and Fuel - 2.7L - [Link target (target-id 305826-) not found]
P208D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313863-) not found]
P208D	Engine Controls and Fuel - 2.7L - [Link target (target-id 305826-) not found]
P208E	Engine Controls and Fuel - 2.7L - [Link target (target-id 305826-) not found]
P208F	Engine Controls and Fuel - 2.7L - [Link target (target-id 305826-) not found]
P2090	Engine Controls and Fuel - 2.7L - [Link target (target-id 305826-) not found]
P2091	Engine Controls and Fuel - 2.7L - [Link target (target-id 305826-) not found]
P20B9	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313853-) not found]

DTC	Diagnostic Procedure
P20BA	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313853-) not found]
P20BB	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313853-) not found]
P20BC	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313853-) not found]
P20BD	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313856-) not found]
P20BE	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313856-) not found]
P20BF	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313856-) not found]
P20C0	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313856-) not found]
P20C1	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313862-) not found]
P20C2	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313862-) not found]
P20C3	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313862-) not found]
P20C4	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313862-) not found]
P20E8	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307732-) not found]
P20E9	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307732-) not found]
P20EE	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307382-) not found]
P20F8	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 335594-) not found]
P20FE	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347129-) not found]
P20FF	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309311-) not found]
P2101	Engine Controls and Fuel - 2.7L - [Link target (target-id 306006-) not found]
P2101	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227727-) not found]
P2119	Engine Controls and Fuel - 2.7L - [Link target (target-id 306006-) not found]
P2119	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227727-) not found]
P2122	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307694-) not found]
P2122	Engine Controls and Fuel - 2.7L - [Link target (target-id 306139-) not found]
P2122	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227773-) not found]
P2123	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307694-) not found]
P2123	Engine Controls and Fuel - 2.7L - [Link target (target-id 306139-) not found]
P2123	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227773-) not found]
P2127	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307694-) not found]
P2127	Engine Controls and Fuel - 2.7L - [Link target (target-id 306139-) not found]
P2127	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227773-) not found]
P2128	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307694-) not found]
P2128	Engine Controls and Fuel - 2.7L - [Link target (target-id 306139-) not found]
P2128	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227773-) not found]
P2135	Engine Controls and Fuel - 2.7L - [Link target (target-id 332874-) not found]
P2135	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 332809-) not found]
P2138	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307694-) not found]
P2138	Engine Controls and Fuel - 2.7L - [Link target (target-id 306139-) not found]
P2138	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227773-) not found]
P2147	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P2147	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P2147	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P2148	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]

DTC	Diagnostic Procedure
P2148	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P2148	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P214E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313863-) not found]
P214F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313853-) not found]
P2150	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P2150	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P2150	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P2151	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P2151	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P2151	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P2153	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P2153	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P2153	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P2154	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309301-) not found]
P2154	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P2154	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P2156	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P2156	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P2157	Engine Controls and Fuel - 2.7L - [Link target (target-id 306084-) not found]
P2157	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P215B	Transfer Case - MP 3015 - [Link target (target-id 302594-) not found]
P215B	Transfer Case - MP 3025 - [Link target (target-id 302595-) not found]
P216B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P216C	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P216E	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P216F	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P2176	Engine Controls and Fuel - 2.7L - [Link target (target-id 306006-) not found]
P2176	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 227727-) not found]
P217B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P217C	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P217E	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P217F	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324174-) not found]
P2184	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327012-) not found]
P2185	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327012-) not found]
P2186	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327012-) not found]
P21A9	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
P21AB	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
P21C5	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
P21CB	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307733-) not found]
P21DD	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313853-) not found]
P2201	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P2202	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]

DTC	Diagnostic Procedure
P2203	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P2205	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P2206	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P2207	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P2208	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P2209	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P220A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307485-) not found]
P220B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307485-) not found]
P220C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P220D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P220E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P220F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P2210	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P2211	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P221C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313856-) not found]
P221D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313856-) not found]
P221E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313862-) not found]
P221F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313862-) not found]
P2227	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307325-) not found]
P2228	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307325-) not found]
P2228	Engine Controls and Fuel - 2.7L - [Link target (target-id 310255-) not found]
P2228	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333002-) not found]
P2229	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307325-) not found]
P2229	Engine Controls and Fuel - 2.7L - [Link target (target-id 310255-) not found]
P2229	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333002-) not found]
P222A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307325-) not found]
P222A	Engine Controls and Fuel - 2.7L - [Link target (target-id 310255-) not found]
P222A	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333002-) not found]
P222B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307325-) not found]
P222B	Engine Controls and Fuel - 2.7L - [Link target (target-id 310255-) not found]
P222B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333002-) not found]
P222C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307325-) not found]
P222C	Engine Controls and Fuel - 2.7L - [Link target (target-id 310255-) not found]
P222C	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333002-) not found]
P222D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307325-) not found]
P222D	Engine Controls and Fuel - 2.7L - [Link target (target-id 310255-) not found]
P222D	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333002-) not found]
P222E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307325-) not found]
P222E	Engine Controls and Fuel - 2.7L - [Link target (target-id 310255-) not found]
P222E	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333002-) not found]
P222F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307325-) not found]
P222F	Engine Controls and Fuel - 2.7L - [Link target (target-id 310255-) not found]

DTC	Diagnostic Procedure
P222F	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333002-) not found]
P2230	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307325-) not found]
P2230	Engine Controls and Fuel - 2.7L - [Link target (target-id 310255-) not found]
P2230	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333002-) not found]
P2261	Engine Controls and Fuel - 2.7L - [Link target (target-id 306166-) not found]
P2264	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 312012-) not found]
P2269	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 312012-) not found]
P2269	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333292-) not found]
P226D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307614-) not found]
P227B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307326-) not found]
P227C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307326-) not found]
P227C	Engine Controls and Fuel - 2.7L - [Link target (target-id 310255-) not found]
P227C	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333002-) not found]
P227D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307326-) not found]
P227D	Engine Controls and Fuel - 2.7L - [Link target (target-id 310255-) not found]
P227D	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333002-) not found]
P227E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307326-) not found]
P227E	Engine Controls and Fuel - 2.7L - [Link target (target-id 310255-) not found]
P227E	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333002-) not found]
P228A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 346946-) not found]
P228B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 346946-) not found]
P228C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 346946-) not found]
P228C	Engine Controls and Fuel - 2.7L - [Link target (target-id 305888-) not found]
P228C	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 297085-) not found]
P228D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 346946-) not found]
P228D	Engine Controls and Fuel - 2.7L - [Link target (target-id 305888-) not found]
P228D	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 297085-) not found]
P2293	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 346946-) not found]
P2294	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 324160-) not found]
P2295	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 324160-) not found]
P2296	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 324160-) not found]
P2297	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P2299	Lighting - [Link target (target-id 220726-) not found]
P229F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P22A0	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P22A1	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P22A3	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P22A4	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P22A5	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P22A6	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P22A7	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P22A8	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]

DTC	Diagnostic Procedure
P22A9	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P22B6	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P22B7	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P22FB	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P22FE	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P2300	Engine Controls and Fuel - 2.7L - [Link target (target-id 305820-) not found]
P2300	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P2301	Engine Controls and Fuel - 2.7L - [Link target (target-id 305820-) not found]
P2301	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P2303	Engine Controls and Fuel - 2.7L - [Link target (target-id 305820-) not found]
P2303	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P2304	Engine Controls and Fuel - 2.7L - [Link target (target-id 305820-) not found]
P2304	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P2306	Engine Controls and Fuel - 2.7L - [Link target (target-id 305820-) not found]
P2306	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P2307	Engine Controls and Fuel - 2.7L - [Link target (target-id 305820-) not found]
P2307	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P2309	Engine Controls and Fuel - 2.7L - [Link target (target-id 305820-) not found]
P2309	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P2310	Engine Controls and Fuel - 2.7L - [Link target (target-id 305820-) not found]
P2310	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P2312	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P2313	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P2315	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P2316	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P2318	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P2319	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P2321	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P2322	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 254362-) not found]
P233A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 310012-) not found]
P233B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 310012-) not found]
P233C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 310012-) not found]
P2381	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347038-) not found]
P2382	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347038-) not found]
P2383	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347038-) not found]
P2384	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347038-) not found]
P23AD	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P23AE	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P23AF	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P23B1	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P23B2	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P23B3	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]

DTC	Diagnostic Procedure
P23B4	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P23B5	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P23B6	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P23B8	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P23B9	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P23C1	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P23C4	Engine Heating and Cooling - [Link target (target-id 351643-) not found]
P23C5	Engine Heating and Cooling - [Link target (target-id 351643-) not found]
P23C6	Engine Heating and Cooling - [Link target (target-id 351643-) not found]
P241F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313867-) not found]
P242B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347083-) not found]
P242C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347083-) not found]
P242D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347083-) not found]
P242E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347083-) not found]
P244A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307427-) not found]
P244B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307427-) not found]
P2452	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347074-) not found]
P2453	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347074-) not found]
P2454	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347074-) not found]
P2455	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347074-) not found]
P2456	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347074-) not found]
P2459	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307772-) not found]
P2463	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307527-) not found]
P249C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307677-) not found]
P249D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307382-) not found]
P249E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307382-) not found]
P24A0	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307577-) not found]
P24A1	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307577-) not found]
P24A4	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307717-) not found]
P24AF	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350376-) not found]
P24B0	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350376-) not found]
P24B1	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350376-) not found]
P24B5	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350376-) not found]
P24B6	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350376-) not found]
P24C7	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350376-) not found]
P24C9	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350376-) not found]
P24D1	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350376-) not found]
P24DA	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350376-) not found]
P250A	Displays and Gauges - [Link target (target-id 211596-) not found]
P2534	Wiring Systems and Power Management - [Link target (target-id 221459-) not found]
P2535	Wiring Systems and Power Management - [Link target (target-id 221459-) not found]
P2544	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]

DTC	Diagnostic Procedure
P2544	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]
P2544	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P2561	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 276019-) not found]
P2564	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 314844-) not found]
P2565	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 314844-) not found]
P257D	Vehicle Access - [Link target (target-id 208940-) not found]
P257E	Vehicle Access - [Link target (target-id 208940-) not found]
P257F	Vehicle Access - [Link target (target-id 208940-) not found]
P2599	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 335071-) not found]
P25A2	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327564-) not found]
P25A2	Engine Controls and Fuel - 2.7L - [Link target (target-id 323782-) not found]
P25A2	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 276019-) not found]
P25AF	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 276019-) not found]
P25BD	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307311-) not found]
P25C6	Antilock Brake System - [Link target (target-id 302627-) not found]
P25C6	Hydraulic Brakes - [Link target (target-id 272270-) not found]
P25C7	Antilock Brake System - [Link target (target-id 302627-) not found]
P25C7	Hydraulic Brakes - [Link target (target-id 272270-) not found]
P25C9	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 276019-) not found]
P2610	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P2610	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P2610	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P261F	Engine Heating and Cooling - [Link target (target-id 330166-) not found]
P2627	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P2628	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P262B	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P262B	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P262B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P262B	Data Communications - [Link target (target-id 272300-) not found]
P262B	Driver Assistance Systems - [Link target (target-id 329011-) not found]
P264F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P264F	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P264F	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P2670	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P2670	Automatic Transmission - 8L80 - [Link target (target-id 323923-) not found]
P2671	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P2671	Automatic Transmission - 8L80 - [Link target (target-id 323923-) not found]
P2687	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307443-) not found]
P2688	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307443-) not found]
P2689	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307443-) not found]
P268C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309315-) not found]
P268D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309315-) not found]

DTC	Diagnostic Procedure
P268E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309315-) not found]
P268F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309315-) not found]
P2690	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309315-) not found]
P2691	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 309315-) not found]
P26B7	Engine Heating and Cooling - [Link target (target-id 351643-) not found]
P26B8	Engine Heating and Cooling - [Link target (target-id 351643-) not found]
P26B9	Engine Heating and Cooling - [Link target (target-id 351643-) not found]
P26BB	Engine Heating and Cooling - [Link target (target-id 351643-) not found]
P26C0	Engine Heating and Cooling - [Link target (target-id 341330-) not found]
P26C2	Engine Heating and Cooling - [Link target (target-id 341330-) not found]
P26C8	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327564-) not found]
P26C8	Engine Controls and Fuel - 2.7L - [Link target (target-id 323782-) not found]
P26C8	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 276019-) not found]
P26C9	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 276019-) not found]
P26E4	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 257465-) not found]
P26E5	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 257465-) not found]
P26E6	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 257465-) not found]
P2714	Automatic Transmission - 10L80 - [Link target (target-id 278308-) not found]
P2714	Automatic Transmission - 8L80 - [Link target (target-id 260363-) not found]
P2715	Automatic Transmission - 10L80 - [Link target (target-id 278308-) not found]
P2715	Automatic Transmission - 8L80 - [Link target (target-id 260363-) not found]
P2718	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P2718	Automatic Transmission - 8L80 - [Link target (target-id 323922-) not found]
P2720	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P2720	Automatic Transmission - 8L80 - [Link target (target-id 323922-) not found]
P2721	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P2721	Automatic Transmission - 8L80 - [Link target (target-id 323922-) not found]
P2723	Automatic Transmission - 10L80 - [Link target (target-id 278310-) not found]
P2723	Automatic Transmission - 8L80 - [Link target (target-id 260677-) not found]
P2724	Automatic Transmission - 10L80 - [Link target (target-id 278310-) not found]
P2724	Automatic Transmission - 8L80 - [Link target (target-id 260677-) not found]
P2727	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P2727	Automatic Transmission - 8L80 - [Link target (target-id 323922-) not found]
P2729	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P2729	Automatic Transmission - 8L80 - [Link target (target-id 323922-) not found]
P2730	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P2730	Automatic Transmission - 8L80 - [Link target (target-id 323922-) not found]
P2732	Automatic Transmission - 10L80 - [Link target (target-id 278312-) not found]
P2733	Automatic Transmission - 10L80 - [Link target (target-id 278312-) not found]
P2736	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P2736	Automatic Transmission - 8L80 - [Link target (target-id 323923-) not found]
P2738	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]

DTC	Diagnostic Procedure
P2738	Automatic Transmission - 8L80 - [Link target (target-id 323923-) not found]
P2739	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P2739	Automatic Transmission - 8L80 - [Link target (target-id 323923-) not found]
P2796	Automatic Transmission - 10L80 - [Link target (target-id 304109-) not found]
P2796	Automatic Transmission - 8L80 - [Link target (target-id 309966-) not found]
P2797	Automatic Transmission - 10L80 - [Link target (target-id 304109-) not found]
P2797	Automatic Transmission - 8L80 - [Link target (target-id 309966-) not found]
P2798	Automatic Transmission - 10L80 - [Link target (target-id 304109-) not found]
P2798	Automatic Transmission - 8L80 - [Link target (target-id 309966-) not found]
P2799	Automatic Transmission - 10L80 - [Link target (target-id 304109-) not found]
P2799	Automatic Transmission - 8L80 - [Link target (target-id 309966-) not found]
P279A	Transfer Case - MP 3015 - [Link target (target-id 302594-) not found]
P279A	Transfer Case - MP 3025 - [Link target (target-id 302595-) not found]
P279B	Transfer Case - MP 3015 - [Link target (target-id 302594-) not found]
P279B	Transfer Case - MP 3025 - [Link target (target-id 302595-) not found]
P279C	Transfer Case - MP 3015 - [Link target (target-id 302594-) not found]
P279C	Transfer Case - MP 3025 - [Link target (target-id 302595-) not found]
P27A7	Automatic Transmission - 10L80 - [Link target (target-id 278314-) not found]
P27A7	Automatic Transmission - 8L80 - [Link target (target-id 264791-) not found]
P27A8	Automatic Transmission - 10L80 - [Link target (target-id 278314-) not found]
P27A8	Automatic Transmission - 8L80 - [Link target (target-id 264791-) not found]
P27A9	Automatic Transmission - 10L80 - [Link target (target-id 278314-) not found]
P27A9	Automatic Transmission - 8L80 - [Link target (target-id 264791-) not found]
P27AA	Automatic Transmission - 10L80 - [Link target (target-id 278314-) not found]
P27AA	Automatic Transmission - 8L80 - [Link target (target-id 264791-) not found]
P27AB	Automatic Transmission - 10L80 - [Link target (target-id 278314-) not found]
P27AB	Automatic Transmission - 8L80 - [Link target (target-id 264791-) not found]
P27AC	Automatic Transmission - 10L80 - [Link target (target-id 278314-) not found]
P27AC	Automatic Transmission - 8L80 - [Link target (target-id 264791-) not found]
P27AD	Automatic Transmission - 10L80 - [Link target (target-id 278314-) not found]
P27AD	Automatic Transmission - 8L80 - [Link target (target-id 264791-) not found]
P27AE	Automatic Transmission - 10L80 - [Link target (target-id 278314-) not found]
P27B5	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P27B5	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P27B5	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P27EB	Automatic Transmission - 10L80 - [Link target (target-id 312083-) not found]
P27EC	Automatic Transmission - 10L80 - [Link target (target-id 316795-) not found]
P27ED	Automatic Transmission - 10L80 - [Link target (target-id 312083-) not found]
P27EE	Automatic Transmission - 10L80 - [Link target (target-id 312083-) not found]
P2802	Automatic Transmission - 10L80 - [Link target (target-id 278292-) not found]
P2802	Automatic Transmission - 8L80 - [Link target (target-id 312997-) not found]
P2803	Automatic Transmission - 10L80 - [Link target (target-id 278292-) not found]

DTC	Diagnostic Procedure
P2803	Automatic Transmission - 8L80 - [Link target (target-id 312997-) not found]
P2805	Automatic Transmission - 10L80 - [Link target (target-id 278292-) not found]
P2805	Automatic Transmission - 8L80 - [Link target (target-id 312997-) not found]
P2808	Automatic Transmission - 8L80 - [Link target (target-id 263743-) not found]
P2809	Automatic Transmission - 8L80 - [Link target (target-id 263743-) not found]
P2812	Automatic Transmission - 10L80 - [Link target (target-id 300998-) not found]
P2812	Automatic Transmission - 8L80 - [Link target (target-id 323923-) not found]
P2814	Automatic Transmission - 10L80 - [Link target (target-id 300998-) not found]
P2814	Automatic Transmission - 8L80 - [Link target (target-id 323923-) not found]
P2815	Automatic Transmission - 10L80 - [Link target (target-id 300998-) not found]
P2815	Automatic Transmission - 8L80 - [Link target (target-id 323923-) not found]
P2817	Automatic Transmission - 10L80 - [Link target (target-id 284324-) not found]
P2817	Automatic Transmission - 8L80 - [Link target (target-id 263745-) not found]
P2818	Automatic Transmission - 10L80 - [Link target (target-id 284324-) not found]
P2818	Automatic Transmission - 8L80 - [Link target (target-id 263745-) not found]
P281B	Automatic Transmission - 10L80 - [Link target (target-id 300998-) not found]
P281B	Automatic Transmission - 8L80 - [Link target (target-id 323922-) not found]
P281D	Automatic Transmission - 10L80 - [Link target (target-id 300998-) not found]
P281D	Automatic Transmission - 8L80 - [Link target (target-id 323922-) not found]
P281E	Automatic Transmission - 10L80 - [Link target (target-id 300998-) not found]
P281E	Automatic Transmission - 8L80 - [Link target (target-id 323922-) not found]
P2820	Automatic Transmission - 10L80 - [Link target (target-id 304110-) not found]
P2821	Automatic Transmission - 10L80 - [Link target (target-id 304110-) not found]
P2821	Automatic Transmission - 8L80 - [Link target (target-id 347866-) not found]
P2824	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P2824	Automatic Transmission - 8L80 - [Link target (target-id 323923-) not found]
P2826	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P2826	Automatic Transmission - 8L80 - [Link target (target-id 323923-) not found]
P2827	Automatic Transmission - 10L80 - [Link target (target-id 300999-) not found]
P2827	Automatic Transmission - 8L80 - [Link target (target-id 323923-) not found]
P28F7	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 315480-) not found]
P2957	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347499-) not found]
P2958	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 335071-) not found]
P295A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 335594-) not found]
P295C	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350352-) not found]
P29FA	Engine Heating and Cooling - [Link target (target-id 341330-) not found]
P29FB	Engine Heating and Cooling - [Link target (target-id 341330-) not found]
P2A00	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
P2A01	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
P2A02	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P2AB0	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350376-) not found]
P2AB8	Engine Controls and Fuel - 2.7L - [Link target (target-id 310257-) not found]

DTC	Diagnostic Procedure
P2AB9	Engine Controls and Fuel - 2.7L - [Link target (target-id 310257-) not found]
P2ADA	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
P2ADB	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
P2ADC	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
P2ADD	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
P2B00	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P2B00	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P2B01	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P2B01	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P2B02	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P2B02	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P2B03	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P2B03	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P2B04	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P2B05	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P2B06	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P2B07	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P2B08	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P2B08	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P2B09	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P2B09	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P2B0A	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P2B0A	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P2B0B	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P2B0B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P2B0C	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P2B0D	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P2B0E	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P2B0F	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P2B33	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P2B34	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P2B35	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P2B39	Engine Controls and Fuel - 2.7L - [Link target (target-id 328871-) not found]
P2B3A	Engine Controls and Fuel - 2.7L - [Link target (target-id 328871-) not found]
P2B3B	Engine Controls and Fuel - 2.7L - [Link target (target-id 328871-) not found]
P2B4F	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P2B51	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P2B53	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P2B58	Engine Heating and Cooling - [Link target (target-id 330897-) not found]
P2B59	Engine Heating and Cooling - [Link target (target-id 330897-) not found]
P2B5A	Engine Heating and Cooling - [Link target (target-id 330897-) not found]
P2B5B	Engine Heating and Cooling - [Link target (target-id 330897-) not found]

DTC	Diagnostic Procedure
P2B5C	Engine Heating and Cooling - [Link target (target-id 330897-) not found]
P2B5E	Engine Heating and Cooling - [Link target (target-id 330902-) not found]
P2B5F	Engine Heating and Cooling - [Link target (target-id 330902-) not found]
P2B60	Engine Heating and Cooling - [Link target (target-id 350313-) not found]
P2B81	Engine Controls and Fuel - 2.7L - [Link target (target-id 310257-) not found]
P2B83	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 328386-) not found]
P2B84	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 328386-) not found]
P2B86	Engine Heating and Cooling - [Link target (target-id 330166-) not found]
P2B87	Engine Heating and Cooling - [Link target (target-id 330166-) not found]
P2B93	Engine Controls and Fuel - 2.7L - [Link target (target-id 310257-) not found]
P2B95	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P2B95	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P2B96	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P2B96	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P2B97	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350352-) not found]
P2B98	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347128-) not found]
P2B99	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347128-) not found]
P2B9A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
P2BAD	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 307382-) not found]
P2C05	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P2C06	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P2C07	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P2C08	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P2C09	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P2C0A	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P2C0B	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P2C0C	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P2C0D	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P2C0E	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P2C0F	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P2C10	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P2C11	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313863-) not found]
P2C12	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P2C13	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P2C14	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P2C15	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P2C16	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P2C17	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P2C18	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P2C19	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P2C1E	Engine Controls and Fuel - 2.7L - [Link target (target-id 305888-) not found]
P2C1E	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 297085-) not found]

DTC	Diagnostic Procedure
P2C1F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 346946-) not found]
P2C1F	Engine Controls and Fuel - 2.7L - [Link target (target-id 305888-) not found]
P2C1F	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 297085-) not found]
P2C20	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 346946-) not found]
P2C20	Engine Controls and Fuel - 2.7L - [Link target (target-id 305888-) not found]
P2C20	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 297085-) not found]
P2C21	Displays and Gauges - [Link target (target-id 309840-) not found]
P2C63	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P2C64	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P2C65	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
P2C9B	Engine Controls and Fuel - 2.7L - [Link target (target-id 310257-) not found]
P2CE5	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347074-) not found]
P2CE6	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347074-) not found]
P2CE7	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347074-) not found]
P2CE8	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347074-) not found]
P2CE9	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347074-) not found]
P2D45	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327139-) not found]
P2DE7	Engine Heating and Cooling - [Link target (target-id 351643-) not found]
P2DE8	Engine Heating and Cooling - [Link target (target-id 341330-) not found]
P2E81	Engine Heating and Cooling - [Link target (target-id 341330-) not found]
P2EAD	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347079-) not found]
P305D	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 272220-) not found]
P305E	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 272220-) not found]
P3077	Engine Heating and Cooling - [Link target (target-id 330166-) not found]
P3078	Engine Heating and Cooling - [Link target (target-id 330166-) not found]
P3080	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P3081	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P3082	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P3083	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P3084	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P3085	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P3086	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P3087	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P3088	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P3089	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P308A	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P308B	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P308C	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P308D	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P308E	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P308F	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P3090	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]

DTC	Diagnostic Procedure
P3091	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P3092	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P3093	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P3094	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P3095	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P3096	Engine Controls and Fuel - 2.7L - [Link target (target-id 326034-) not found]
P3097	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P3098	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P3099	Engine Controls and Fuel - 2.7L - [Link target (target-id 328871-) not found]
P309A	Engine Controls and Fuel - 2.7L - [Link target (target-id 328871-) not found]
P309B	Engine Controls and Fuel - 2.7L - [Link target (target-id 328871-) not found]
P309C	Engine Controls and Fuel - 2.7L - [Link target (target-id 326035-) not found]
P30AE	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 328386-) not found]
P30AF	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 328386-) not found]
P30B0	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P30B1	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P30B2	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P30B3	Engine Controls and Fuel - 2.7L - [Link target (target-id 310669-) not found]
P30BE	Engine Controls and Fuel - 2.7L - [Link target (target-id 310670-) not found]
P30BF	Engine Controls and Fuel - 2.7L - [Link target (target-id 310670-) not found]
P30C2	Engine Controls and Fuel - 2.7L - [Link target (target-id 310670-) not found]
P30C3	Engine Controls and Fuel - 2.7L - [Link target (target-id 310670-) not found]
P30C6	Engine Controls and Fuel - 2.7L - [Link target (target-id 310670-) not found]
P30C7	Engine Controls and Fuel - 2.7L - [Link target (target-id 310670-) not found]
P30CA	Engine Controls and Fuel - 2.7L - [Link target (target-id 310670-) not found]
P30CB	Engine Controls and Fuel - 2.7L - [Link target (target-id 310670-) not found]
P30CE	Engine Controls and Fuel - 2.7L - [Link target (target-id 310671-) not found]
P30CF	Engine Controls and Fuel - 2.7L - [Link target (target-id 310671-) not found]
P30D0	Engine Controls and Fuel - 2.7L - [Link target (target-id 310671-) not found]
P30D1	Engine Controls and Fuel - 2.7L - [Link target (target-id 310671-) not found]
P30D4	Engine Controls and Fuel - 2.7L - [Link target (target-id 310223-) not found]
P30D4	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 333138-) not found]
P30D6	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P30D6	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P30D6	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P30D6	Data Communications - [Link target (target-id 272300-) not found]
P30D6	Driver Assistance Systems - [Link target (target-id 329012-) not found]
P30D7	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P30D7	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P30D7	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P30D7	Data Communications - [Link target (target-id 272300-) not found]
P30D7	Driver Assistance Systems - [Link target (target-id 329012-) not found]

DTC	Diagnostic Procedure
P30D8	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P30D8	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P30D8	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P30D8	Data Communications - [Link target (target-id 272300-) not found]
P30D8	Driver Assistance Systems - [Link target (target-id 329012-) not found]
P30D9	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P30D9	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P30D9	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P30D9	Data Communications - [Link target (target-id 272300-) not found]
P30D9	Driver Assistance Systems - [Link target (target-id 329012-) not found]
P30DA	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P30DA	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P30DA	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P30DA	Data Communications - [Link target (target-id 272300-) not found]
P30DB	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P30DB	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P30DB	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P30DB	Data Communications - [Link target (target-id 272300-) not found]
P30DC	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P30DC	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P30DC	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P30DC	Data Communications - [Link target (target-id 272300-) not found]
P30DD	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P30DD	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P30DD	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P30DD	Data Communications - [Link target (target-id 272300-) not found]
P30DE	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]
P30DE	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]
P30DE	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P30EC	Antilock Brake System - [Link target (target-id 310827-) not found]
P3105	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3106	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3108	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3109	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P310B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P310C	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P310E	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P310F	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3111	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3112	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3114	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3115	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]

DTC	Diagnostic Procedure
P3117	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3118	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P311A	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P311B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P314E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327050-) not found]
P314E	Engine Controls and Fuel - 2.7L - [Link target (target-id 324175-) not found]
P314E	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 316955-) not found]
P314F	Antilock Brake System - [Link target (target-id 309494-) not found]
P3186	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P3186	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P3186	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P3186	Data Communications - [Link target (target-id 272300-) not found]
P3186	Driver Assistance Systems - [Link target (target-id 329013-) not found]
P3187	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327624-) not found]
P3187	Engine Controls and Fuel - 2.7L - [Link target (target-id 338053-) not found]
P3187	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 327505-) not found]
P3188	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327624-) not found]
P3188	Engine Controls and Fuel - 2.7L - [Link target (target-id 338053-) not found]
P3188	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 327505-) not found]
P3189	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304087-) not found]
P318A	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304087-) not found]
P318B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304087-) not found]
P318C	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304087-) not found]
P318D	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304087-) not found]
P318E	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304087-) not found]
P318F	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304087-) not found]
P3190	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304087-) not found]
P3191	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 323900-) not found]
P3191	Engine Controls and Fuel - 2.7L - [Link target (target-id 324285-) not found]
P3191	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324290-) not found]
P31C2	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 365478-) not found]
P31C3	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 346596-) not found]
P3400	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3401	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3403	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3404	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3409	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3411	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3412	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3417	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3419	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3420	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]

DTC	Diagnostic Procedure
P3425	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3427	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3428	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3433	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3435	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3436	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3441	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3443	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3444	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3449	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3451	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3452	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3457	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3459	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3460	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3498	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P3499	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P349A	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P349B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P349C	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P349D	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P349E	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
P349F	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 304086-) not found]
U0073	Data Communications - [Link target (target-id 148027-) not found]
U0074	Data Communications - [Link target (target-id 168614-) not found]
U0075	Data Communications - [Link target (target-id 219671-) not found]
U0076	Data Communications - [Link target (target-id 225597-) not found]
U0079	Data Communications - [Link target (target-id 313798-) not found]
U007B	Data Communications - [Link target (target-id 274046-) not found]
U007E	Data Communications - [Link target (target-id 277590-) not found]
U0100-U02FF	Data Communications - [Link target (target-id 148031-) not found]
U0125	Data Communications - [Link target (target-id 284672-) not found]
U0212	Data Communications - [Link target (target-id 329087-) not found]
U029D	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327907-) not found]
U029E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327907-) not found]
U02A1	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327907-) not found]
U02A3	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 327907-) not found]
U02A9	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 328386-) not found]
U02BB	Engine Controls and Fuel - 2.7L - [Link target (target-id 310705-) not found]
U03C1	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 362333-) not found]
U0400-U05FF	Data Communications - [Link target (target-id 179843-) not found]
U04A4	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350376-) not found]

DTC	Diagnostic Procedure
U059E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 338020-) not found]
U059F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350348-) not found]
U05A8	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350355-) not found]
U05AA	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 328386-) not found]
U0600-U06FF	Data Communications - [Link target (target-id 276055-) not found]
U0601	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347074-) not found]
U0606	Engine Controls and Fuel - 2.7L - [Link target (target-id 332874-) not found]
U0606	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 332809-) not found]
U0607	Engine Controls and Fuel - 2.7L - [Link target (target-id 332874-) not found]
U0607	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 332809-) not found]
U060F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 362333-) not found]
U060F	Engine Controls and Fuel - 2.7L - [Link target (target-id 326137-) not found]
U060F	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 323319-) not found]
U0617	Engine Heating and Cooling - [Link target (target-id 351643-) not found]
U0618	Engine Heating and Cooling - [Link target (target-id 341330-) not found]
U061F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347083-) not found]
U0620	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347083-) not found]
U0623	Engine Heating and Cooling - [Link target (target-id 330166-) not found]
U0625	Engine Controls and Fuel - 2.7L - [Link target (target-id 323120-) not found]
U0625	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324301-) not found]
U063F	Engine Heating and Cooling - [Link target (target-id 330902-) not found]
U0644	Engine Controls and Fuel - 2.7L - [Link target (target-id 310257-) not found]
U064F	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313022-) not found]
U0650	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313844-) not found]
U0651	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347034-) not found]
U0653	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347034-) not found]
U0654	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 313014-) not found]
U0656	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 314844-) not found]
U0669	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347038-) not found]
U0670	Engine Controls and Fuel - 2.7L - [Link target (target-id 323120-) not found]
U0670	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324301-) not found]
U0671	Engine Controls and Fuel - 2.7L - [Link target (target-id 323120-) not found]
U0671	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324301-) not found]
U068E	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347570-) not found]
U0696	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347074-) not found]
U069A	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 347083-) not found]
U1002	Data Communications - [Link target (target-id 265917-) not found]
U1004	Data Communications - [Link target (target-id 317042-) not found]
U1005	Data Communications - [Link target (target-id 317043-) not found]
U1006	Data Communications - [Link target (target-id 317044-) not found]
U1007	Data Communications - [Link target (target-id 317045-) not found]
U1008	Data Communications - [Link target (target-id 317046-) not found]

DTC	Diagnostic Procedure
U1009	Data Communications - [Link target (target-id 317047-) not found]
U100B	Data Communications - [Link target (target-id 317049-) not found]
U101A	Data Communications - [Link target (target-id 317051-) not found]
U101B	Engine Controls and Fuel - 2.7L - [Link target (target-id 323120-) not found]
U101B	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 324301-) not found]
U1109	Data Communications - [Link target (target-id 329043-) not found]
U110A	Data Communications - [Link target (target-id 329044-) not found]
U111B	Data Communications - [Link target (target-id 329051-) not found]
U1121	Data Communications - [Link target (target-id 329054-) not found]
U1122	Data Communications - [Link target (target-id 329055-) not found]
U1123	Data Communications - [Link target (target-id 329056-) not found]
U1126	Data Communications - [Link target (target-id 329058-) not found]
U1127	Data Communications - [Link target (target-id 301016-) not found]
U112D	Data Communications - [Link target (target-id 329059-) not found]
U113B	Data Communications - [Link target (target-id 329070-) not found]
U1145	Data Communications - [Link target (target-id 329073-) not found]
U1146	Data Communications - [Link target (target-id 329074-) not found]
U1150	Data Communications - [Link target (target-id 329077-) not found]
U1151	Data Communications - [Link target (target-id 329078-) not found]
U11FD	Data Communications - [Link target (target-id 349284-) not found]
U1300-U1344	Data Communications - [Link target (target-id 317053-) not found]
U1319	Engine Controls and Fuel - 2.7L - [Link target (target-id 326137-) not found]
U1319	Engine Controls and Fuel - 5.3L, 6.2L - [Link target (target-id 323319-) not found]
U1345-U1349	Data Communications - [Link target (target-id 317756-) not found]
U134A-U14FF	Data Communications - [Link target (target-id 317053-) not found]
U1379	Engine Heating and Cooling - [Link target (target-id 341330-) not found]
U137A	Engine Controls and Fuel - 2.7L - [Link target (target-id 310705-) not found]
U137E	Engine Heating and Cooling - [Link target (target-id 330166-) not found]
U1500-U15FF	Data Communications - [Link target (target-id 179844-) not found]
U1600	Data Communications - [Link target (target-id 195726-) not found]
U1602	Data Communications - [Link target (target-id 328899-) not found]
U1603	Data Communications - [Link target (target-id 328900-) not found]
U1604	Data Communications - [Link target (target-id 317757-) not found]
U1605	Data Communications - [Link target (target-id 317758-) not found]
U1607	Data Communications - [Link target (target-id 328512-) not found]
U1608	Data Communications - [Link target (target-id 328513-) not found]
U1609	Data Communications - [Link target (target-id 328514-) not found]
U160A	Data Communications - [Link target (target-id 328515-) not found]
U160B	Data Communications - [Link target (target-id 328516-) not found]
U160C	Data Communications - [Link target (target-id 328517-) not found]
U160F	Data Communications - [Link target (target-id 328518-) not found]
U1610	Data Communications - [Link target (target-id 328519-) not found]

DTC	Diagnostic Procedure
U1611	Data Communications - [Link target (target-id 319395-) not found]
U1614	Data Communications - [Link target (target-id 328521-) not found]
U1615	Data Communications - [Link target (target-id 328522-) not found]
U1616	Data Communications - [Link target (target-id 328523-) not found]
U1619	Data Communications - [Link target (target-id 330988-) not found]
U161B	Data Communications - [Link target (target-id 349328-) not found]
U1623	Data Communications - [Link target (target-id 328524-) not found]
U1624	Data Communications - [Link target (target-id 328525-) not found]
U1625	Data Communications - [Link target (target-id 328526-) not found]
U1626	Data Communications - [Link target (target-id 328527-) not found]
U1641	Data Communications - [Link target (target-id 349291-) not found]
U1642	Data Communications - [Link target (target-id 335270-) not found]
U1643	Data Communications - [Link target (target-id 332932-) not found]
U164A	Data Communications - [Link target (target-id 332934-) not found]
U164B	Data Communications - [Link target (target-id 335271-) not found]
U164E	Data Communications - [Link target (target-id 332935-) not found]
U164F	Data Communications - [Link target (target-id 332936-) not found]
U1650	Data Communications - [Link target (target-id 184700-) not found]
U1651	Data Communications - [Link target (target-id 184702-) not found]
U166A	Data Communications - [Link target (target-id 332946-) not found]
U1818	Data Communications - [Link target (target-id 168622-) not found]
U18A2	Data Communications - [Link target (target-id 225598-) not found]
U18C6	Data Communications - [Link target (target-id 289947-) not found]
U18C7	Data Communications - [Link target (target-id 289948-) not found]
U18D2	Data Communications - [Link target (target-id 289953-) not found]
U18D3	Data Communications - [Link target (target-id 289954-) not found]
U18E2	Data Communications - [Link target (target-id 317760-) not found]
U1960	Driver Assistance Systems - [Link target (target-id 329015-) not found]
U1960-U1962	Data Communications - [Link target (target-id 315363-) not found]
U1961	Image Display Cameras - [Link target (target-id 364463-) not found]
U1961	Driver Assistance Systems - [Link target (target-id 329015-) not found]
U1967	Cellular, Entertainment, and Navigation - [Link target (target-id 319002-) not found]
U196E	Power Outlets - [Link target (target-id 359630-) not found]
U1970-U1972	Data Communications - [Link target (target-id 317761-) not found]
U1973	Displays and Gauges - [Link target (target-id 309457-) not found]
U1977	Data Communications - [Link target (target-id 317061-) not found]
U1978	Data Communications - [Link target (target-id 317062-) not found]
U197B	Data Communications - [Link target (target-id 317065-) not found]
U197C	Data Communications - [Link target (target-id 317066-) not found]
U197D	Data Communications - [Link target (target-id 317067-) not found]
U197E	Displays and Gauges - [Link target (target-id 317153-) not found]
U197F	Displays and Gauges - [Link target (target-id 317154-) not found]

DTC	Diagnostic Procedure
U1982-U1984	Data Communications - [Link target (target-id 320510-) not found]
U198B	Data Communications - [Link target (target-id 349296-) not found]
U2000-U20FF	Data Communications - [Link target (target-id 317070-) not found]
U2110-U2117	Data Communications - [Link target (target-id 317071-) not found]
U2201	Data Communications - [Link target (target-id 179643-) not found]
U2203	Data Communications - [Link target (target-id 328595-) not found]
U2204	Data Communications - [Link target (target-id 328622-) not found]
U2205	Data Communications - [Link target (target-id 328623-) not found]
U2209	Data Communications - [Link target (target-id 328624-) not found]
U220C	Data Communications - [Link target (target-id 328626-) not found]
U220D	Data Communications - [Link target (target-id 328627-) not found]
U220E	Data Communications - [Link target (target-id 328628-) not found]
U220F	Data Communications - [Link target (target-id 328629-) not found]
U2211	Data Communications - [Link target (target-id 328630-) not found]
U2212	Data Communications - [Link target (target-id 328631-) not found]
U2213	Data Communications - [Link target (target-id 328632-) not found]
U2215	Data Communications - [Link target (target-id 328633-) not found]
U221A	Data Communications - [Link target (target-id 328634-) not found]
U2405	Data Communications - [Link target (target-id 328635-) not found]
U240D	Data Communications - [Link target (target-id 289955-) not found]
U240E	Data Communications - [Link target (target-id 289956-) not found]
U2413	Data Communications - [Link target (target-id 301778-) not found]
U2418	Data Communications - [Link target (target-id 328636-) not found]
U2419	Data Communications - [Link target (target-id 328637-) not found]
U241C	Data Communications - [Link target (target-id 328638-) not found]
U241D	Data Communications - [Link target (target-id 328639-) not found]
U250D	Data Communications - [Link target (target-id 328640-) not found]
U2627	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
U2628	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
U2630	Engine Controls and Fuel - 3.0L Diesel - [Link target (target-id 350381-) not found]
U2A90	Displays and Gauges - [Link target (target-id 322010-) not found]
U2A91	Displays and Gauges - [Link target (target-id 322011-) not found]
U2C91	Data Communications - [Link target (target-id 349297-) not found]
U3000	Displays and Gauges - [Link target (target-id 324190-) not found]
U3000	Image Display Cameras - [Link target (target-id 327503-) not found]
U3000	Data Communications - [Link target (target-id 229188-) not found]
U3000	Driver Assistance Systems - [Link target (target-id 317614-) not found]
U3000	Driver Monitoring - [Link target (target-id 354524-) not found]
U3000	Parking Assistance Systems - [Link target (target-id 320659-) not found]
U3000	Supplemental Restraints - [Link target (target-id 321864-) not found]
U3000	Power Seats - [Link target (target-id 352062-) not found]
U3000	Power Steering - [Link target (target-id 317740-) not found]

DTC	Diagnostic Procedure
U3002	Antilock Brake System - [Link target (target-id 309495-) not found]
U3002	Data Communications - [Link target (target-id 280674-) not found]
U3002	Driver Assistance Systems - [Link target (target-id 329016-) not found]
U3003	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 205272-) not found]
U300D	Wiring Systems and Power Management - [Link target (target-id 319488-) not found]
U3018	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 297157-) not found]
U3019	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 297157-) not found]
U3023	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 327359-) not found]
U3034	Data Communications - [Link target (target-id 315363-) not found]
U3035	Data Communications - [Link target (target-id 315363-) not found]
U3501-U3588	Starting, Charging, and Low Voltage Energy Storage - [Link target (target-id 297157-) not found]
U35B9	Data Communications - [Link target (target-id 332964-) not found]

Symptom Byte List

Symptom Byte List

Symptom Byte	Symptom Byte Description	Symptom Byte Definition
00	No Sub Type Information	This sub type is used for failures where the base DTC text string provides the complete description of the failure itself.
01	General Electrical Failure	This sub type is used for General Electrical Failures that cannot be assigned to a specific sub type.
02	General Signal Failure	This sub type is used for General Signal Failures that cannot be assigned to a specific sub type.
03	FM (Frequency Modulated) / PWM (Pulse Width Modulated) Failure	This sub type is used for FM / PWM Failures that cannot be assigned to a specific sub type.
04	System Internal Failure	This sub type is used for control module Internal Failures that cannot be assigned to a specific sub type.
05	System Programming Failure	This sub type is used for System Programming Failures that cannot be assigned to a specific sub type.
06	Algorithm Based Failure	This sub type is used for Algorithm Based Failures that cannot be assigned to a specific sub type.
07	Mechanical Failure	This sub type is used for Mechanical Failures that cannot be assigned to a specific sub type.
08	Bus Signal / Message Failure	This sub type is used for Bus Signal / Message Failures that cannot be assigned to a specific sub type.
09	Component Failure	This sub type is used for Component Failures that cannot be assigned to a specific sub type.
0A	General Electric Failures — 2	This range specifies the standard wiring failure modes (i.e., shorts and opens), and direct current (DC) quantities related by Ohm's Law.
0B	Reserved	—
0C	Reserved	—
0D	Reserved	—
0E	Reserved	—
0F	Reserved	—
10	Reserved	—

Symptom Byte	Symptom Byte Description	Symptom Byte Definition
11	Circuit Short To Ground	This sub type is used for failures where the control module measures ground (battery negative) potential for greater than a specified time period or when some other value less than the low voltage limit DTC Sub Type is measured.
12	Circuit Short To Battery	This sub type is used for failures, where the control module measures vehicle system (battery positive) potential for greater than a specified time period or when some other value higher than the high voltage limit DTC Sub Type is measured.
13	Circuit Open	This sub type is used for failures, where the control module determines an open circuit via lack of bias voltage, low current flow, no change in the state of an input in response to an output, etc.
14	Circuit Short To Ground or Open	This sub type is used for failures, where the condition detected by the control module is the same for either indicated failure mode.
15	Circuit Short To Battery or Open	This sub type is used for failures, where the condition detected by the control module is the same for either indicated failure mode.
16	Circuit Voltage Below Threshold	This sub type is used for failures, where the control module measures a voltage below a specified range.
17	Circuit Voltage Above Threshold	This sub type is used for failures, where the control module measures a voltage above a specified range.
18	Circuit Current Below Threshold	This sub type is used for failures, where the control module measures current flow below a specified range.
19	Circuit Current Above Threshold	This sub type is used for failures, where the control module measures current flow above a specified range.
1A	Circuit Resistance Below Threshold	This sub type is used for failures, where the control module infers a circuit resistance below a specified range.
1B	Circuit Resistance Above Threshold	This sub type is used for failures, where the control module infers a circuit resistance above a specified range.
1C	Circuit Voltage Out of Range	This sub type is used for failures, where the control module measures a voltage outside the expected range but not identified as too high or too low.
1D	Circuit Current Out of Range	This sub type is used for failures, where the control module measures a current outside the expected range but not identified as too high or too low.
1E	Circuit Resistance Out of Range	This sub type is used for failures, where the control module measures a resistance outside the expected range but not identified as too high or too low.
1F	Circuit Intermittent	This sub type is used for failures, where the control module momentarily detects one of the conditions defined above, but not long enough to set a specific sub type.
20	Reserved	—
21	Signal Amplitude < Minimum	This sub type is used for failures where the control module measures a signal voltage amplitude below a specified range (e.g., low gain).
22	Signal Amplitude > Maximum	This sub type is used for failures where the control module measures a signal voltage amplitude above a specified range (e.g., gain too high).
23	Signal Stuck Low	This sub type is used for failures where the control module measures a signal that remains low when transitions are expected.
24	Signal Stuck High	This sub type is used for failures where the control module measures a signal that remains high when transitions are expected.
25	Signal Shape / Waveform Failure	This sub type is used for failures where the shape of the signal (plot of the amplitude with respect to time) is not correct, e.g., improper circuit impedance.

Symptom Byte	Symptom Byte Description	Symptom Byte Definition
26	Signal Rate of Change Below Threshold	This sub type is used for failures where the signal transitions more slowly than the specified limit.
27	Signal Rate of Change Above Threshold	This sub type is used for failures where the signal transitions more quickly than the specified limit.
28	Signal Bias Level Out of Range / Zero Adjustment Failure	This sub type is used for failures where the control module applies a bias voltage or a zero signal level to a circuit upon which is superimposed a signal voltage (e.g., bias voltage to an Oxygen Sensor circuit, or a filtered digital m/sec2 signal while vehicle stands still for a lateral accelerator sensor module.)
29	Signal Invalid	This sub type is used for failures where the value of the signal is not plausible given the operating conditions.
2A	Signal Stuck In Range	This sub type is used for failures where the value of the signal is in the normal operating range, but not correct for current operating conditions.
2B	Signal Cross Coupled	This sub type is used when a signal is found to be incorrectly correlated to another signal that the control module is also monitoring, indicating that the signals are shorted together
2C	Reserved	—
2D	Reserved	—
2E	Reserved	—
2F	Signal Erratic	This sub type is used for failures where the signal is momentarily implausible (not long enough for "signal invalid") or discontinuous.
30	Reserved	—
31	No Signal	This sub type is used for failures where the control module does not detect a signal which ought to be present (e.g., wheel speed signals present for three of the four wheels and brakes not applied.)
32	Signal Low Time < Minimum	This sub type is used for failures where the control module detects the low pulse is too narrow with respect to time.
33	Signal Low Time > Maximum	This sub type is used for failures where the control module detects the low pulse is too wide with respect to time.
34	Signal High Time < Minimum	This sub type is used for failures where the control module detects the high pulse is too narrow with respect to time.
35	Signal High Time > Maximum	This sub type is used for failures where the control module detects the high pulse is too wide with respect to time.
36	Signal Frequency Too Low	This sub type is used for failures where the control module detects excessive duration for one cycle of the output across a specified sample size.
37	Signal Frequency Too High	This sub type is used for failures where the control module detects insufficient duration for one cycle of the output across a specified sample size.
38	Signal Frequency Incorrect	This sub type is used for failures where the control module measures an incorrect number of cycles in a given time period.
39	Signal Has Too Few Pulses	This sub type is used for failures where the control module measures too few pulses (e.g., position is calibrated in counts from one extreme to the other).
3A	Signal Has Too Many Pulses	This sub type is used for failures where the control module measures too many pulses (e.g., position is calibrated in counts from one extreme to the other).
3B	Reserved	—
3C	Reserved	—
3D	Reserved	—
3E	Reserved	—

Symptom Byte	Symptom Byte Description	Symptom Byte Definition
3F	Reserved	—
40	Reserved	—
41	General Checksum Failure	This sub type is used by the control module to indicate an incorrect checksum calculation where memory type is not specified.
42	General Memory Failure	This sub type is used by the control module to indicate a memory failure where memory type is not specified.
43	Special Memory Failure	This sub type is used by the control module to indicate a memory failure where the specific memory type is not defined in this category.
44	Data Memory Failure	This sub type is used by the control module to indicate a data (or working) memory failure for embedded systems using FLASH memory. This is equivalent to RAM in RAM/ROM/EEPROM embedded systems.
45	Program Memory Failure	This sub type is used by the control module to indicate a program memory failure for embedded systems using FLASH memory. This is equivalent to ROM in RAM/ROM/EEPROM embedded systems.
46	Calibration / Parameter Memory Failure	This sub type is used by the control module to indicate a calibration / parameter memory failure for embedded systems using FLASH memory. This is equivalent to EEPROM in RAM/ROM/EEPROM embedded systems.
47	Watchdog / Safety µC Failure	This sub type is used by the control module to indicate a watchdog / safety µC failure, or a failure in the execution of operational software.
48	Supervision Software Failure	This sub type is used by the control module to indicate a supervision software failure.
49	Internal Electronic Failure	This sub type is used by the control module to indicate the detection of an internal circuit failure.
4A	Incorrect Component Installed	This sub type is used by the control module to indicate a mismatch between the hardware connected to the control module and the hardware expected by the control module.
4B	Over Temperature	This sub type is used by the control module to indicate the detection of an internal temperature above the expected range.
4C	Reserved	—
4D	Reserved	—
4E	Reserved	—
4F	Reserved	—
50	Reserved	—
51	Not Programmed	This sub type is used by the control module to indicate that programming is required.
52	Not Activated	This sub type is used by the control module to indicate that some portion of the program has not been enabled.
53	Deactivated	This sub type is used by the control module to indicate that that some portion of the program has been disabled.
54	Missing Setup/Learn	This sub type is used by the control module to indicate that an operational range, etc., for a sensor or actuator must be taught to the control module, e.g. by programming or learning.
55	Not Configured	This sub type is used by the control module to indicate the need to enter (program) the sub system option content or the vehicle option content.
56	Invalid / Incompatible Configuration	This sub type indicates a control module or system configuration that cannot be valid, e.g. to have mutually exclusive options set on at the same time, or a set up that is not supported by the currently installed hardware/software.

Symptom Byte	Symptom Byte Description	Symptom Byte Definition
57	Invalid / Incompatible Software Component	This sub type is used by the control module to indicate that a software component (calibration or program) has been identified as invalid for the control module or incompatible with other hardware or software identified by the control module, e.g. a downloaded calibration software component is incompatible with a permanent or downloaded strategy software component.
58	Reserved	—
59	Reserved	—
5A	Reserved	—
5B	Reserved	—
5C	Reserved	—
5D	Reserved	—
5E	Reserved	—
5F	Reserved	—
60	Reserved	—
61	Signal Calculation Failure	This sub type is used for algorithm based calculation failures where the calculated value is outside the expected range.
62	Signal Compare Failure	This sub type is used for failures where the control module compares two or more input parameters for plausibility but cannot specifically identify the component that is faulted.
63	Circuit / Component Protection Time-Out	This sub type is used for failures where the control module detects a function is active for greater than a specified time period.
64	Signal Plausibility Failure	This sub type is used for failures where the control module detects a single input parameter is operating outside the plausible range.
65	Signal Has Too Few Transitions / Events	This sub type is used for failures where the control module monitors a parameter over time within specified limits and detects fewer than the expected number of transitions.
66	Signal Has Too Many Transitions / Events	This sub type is used for failures where the control module monitors a parameter over time within specified limits and detects more than the expected number of transitions.
67	Signal Incorrect After Event	This sub type is used for failures where the control module does not see the correct change of a parameter or group of parameters in response to a particular event.
68	Event Information	This sub type is used by the control module to indicate the detection of a system event that was not caused by the control module itself but forces the control module to store a DTC (e.g. missing functionality from another system/control module).
69	Reserved	—
6A	Reserved	—
6B	Reserved	—
6C	Reserved	—
6D	Reserved	—
6E	Reserved	—
6F	Reserved	—
70	Reserved	—
71	Actuator Stuck	This sub type is used for failures where the control module does not detect any mechanical motion in response to energizing a motor, solenoid, relay, etc.

Symptom Byte	Symptom Byte Description	Symptom Byte Definition
72	Actuator Stuck Open	This sub type is used for failures where the control module does not detect any mechanical motion upon commanding the operation of a motor, solenoid, relay, etc., to close some piece of equipment.
73	Actuator Stuck Closed	This sub type is used for failures where the control module does not detect any mechanical motion upon commanding the operation of a motor, solenoid, relay, etc., to open some piece of equipment.
74	Actuator Slipping	This sub type is used for failures where the control module detects excessive duration to command a motor, solenoid, relay, etc., to move a piece of equipment to a desired position.
75	Emergency Position Not Reachable	This sub type is used for failures where the control module is unable to command a motor, solenoid, relay, etc., to move a piece of equipment to the emergency position.
76	Wrong Mounting Position	This sub type is used for failures where the control module detects incorrectly mounted components, e.g., acceleration sensor showing a position error of 90°.
77	Commanded Position Not Reachable	This sub type is used for failures where the control module is unable to command a motor, solenoid, relay, etc., to move a piece of equipment to the commanded position either due to a failure in the actuator or its mechanical environment.
78	Alignment or Adjustment Incorrect	This sub type is used for failures where the control module detects incorrectly adjusted or aligned components.
79	Mechanical Linkage Failure	This sub type is used for failures where the control module detects that the actuator is operational but the driven device is not operating, e.g., drive cable for power sliding door broken.
7A	Fluid Leak or Seal Failure	This sub type is used for failures where the control module detects that a mechanical component has an unexpected gas or liquid flow in, out, or through the component.
7B	Low Fluid Level	This sub type is used for failures where the control module detects that a fluid level is too low for proper operation of the system.
7C	Slow Response	This sub type is used where control module has detected a response that is longer than expected or a degraded rate of change in the monitored component or system.
7D	Reserved	—
7E	Actuator Stuck On	This sub type is used for failures where the control module detects the actuator mechanical function is fixed in the ON / applied state
7F	Actuator Stuck Off	This sub type is used for failures where the control module detects the actuator mechanical function is fixed in the OFF / Released state.
80	Reserved	—
81	Invalid Serial Data Received	This sub type is used by the control module to indicate a signal was received with the corresponding validity bit equal to "invalid" or post processing of the signal determines it is invalid.
82	Alive / Sequence Counter Incorrect / Not Updated	This sub type is used by the control module to indicate that a signal was received without the corresponding rolling count value being properly updated.
83	Value of Signal Protection Calculation Incorrect	This sub type is used by the control module to indicate, that a message was processed with an incorrect protection (checksum) calculation.
84	Signal Below Allowable Range	This sub type is used for failures where some circuit quantity, reported via serial data, is below a specified range.
85	Signal Above Allowable Range	This sub type is used for failures where some circuit quantity, reported via serial data, is above a specified range.

Symptom Byte	Symptom Byte Description	Symptom Byte Definition
86	Signal Invalid	This sub type is used for failures where some circuit quantity, reported via serial data, is not plausible given the operating conditions.
87	Missing Message	This sub type is used for failures where one (or more) expected message(s) is not received, e.g., periodic transmission where the repetition time is too high, or message not received as a result of unforeseen reset events of the concerning component (e.g. engine control unit communicating with ABS).
88	Bus off	This sub type is used for failures where a data bus is not available.
89	Data Transfer Failure	This subtype is for failures where an ECU requests a data transfer from an external source (off-board, on-board, or another ECU) and the data transfer initiates but fails to complete.
8A	Reserved	—
8B	Reserved	—
8C	Reserved	—
8D	Reserved	—
8E	Reserved	—
8F	Erratic	This sub type is used for failures where the signal, reported via serial data, is momentarily implausible or discontinuous.
90	Reserved	—
91	Parametric	This sub type is used for failures where the control module has detected that a component parameter (e.g., capacitance or inductance) is outside its expected range.
92	Performance or Incorrect Operation	This sub type is used for failures where the control module has detected that the component performance is outside its expected range or operating in an incorrect way.
93	No Operation	This sub type is used for failures where the control module has detected that the component is not operating.
94	Unexpected Operation	This sub type is used for failures where the control module has detected that the component is operating in a way or at a time that it has not been commanded to operate.
95	Incorrect Assembly	This sub type is used for failures where the control module has detected that the component has been incorrectly installed (e.g., hydraulic pipes crossed over, circuits cross wired) or polarity errors.
96	Component Internal Failure	This sub type is used for failures where the control module has received an indication about the component that indicates a failure (e.g., an intelligent actuator or sensor) is indicating an internal fault.
97	Component or System Operation Obstructed or Blocked	This sub type is used for failures where the control module has detected that the operation of a component is prevented by an obstruction, e.g., advanced cruise system radar beam obstructed.
98	Component or System Over Temperature	This sub type is used for failures where the control module has detected that the temperature is too high for the correct operation of the component or system.
99	Exceeded Learning Limit	This sub type is used for failures where the control module has detected that the component or system has exceeded the expected range allowed for learning component tolerances.
9A	Component or System Operating Conditions	This sub type is used for failures where the control module has detected that environmental or other operating conditions are either temporarily or permanently outside the design limits for correct operation such that all or part of a component function is inhibited or fails, e.g. a radio is disabled because its LCD display or its CD mechanism cannot operate at a low ambient temperature.

Symptom Byte	Symptom Byte Description	Symptom Byte Definition
9B	High/Excessive Flow	This sub type is used for failures where the control module has detected that the component or system is operating above the expected flow range flow, e.g. too much EGR at idle.
9C	Low/Insufficient Flow	This sub type is used for failures where the control module has detected that the component or system is operating below the expected flow range flow, e.g. too little EGR at part throttle.
9D	Component or System Under Temperature	This sub type is used for failures where the control module has detected that the temperature is too low for the correct operation of the component or system.
9E	Stuck On	This sub type is used for failures where the control module detects the electrical circuit or switch is fixed in the ON / Applied state
9F	Stuck Off	This sub type is used for failures where the control module detects the electrical circuit or switch is fixed in the OFF / Released state.
A0	Reserved	—
A1	System Voltage	This sub type is used for failures, where the control module system voltage is outside the expected range but not identified as too high or too low.
A2	System Voltage Low	This sub type is used for failures where the control module system voltage is below a specified range.
A3	System Voltage High	This sub type is used for failures where the control module system voltage is above a specified range.
A4	Reserved	—
A5	Reserved	—
A6	Reserved	—
A7	Reserved	—
A8	Reserved	—
A9	Reserved	—
AA	Reserved	—
AB	Reserved	—
AC	Reserved	—
AD	Reserved	—
AE	Reserved	—
AF	Reserved	—
B0	Reserved	—
B1	Reserved	—
B2	Reserved	—
B3	Reserved	—
B4	Reserved	—
B5	Reserved	—
B6	Reserved	—
B7	Reserved	—
B8	Reserved	—
B9	Reserved	—
BA	Reserved	—
BB	Reserved	—
BC	Reserved	—

Symptom Byte	Symptom Byte Description	Symptom Byte Definition
BD	Reserved	—
BE	Reserved	—
BF	Reserved	—
C0	Reserved	—
C1	Reserved	—
C2	Reserved	—
C3	Reserved	—
C4	Reserved	—
C5	Reserved	—
C6	Reserved	—
C7	Reserved	—
C8	Reserved	—
C9	Reserved	—
CA	Reserved	—
CB	Reserved	—
CC	Reserved	—
CD	Reserved	—
CE	Reserved	—
CF	Reserved	—
D0	Reserved	—
D1	Reserved	—
D2	Reserved	—
D3	Reserved	—
D4	Reserved	—
D5	Reserved	—
D6	Reserved	—
D7	Reserved	—
D8	Reserved	—
D9	Reserved	—
DA	Reserved	—
DB	Reserved	—
DC	Reserved	—
DD	Reserved	—
DE	Reserved	—
DF	Reserved	—
E0	Reserved	—
E1	Reserved	—
E2	Reserved	—
E3	Reserved	—
E4	Reserved	—
E5	Reserved	—
E6	Reserved	—

Symptom Byte	Symptom Byte Description	Symptom Byte Definition
E7	Reserved	—
E8	Reserved	—
E9	Reserved	—
EA	Reserved	—
EB	Reserved	—
EC	Reserved	—
ED	Reserved	—
EE	Reserved	—
EF	Reserved	—
F0	Manufacturer Defined	This value is reserved for vehicle manufacturer/system supplier use.
F1	Manufacturer Defined	This value is reserved for vehicle manufacturer/system supplier use.
F2	Manufacturer Defined	This value is reserved for vehicle manufacturer/system supplier use.
F3	Manufacturer Defined	This value is reserved for vehicle manufacturer/system supplier use.
F4	Manufacturer Defined	This value is reserved for vehicle manufacturer/system supplier use.
F5	Manufacturer Defined	This value is reserved for vehicle manufacturer/system supplier use.
F6	Manufacturer Defined	This value is reserved for vehicle manufacturer/system supplier use.
F7	Manufacturer Defined	This value is reserved for vehicle manufacturer/system supplier use.
F8	Manufacturer Defined	This value is reserved for vehicle manufacturer/system supplier use.
F9	Manufacturer Defined	This value is reserved for vehicle manufacturer/system supplier use.
FA	Manufacturer Defined	This value is reserved for vehicle manufacturer/system supplier use.
FB	Manufacturer Defined	This value is reserved for vehicle manufacturer/system supplier use.
FC	Manufacturer Defined	This value is reserved for vehicle manufacturer/system supplier use.
FD	Manufacturer Defined	This value is reserved for vehicle manufacturer/system supplier use.
FE	Manufacturer Defined	This value is reserved for vehicle manufacturer/system supplier use.
FF	Manufacturer Defined	This value is reserved for vehicle manufacturer/system supplier use.

Symptoms - Vehicle

Body Repair

- [Link target (target-id 266613-) not found]
- [Link target (target-id 263864-) not found]

Body Systems

- [Link target (target-id 157990-) not found]
- [Link target (target-id 48522-) not found]
- [Link target (target-id 157988-) not found]
- [Link target (target-id 157992-) not found]
- [Link target (target-id 157994-) not found]
- [Link target (target-id 61936-) not found]

Brakes

- [Link target (target-id 1496-) not found]
- [Link target (target-id 302729-) not found]
- [Link target (target-id 50306-) not found]
- [Link target (target-id 54639-) not found]

Driveline/Axle

- [Link target (target-id 64694-) not found]
- [Link target (target-id 64690-) not found]
- [Link target (target-id 150354-) not found]
- [Link target (target-id 64697-) not found]

Driver Information and Entertainment

- [Link target (target-id 149620-) not found]
- [Link target (target-id 47032-) not found]
- [Link target (target-id 158155-) not found]
- [Link target (target-id 284269-) not found]
- [Link target (target-id 158091-) not found]

Engine

- [Link target (target-id 37791-) not found]
- [Link target (target-id 213827-) not found]
- [Link target (target-id 10846-) not found]
- [Link target (target-id 305969-) not found] – 2.7L (L3B) engine
- [Link target (target-id 307123-) not found] – 3.0L (LZ0) Diesel engine
- [Link target (target-id 227894-) not found] – 5.3L (L84) or 6.2L (L87) engine
- [Link target (target-id 37429-) not found]
- [Link target (target-id 304793-) not found] – 2.7L (L3B) engine
- [Link target (target-id 302760-) not found] – 3.0L (LZ0) Diesel engine
- [Link target (target-id 226061-) not found] – 5.3L (L84) or 6.2L (L87) engine
- [Link target (target-id 37994-) not found]

General Information

[Link target (target-id 62604-) not found]

HVAC

- [Link target (target-id 169242-) not found]
- [Link target (target-id 49126-) not found]
- [Link target (target-id 49993-) not found]

Power and Signal Distribution

- [Link target (target-id 159675-) not found]
- [Link target (target-id 259572-) not found]
- [Link target (target-id 121150-) not found]
- [Link target (target-id 62211-) not found]

Roof

[Link target (target-id 56634-) not found]

Safety and Security

- [Link target (target-id 284270-) not found]
- [Link target (target-id 158595-) not found]
- [Link target (target-id 284271-) not found]
- [Link target (target-id 158156-) not found]
- [Link target (target-id 346599-) not found]
- [Link target (target-id 56800-) not found]
- [Link target (target-id 57885-) not found]
- [Link target (target-id 151732-) not found]

Seats

- [Link target (target-id 160302-) not found]
- [Link target (target-id 160303-) not found]

Steering

- [Link target (target-id 55202-) not found]
- [Link target (target-id 65643-) not found]

Suspension

- [Link target (target-id 62585-) not found]
- [Link target (target-id 59474-) not found]

Transmission/Transaxle

- [Link target (target-id 284831-) not found] – 10L80 (MHS, MHT, MI2, MQB, MQC) transmission
- [Link target (target-id 260585-) not found] – 8L80 (MFC) transmission
- [Link target (target-id 57472-) not found]
- [Link target (target-id 192283-) not found] – MP 3015 (NP0) transfer case
- [Link target (target-id 161481-) not found] – MP 3025 (NQH) transfer case

Engine Does Not Crank

Refer to the appropriate diagnostic procedure below for the symptom observed.

- Starter Malfunction
- Engine Cranks Slowly

Engine Cranks But Does Not Run

Refer to the appropriate diagnostic procedure below for the vehicle being serviced.

- [Link target (target-id 306011-) not found] – 2.7L (L3B) engine
- [Link target (target-id 307245-) not found] – 3.0L (LZ0) Diesel engine
- [Link target (target-id 227835-) not found] – 5.3L (L84) or 6.2L (L87) engine

Inspection/Maintenance System Check

Refer to the appropriate diagnostic procedure below for the vehicle being serviced.

- [Link target (target-id 306161-) not found] – 2.7L (L3B) engine
- [Link target (target-id 307357-) not found] – 3.0L (LZ0) Diesel engine
- [Link target (target-id 228015-) not found] – 5.3L (L84) or 6.2L (L87) engine

Diagnostic Repair Verification

Note: After a repair has been made, some DTCs require the ignition to be turned Off and then back On before the scan tool function will clear the DTC.

1. Ignition/Vehicle » Off
2. Install any components or connectors that have been removed or replaced during diagnosis.
3. Perform any adjustment, programming or setup procedures that are required when a component or module is removed or replaced.
4. Perform the following action:
    - 4.1. Ignition » On / Vehicle » In Service Mode
    - 4.2. Clear the DTCs.
    - 4.3. Ignition/Vehicle » Off
    - 4.4. Driver Door» Open& Close
    - 4.5. Wait for greater than 2 min. orInstrument Panel = Off
5. Perform the Circuit/System Verification and verify the result ends with an All OK — If available

    or

    If the repair was related to a DTC, duplicate the Conditions for Running the DTC and use the Freeze Frame/Failure Records, if applicable, in order to verify the DTC does not set. If the DTC sets or another DTC is present » Refer to: *Diagnostic Trouble Code (DTC) List - Vehicle 3-173*

    or

    If the repair was symptom related, duplicate the conditions under which the customer concern occurred to verify the repair. If the customer concern reoccurs or another symptom is present » Refer to: *Symptoms - Vehicle 3-257*

Proactive Alerts List

This master list includes all applicable Proactive Alert Identifiers in alphanumeric order.

Proactive alert identifiers are stored in the K73 Telematics Communication Interface Module and can only be cleared using a scan tool.

Note: If the concern is still present after following the steps for Diagnostics in any of the Proactive Alert Identifiers, contact GM TAC for further assistance. The GM TAC Agent will arrange for the stuck Proactive Alert to be cleared from OnStar Back Office.

Proactive Alerts List

Proactive Alert Service Message	Diagnostic Procedure
SAC001	12 V Starting and Charging- [Link target (target-id 276794-) not found]
SAC002	12 V Starting and Charging- [Link target (target-id 276795-) not found]
SAC003	12 V Starting and Charging- [Link target (target-id 276796-) not found]
SAC004	12 V Starting and Charging- [Link target (target-id 276797-) not found]
SAC005	12 V Starting and Charging- [Link target (target-id 276798-) not found]

Description and Operation

Proactive Alerts Description and Operation

Proactive Alert System Overview

Note: The customer must enroll their vehicle in this program through the OnStar website or with an OnStar advisor to receive Proactive Alerts. When the customer enrolls their vehicle, they select their notification preferences (email address, in-vehicle alert, and/or text message). They also identify their preferred service provider which is often the selling dealer.

This feature collects and stores specific system performance data each ignition cycle. The data is then transmitted via the cellular system (OnStar) when the On/Off Vehicle Switch has been in Run or Accessory power mode for ten minutes. The transmitted data is stored off-board the vehicle and analyzed by special algorithms to detect degraded performance. When monitored system performance degrades to predetermined levels, the off-board system sends a Proactive Alert identifier. The affected system is identified within the alert.

When a Proactive Alert is set, one or more of the following may occur:

- E-mail and/or text message is sent to the customer
- E-mail is sent to the preferred service provider (Customer Experience Manager at GM Dealers)
- A message is sent to the vehicle through the cellular system

When the vehicle receives the Proactive Alert identifier, it is stored in the Communication Interface Module. When stored, the Communication Interface Module may request a specific identifier to display on the radio and/or play an audio message. Each identifier is displayed and/or played one time only when the vehicle is started after the Alert has been set. If there is no performance improvement detected within seven days and then again at fourteen days, the system will send a reminder which contains the same identifier as the original.

When the collected data indicates component performance is normal again, no reminder alerts are sent and the system continues to monitor as before the active alert.

Proactive Alert identifiers stored in the Communication Interface Module will clear once the system is repaired. They can also be cleared using a scan tool, if desired. Ask the customer if they can produce the E-mail and check the date it was sent if you suspect that it is not active. If the customer is unable to provide the documentation, the Proactive Alert can be verified utilizing the scan tool: “Vehicle Diagnostics” >> “Vehicle Proactive Alerts”, or Service Workbench Alerts.

Note: The identifier will not be retained if the Communication Interface Module is replaced.

Note: If the concern is still present after following the steps for Diagnostics in any of the Proactive Alert Identifiers, contact GM TAC for further assistance. The GM TAC Agent will arrange for the stuck Proactive Alert to be cleared from OnStar Back Office.

Power of Green Overview

Note: Power of Green is only available for vehicles that are enrolled in Proactive Alerts.

“Power of Green” utilizes available vehicle data collected through OnStar to establish a history of 12V battery health and determine a Battery Condition. The history is based on Battery voltage, current, and other prognostic-related data, which is collected onboard during every ignition cycle. The current Battery Condition can be accessed for enrolled vehicles via the Dashboard in Techline Connect (TLC). Battery Condition will include a timestamp (date/time) with the OnStar logo if valid.

Battery Condition will be one of the following four statuses:

Green

- “OnStar monitoring indicated good battery condition.”
- No fault detected internal to Battery
- It is unlikely that the Battery will require replacement at this time

Red

- “Battery replacement recommended.”
- SAC001 – Battery Low Cranking Capability Due to Shorted Cell
- Battery testing is NOT required, therefore a print out of the Warranty Code when the battery is replaced for SAC001 is not required.
- Follow SI procedure for Proactive Alert Identifier SAC001

Yellow

- “Starting and Charging proactive alerts detected. Please consult Service Information to diagnose the concern.”
- One of the following:
  - SAC002 – Low Cranking Capability Due to Battery High Resistance
  - SAC003 – Low Cranking Capability Due to Battery Low State of Charge
  - SAC004 – Low Cranking Capability Due to High Resistance in Starter System
  - SAC005 – Low Cranking Capability Due to High Resistance in Battery or Short in Starter System
- Follow SI procedure for appropriate Proactive Alert Identifier

Grey

- “Not enough data available to determine battery condition.”
- One of the following:
  - Vehicle is not enrolled in OnStar Proactive Alerts

  - Inability to contact the Power of Green data service
  - Insufficient recent ignition cycles to make a Red/Yellow/Green determination
- If a Battery issue is suspected, proceed to Battery Inspection/Test

Updated Battery Condition data may be obtained by selecting “Refresh” button next to the timestamp.

Note: Since the Green status is dependent on a history of battery health, the Battery Condition may not update immediately and turn Green if the battery is replaced.

While the vehicle is being serviced, the Battery Condition may change from Green depending on Service actions (e.g. if battery is disconnected or becomes discharged, status may change).

Section 4

Driveline/Axle

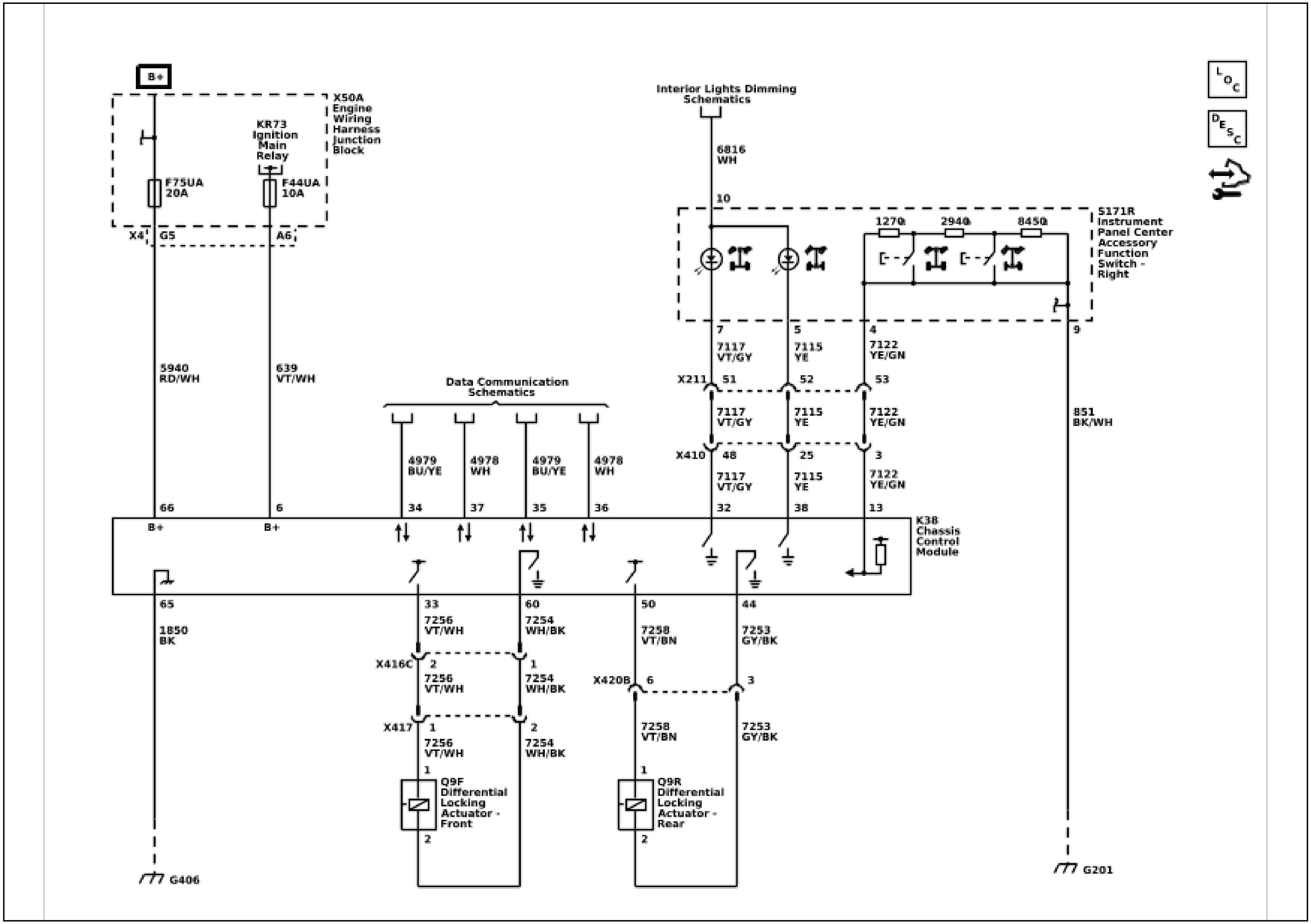
Rear Drive Axle **4-2**
  Schematic and Routing Diagrams **4-2**
    Differential Lock Schematics 4-3
  Description and Operation **4-4**
    Locking Differential Description and Operation 4-4
    Rear Drive Axle Description and Operation 4-5
    Rear Drive Axle Description and Operation 4-6
    Rear Axle Electronic Locking Differential Description and Operation 4-6

Driveline/Axle

Rear Drive Axle

Schematic and Routing Diagrams

Differential Lock Schematics (Locking Differentials (G93 / G94))


B+
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F75UA 20A
F44UA 10A
X4
G5
A6
5940 RD/WH
639 VT/WH
66
6
B+
B+
Data Communication Schematics
4979 BU/YE
4978 WH
4979 BU/YE
4978 WH
34
37
35
36
Interior Lights Dimming Schematics
6816 WH
10
S171R Instrument Panel Center Accessory Function Switch - Right
1270Ω
2940Ω
8450Ω
7
5
4
9
7117 VT/GY
7115 YE
7122 YE/GN
X211
51
52
53
7117 VT/GY
7115 YE
7122 YE/GN
X410
48
25
3
7117 VT/GY
7115 YE
7122 YE/GN
32
38
13
851 BK/WH
K38 Chassis Control Module
65
33
60
50
44
1850 BK
7256 VT/WH
7254 WH/BK
7258 VT/BN
7253 GY/BK
X416C
2
1
7256 VT/WH
7254 WH/BK
X420B
6
3
X417
1
2
7256 VT/WH
7254 WH/BK
7258 VT/BN
7253 GY/BK
1
Q9F Differential Locking Actuator - Front
2
1
Q9R Differential Locking Actuator - Rear
2
G406
G201
L O C
D E S C

6846913

Description and Operation

Locking Differential Description and Operation

The locking differential consists of the following components:

- Differential case – 1 or 2 piece
- Locking differential spider – 2 piece case only
- Pinion gear shaft – 1 piece case only
- Differential pinion gear shaft lock bolt – 1 piece case only
- Two clutch discs sets
- Locking differential side gear
- Thrust block
- Locking differential clutch disc guides
- Differential side gear shim
- Locking differential clutch disc thrust washer
- Locking differential governor
- Latching bracket
- Cam plate assembly
- Differential pinion gears
- Differential pinion gear thrust washers

The optional locking differential (RPO G80) enhances the traction capability of the rear axle by combining the characteristics of a limited-slip differential and the ability of the axle shafts to “lock” together when uneven traction surfaces exist. The differential accomplishes this in 2 ways. First by having a series of clutch plates at each side of the differential case to limit the amount of slippage between each wheel. Second, by using a mechanical locking mechanism to stop the rotation of the right differential side gear, in order to transfer the rotating torque of the wheel without traction to the wheel with traction. Each of these functions occur under different conditions.

Limited-Slip Function

Under normal conditions, when the differential is not locked, a small amount of limited-slip action occurs. The gear separating force developed in the right-hand clutch pack is primarily responsible for this.

The operation of how the limited-slip function of the unit works can be explained when the vehicle makes a right-hand turn. Since the left wheel travels farther than the right wheel, it must rotate faster than the ring gear and differential case assembly. This results in the left axle and left side gear rotating faster than the differential case. The faster rotation of the left-side gear causes the pinion gears to rotate on the pinion shaft. This causes the right-side gear to rotate slower than the differential case.

Although the side gear spreading force produced by the pinion gears compresses the clutch packs, primarily the right side, the friction between the tires and the road surface is sufficient to overcome the friction of the clutch packs. This prevents the side gears from being held to the differential case.

Locking Function

Locking action occurs through the use of some special parts:

- A governor mechanism with 2 flyweights
- A latching bracket
- The left side cam plate and cam side gear

When the wheel-to-wheel speed difference is 100 RPM or more, the flyweights of the governor will fling out and one of them will contact an edge of the latching bracket. This happens because the left cam side gear and cam plate are rotating at a speed different, either slower or faster, than that of the ring gear and differential case assembly. The cam plate has teeth on its outer diameter surface in mesh with teeth on the shaft of the governor.

As the side gear rotates at a speed different than that of the differential case, the shaft of the governor rotates with enough speed to force the flyweights outward against spring tension. One of the flyweights catches its edge on the closest edge of the latching bracket, which is stationary in the differential case. This latching process triggers a chain of events.

When the governor latches, it stops rotating. A small friction clutch inside the governor allows rotation, with resistance, of the governor shaft while one flyweight is held to the differential case through the latching bracket. The purpose of the governor's latching action is to slow the rotation of the cam plate as compared to the cam side gear. This will cause the cam plate to move out of its detent position.

The cam plate normally is held in its detent position by a small wave spring and detent humps resting in matching notches of the cam side gear. At this point, the ramps of the cam plate ride up on the ramps of the cam side gear, and the cam plate compresses the left clutch pack with a self-energizing action.

As the left clutch pack is compressed, it pushes the cam plate and cam side gear slightly toward the right side of the differential case. This movement of the cam side gear pushes the thrust block which compresses the right-hand side gear clutch pack.

At this point, the force of the self-energizing clutches and the side gear separating force combine to hold the side gears to the differential case in the locking stage.

The entire locking process occurs in less than 1 second. The process works with either the left or right wheel spinning, due to the design of the governor and cam mechanism. A torque reversal of any kind will unlatch the governor, causing the cam plate to ride back down to its detent position. Cornering or deceleration during a transmission shift will cause a torque reversal of this type. The differential unit returns to its limited-slip function.

The self-energizing process would not occur if it were not for the action of one of the left clutch discs. This energizing disc provides the holding force of the ramping action to occur. It is the only disc which is splined to the cam plate itself. The other splined discs fit on the cam side gear.

If the rotating speed of the ring gear and differential case assembly is high enough, the latching bracket will pivot due to centrifugal force. This will move the flyweights so that no locking is permitted. During vehicle driving, this happens at approximately 32 km/h (20 mph) and continues at faster speeds.

When comparing the effectiveness of the locking differential, in terms of percent-of-grade capability to open and limited-slip units, the locking differential has nearly 3 times the potential of the limited-slip unit under the same conditions.

Locking Differential Torque-Limiting Disc

The locking differential design was modified in mid-1986 to include a load-limiting feature to reduce the chance of breaking an axle shaft under abusive driving conditions. The number of tangs on the energizing disc in the left-hand clutch pack was reduced allowing these tangs to shear in the event of a high-torque engagement of the differential locking mechanism.

At the time of failure of the load-limiting disc, there will be a loud bang in the rear axle and the differential will operate as a standard differential with some limited-slip action of the clutch packs at low torques.

The service procedure, when the disc tangs shear, involves replacing the left-hand clutch plates and the wave spring. It is also necessary to examine the axle shafts for twisting because at high torques it is possible to not only shear the load-limiting disc, but to also twist the axle shafts.

Rear Drive Axle Description and Operation

The electronic locking differential functions as an open differential when not engaged while providing the capability to fully lock the differential based on driver request and vehicle engagement conditions. Locking of the rear differential provides 100% of the available torque to both ends of the axle forcing the left and right wheels to rotate at the same speed.

The rear axle differential lock is available in 2 H, 4 Auto, 4 High or 4 Lo. The Normal/Off-Road mode switch provides an input to the Body Control Module (BCM) which sends the selected vehicle mode to the Integrated Chassis Control Module (ICCM) through the High Speed GMLAN. The ICCM uses this message to determine rear locker engagement/disengagement based upon vehicle speed

- Normal mode engagement allowed if vehicle speed is less than 30 km/h (19 mph)
- Off road mode engagement allowed if vehicle speed is less than 30 km/h (19 mph)

In addition to engagement/disengagement of the differentials, the mode switch signal is used to disable the ABS and ESC features when the front axle is locked in Normal mode. The momentary Rear Lock switch provides an ICCM input to energize the rear axle differential lock high control and low control relays. The relays provide power to energize an electromagnetic actuator within the rear differential. As the electromagnet is energized, torque is created on a drag plate which actuates a ramping mechanism. The ramping mechanism translates this rotational force into the axial motion of a locking mechanism. The locking mechanism engages the differential side gear which locks side gear rotation to the differential housing, providing a fully locked differential.

The ICCM uses wheel speed sensor signals from the Electronic Brake Control Module (EBCM) and a steering angle sensor signal from the Power Steering Control Module (PSCM) to determine if the axle is locked. The ICCM will illuminate the rear axle lock switch indicator and send a Rear Axle Locked indicator request to the BCM which transfers the message request to the Instrument Panel Cluster (IPC). The IPC will display a rear axle locked state on the Off Road DIC screen. The rear axle will remain in the locked position until one of the following events occur:

- A driver request to disengage
- Vehicle speed is greater than 40 km/h (25 mph) in Normal Mode
- Vehicle speed is greater than 160 km/h (100 mph) in Off-Road Mode
- An ABS or ESC event in OFF Road Mode and vehicle speed is greater than 40 km/h (25 mph)

When the locking differential is deactivated, the ICCM will de-energize the rear axle differential lock high control and low control relays. With the electromagnetic actuator deenergized, a series of return springs within the differential lock assembly forces the locking mechanism to disengage and the differential again operates as a fully open differential.

Rear Drive Axle Description and Operation

Rear axles for this vehicle consist of the following primary components:

- Axle Shaft – Left
- Axle Shaft – Right
- Differential
- Differential Drive Pinion Gear
- Differential Drive Ring Gear
- Rear Axle Housing

The rear axle is a semi-floating axle. The semi-floating axle has C – Clips inside the differential that retain the axle shafts into the axle housing and differential. The rear axle can be identified by the stamping on the right side axle tube. The rear axle may also be identified by the ring gear size. The ring gear sizes include 9.50 and 9.76 inch axles. The rear axle differential can be an open differential or limited slip/locking differential. For a description and operation of the limited slip/locking differentials refer to: *Locking Differential Description and Operation 4-4*.

An open differential has 2 types of gears, pinion gears and side gears. There are 2 side gears within the differential that the axle shafts spline into, so each side gear and axle shaft rotate together. Typically there are 2 pinion gears, but some differentials have more than 2 pinion gears. The pinion gears are mounted on a differential pinion shaft, and the gears are free to rotate around this shaft. The pinion shaft(s) is fitted into a bore in the differential case and is at a right angle to the axle shafts.

Power is transmitted through the differential as follows: The differential drive pinion rotates the differential ring gear. The ring gear being bolted to the differential case, rotates the case. As the pinion gears and pinion shaft are located in the case they are rotated by the case, forcing the pinion gears into the side gears causing the side gears to rotate. The side gears, being splined to the axle shafts and in mesh with the pinion gears rotate the axle shafts.

When both wheels have equal traction and when the vehicle is driving in a straight line, the pinion gears do not rotate on the pinion shaft because of input force on the pinion gear is equally divided between the two side gears. Therefore, the pinion gears revolve with the pinion shaft, but do not rotate around the shaft itself.

When the vehicle turns a corner or when the wheels do not have equal traction, the one wheel turns slower than the other wheel in turn slowing one rear axle side gear (as the axle shaft splines into the side gear). The rear axle pinion gears will roll around the slower rear axle side gear, driving the other rear axle side gear faster.

Rear Axle Electronic Locking Differential Description and Operation

The electronic locking differential functions as an open differential when not engaged while providing the capability to fully lock the differential based on driver request and vehicle engagement conditions. Locking of the rear differential provides 100% of the available torque to both ends of the axle forcing the left and right wheels to rotate at the same speed.

The rear axle differential lock is available in 2 H, 4 Auto, 4 High or 4 Lo. The Normal/Off-Road mode switch provides an input to the Body Control Module (BCM) which sends the selected vehicle mode to the K38 Chassis Control Module through the High Speed GMLAN. The K38 Chassis Control Module uses this message to determine rear locker engagement/disengagement based upon vehicle speed

- Normal mode engagement allowed if vehicle speed is less than 30 km/h (19 mph)
- Off road mode engagement allowed if vehicle speed is less than 30 km/h (19 mph)

In addition to engagement/disengagement of the differentials, the mode switch signal is used to disable the ABS and ESC features when the front axle is locked in Normal mode. The momentary Rear Lock switch provides an K38 Chassis Control Module input to energize the rear axle differential lock high control and low control . This provides power to energize an electromagnetic actuator within the rear differential. As the electromagnet is energized, torque is created on a drag plate which actuates a ramping mechanism. The ramping mechanism translates this rotational force into the axial motion of a locking mechanism. The locking mechanism engages the differential side gear which locks side gear rotation to the differential housing, providing a fully locked differential.

The K38 Chassis Control Module uses wheel speed sensor signals from the Electronic Brake Control Module (EBCM) and a steering angle sensor signal from the Power Steering Control Module (PSCM) to determine if the axle is locked. The K38 Chassis Control Module will illuminate the rear axle lock switch indicator and send a Rear Axle Locked indicator request to the K9 Body Control Module which transfers the message request to the Instrument Panel Cluster (IPC). The IPC will display a rear axle locked state on the Off Road DIC screen. The rear axle will remain in the locked position until one of the following events occur:

- A driver request to disengage
- Vehicle speed is greater than 40 km/h (25 mph) in Normal Mode
- Vehicle speed is greater than 160 km/h (100 mph) in Off-Road Mode

- An ABS or ESC event in OFF Road Mode and vehicle speed is greater than 40 km/h (25 mph)

When the locking differential is deactivated, the ICCM will de-energize the rear axle differential lock high control and low control. With the electromagnetic actuator deenergized, a series of return springs within the differential lock assembly forces the locking mechanism to disengage and the differential again operates as a fully open differential.

Section 5

Driver Information and Entertainment

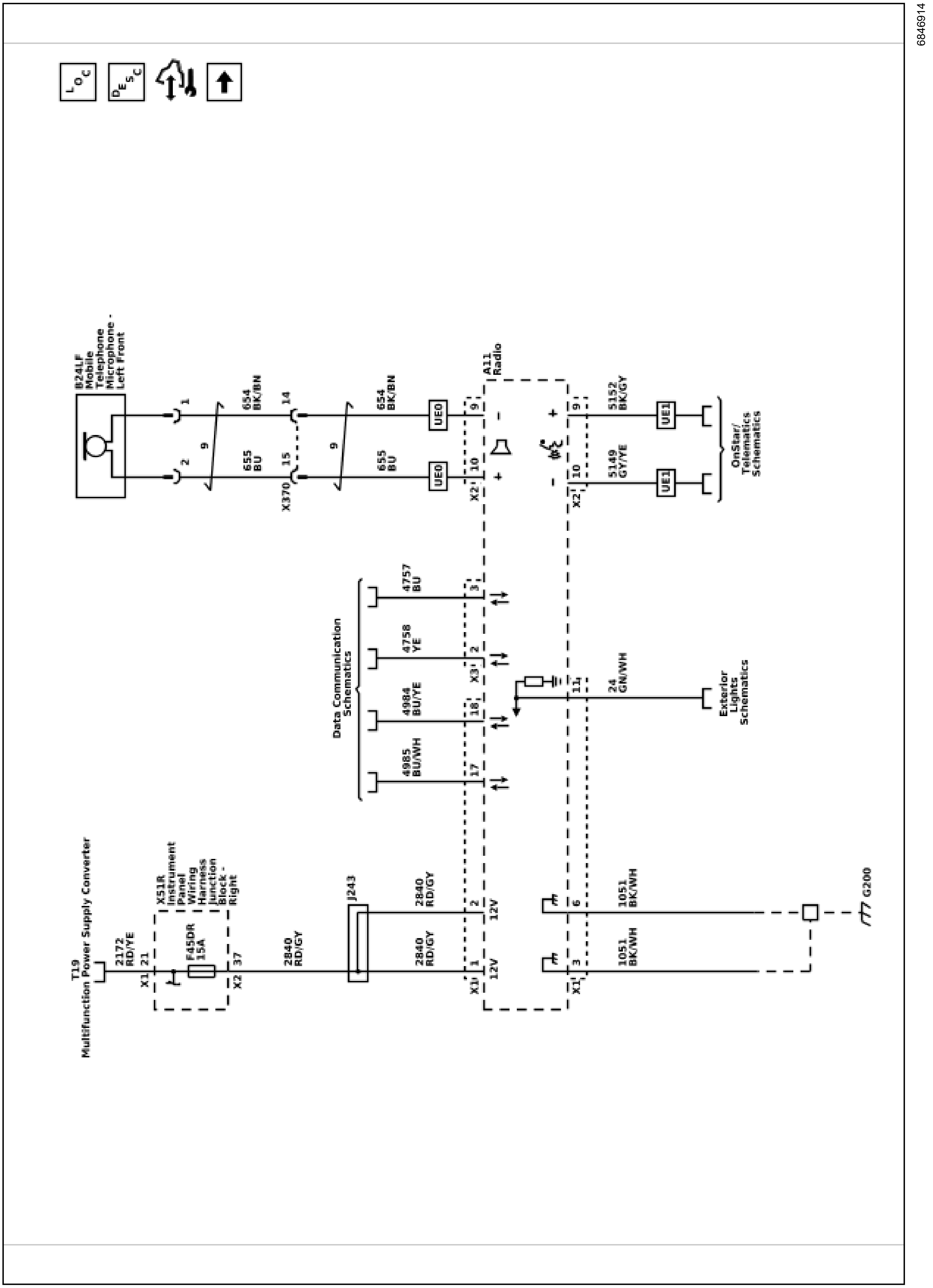
Cellular, Entertainment, and Navigation 5-2
Schematic and Routing Diagrams 5-2
Radio/Navigation System Schematics (IOR) 5-3
Radio/Navigation System Schematics (IOK) 5-8
OnStar/Telematics Schematics 5-19
Description and Operation 5-21
Active Noise Cancellation Description and Operation 5-21
OnStar Description and Operation 5-21
Radio/Audio System Description and Operation 5-26
Displays and Gauges 5-37
Schematic and Routing Diagrams 5-37
Instrument Cluster Schematics 5-38
Head-Up Display Schematics (UV6) 5-43
Audible Warnings Schematics 5-44
Description and Operation 5-45
Audible Warnings Description and Operation 5-45
Head-Up Display Description and Operation 5-46
Indicator/Warning Message Description and Operation 5-47
Instrument Cluster Description and Operation 5-47
Image Display Cameras 5-51
Schematic and Routing Diagrams 5-51
Image Display Camera Schematics 5-52
Description and Operation 5-55
Rearview Camera Full Display Mirror Description and Operation 5-55
Rear Vision Camera Description and Operation 5-55
Surround Vision Camera Description and Operation 5-55
Secondary and Configurable Customer Controls 5-57
Schematic and Routing Diagrams 5-57
Steering Wheel Secondary/Configurable Control Schematics 5-58
Description and Operation 5-60
Steering Wheel Controls Description and Operation 5-60

Driver Information and Entertainment

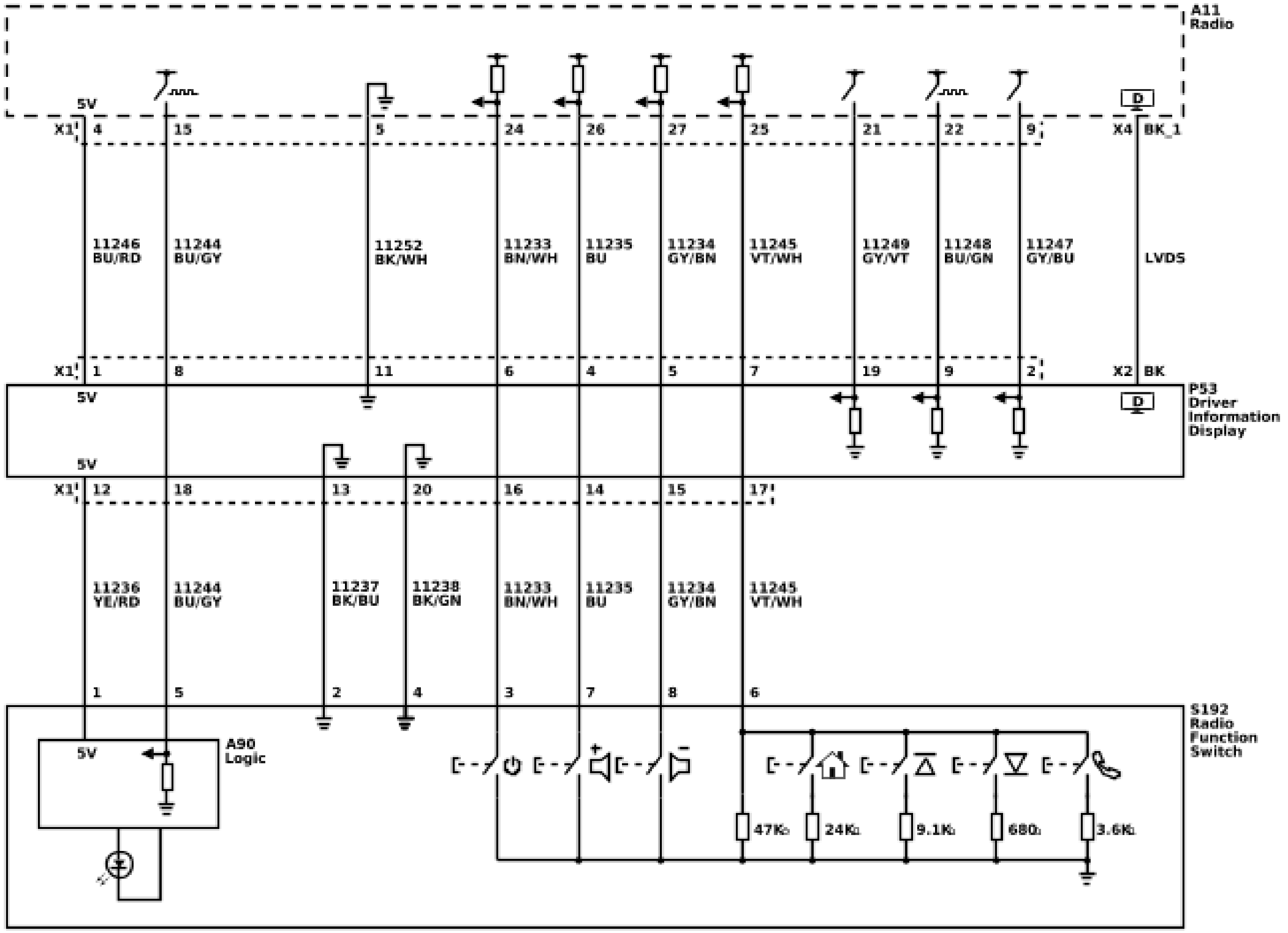
Cellular, Entertainment, and Navigation

Schematic and Routing Diagrams

Radio/Navigation System Schematics (IOR) (Power, Ground, Serial Data, Microphone, and Subsystem References)

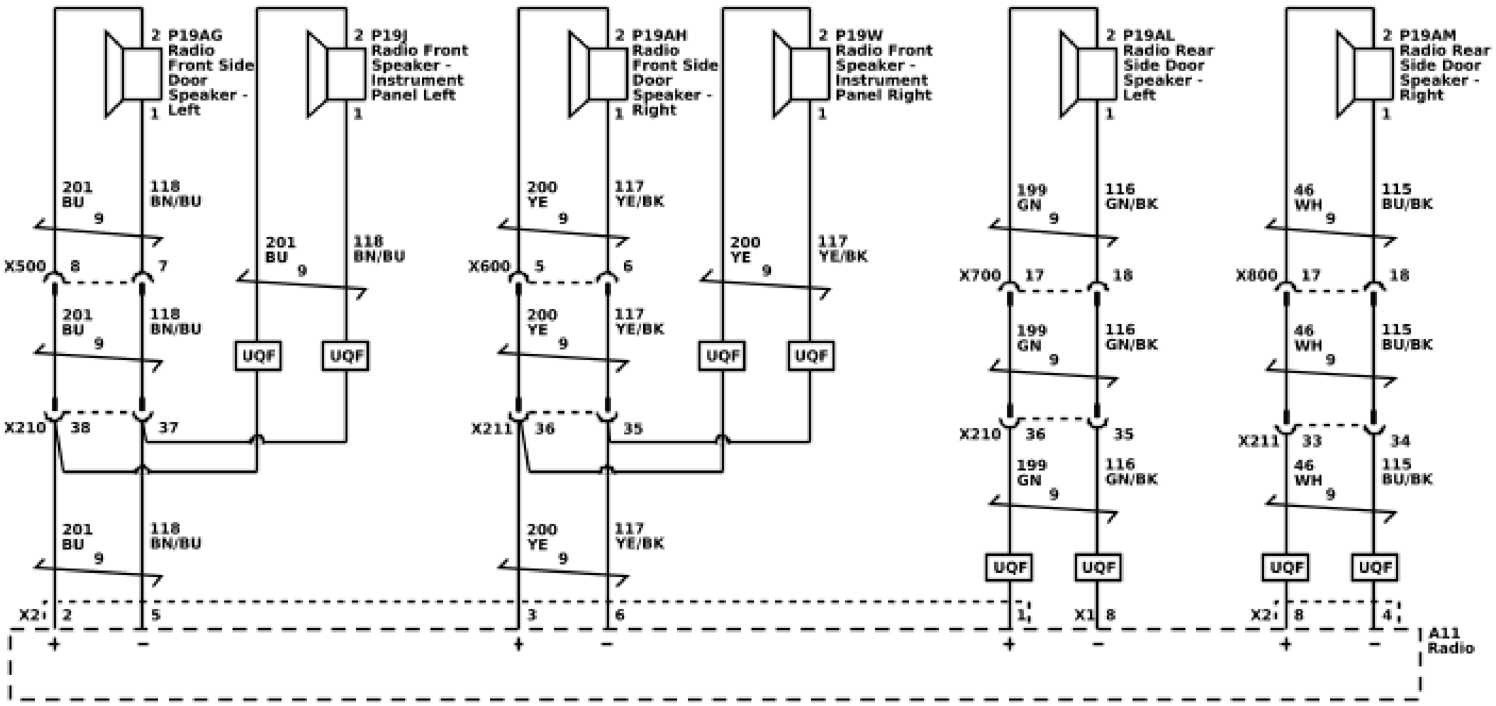

6846914
LOC
DESC
B24LF Mobile Telephone Microphone - Left Front
1
2
9
654 BK/BN
655 BU
14
15
X370
A11 Radio
UE0
UE1
X2
10
9
+
-
5152 BK/GY
5149 GY/YE
OnStar/ Telematics Schematics
Data Communication Schematics
4757 BU
4758 YE
4984 BU/YE
4985 BU/WH
3
2
18
17
X3
11
24 GN/WH
Exterior Lights Schematics
T19 Multifunction Power Supply Converter
2172 RD/YE
X1 21
X51R Instrument Panel Wiring Harness Junction Block - Right
F45DR 15A
X2 37
2840 RD/GY
J243
1
12V
X1
6
3
1051 BK/WH
G200

Radio/Navigation System Schematics (IOR) (Driver Information Display and Radio Function Switch (UDC))


A11
Radio
5V
X1
4
15
5
24
26
27
25
21
22
9
X4
BK_1
11246
BU/RD
11244
BU/GY
11252
BK/WH
11233
BN/WH
11235
BU
11234
GY/BN
11245
VT/WH
11249
GY/VT
11248
BU/GN
11247
GY/BU
LVDS
X1
1
8
11
6
4
5
7
19
9
2
X2
BK
P53
Driver
Information
Display
5V
5V
X1
12
18
13
20
16
14
15
17
11236
YE/RD
11244
BU/GY
11237
BK/BU
11238
BK/GN
11233
BN/WH
11235
BU
11234
GY/BN
11245
VT/WH
1
5
2
4
3
7
8
6
S192
Radio
Function
Switch
5V
A90
Logic
47KΩ
24KΩ
9.1KΩ
680Ω
3.6KΩ

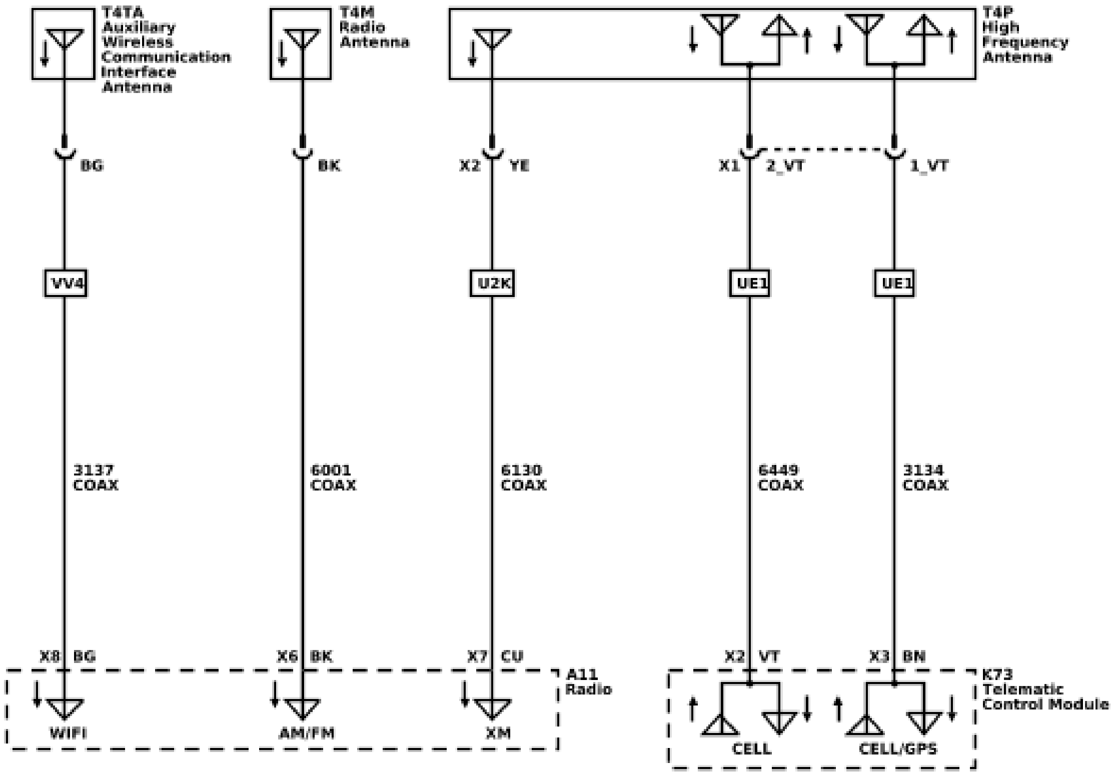
6846915

Radio/Navigation System Schematics (IOR) (Speakers (U95 / UQF))


2 P19AG Radio Front Side Door Speaker - 1 Left
2 P19J Radio Front Speaker - Instrument Panel Left 1
2 P19AH Radio Front Side Door Speaker - 1 Right
2 P19W Radio Front Speaker - Instrument Panel Right 1
2 P19AL Radio Rear Side Door Speaker - Left 1
2 P19AM Radio Rear Side Door Speaker - Right 1
201 BU 9
118 BN/BU
X500 8 7
X210 38 37
X600 5 6
X211 36 35
200 YE 9
117 YE/BK
UQF
199 GN 9
116 GN/BK
X700 17 18
X210 36 35
46 WH 9
115 BU/BK
X800 17 18
X211 33 34
X2 2 5
3 6
1
X1 8
X2 8 4
+ −
A11 Radio

6846916

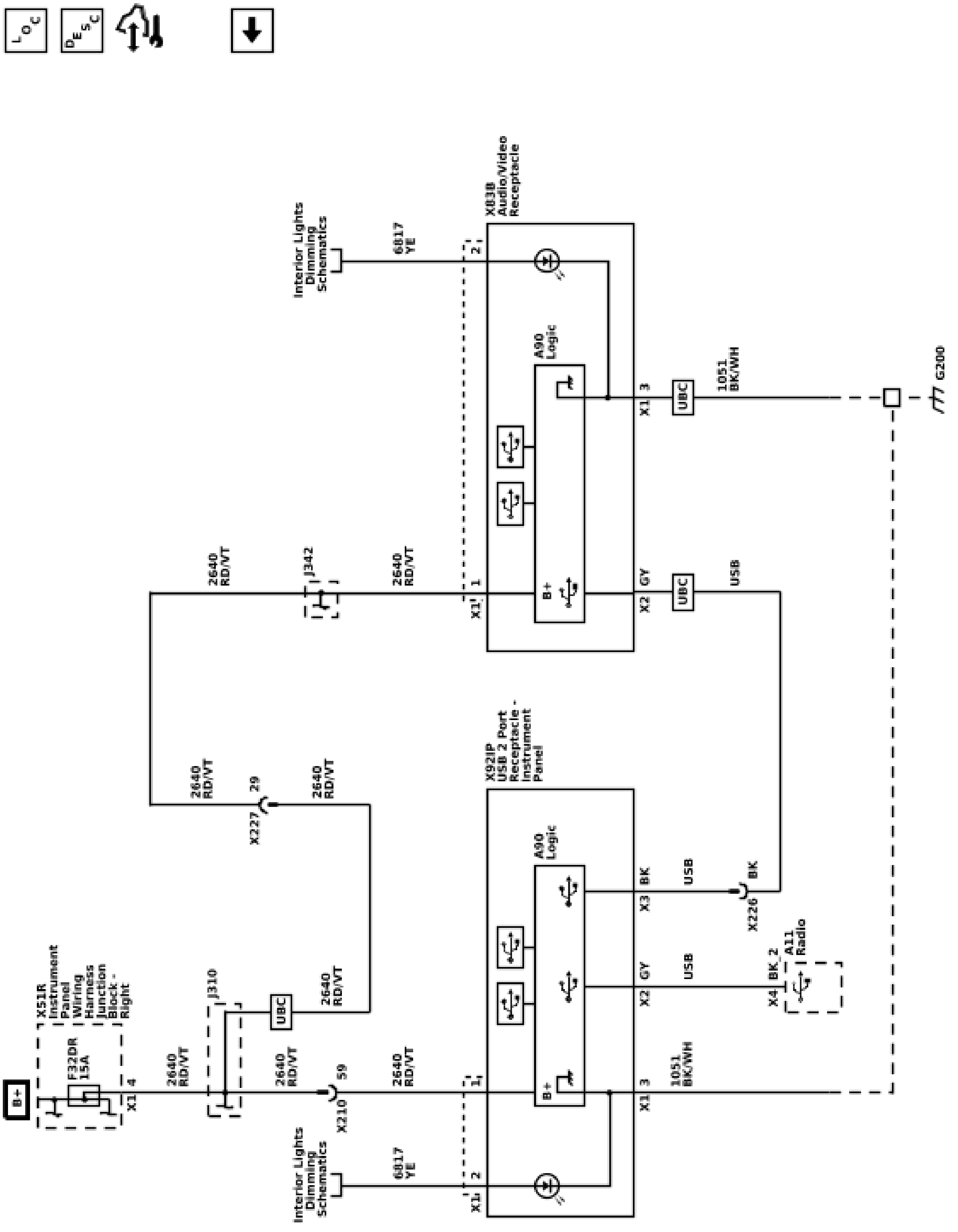
Radio/Navigation System Schematics (IOR) (Antennas)


T4TA
Auxiliary
Wireless
Communication
Interface
Antenna
T4M
Radio
Antenna
T4P
High
Frequency
Antenna
BG
BK
X2
YE
X1
2_VT
1_VT
VV4
U2K
UE1
UE1
3137
COAX
6001
COAX
6130
COAX
6449
COAX
3134
COAX
X8
BG
X6
BK
X7
CU
A11
Radio
X2
VT
X3
BN
K73
Telematic
Control Module
WIFI
AM/FM
XM
CELL
CELL/GPS

6846917

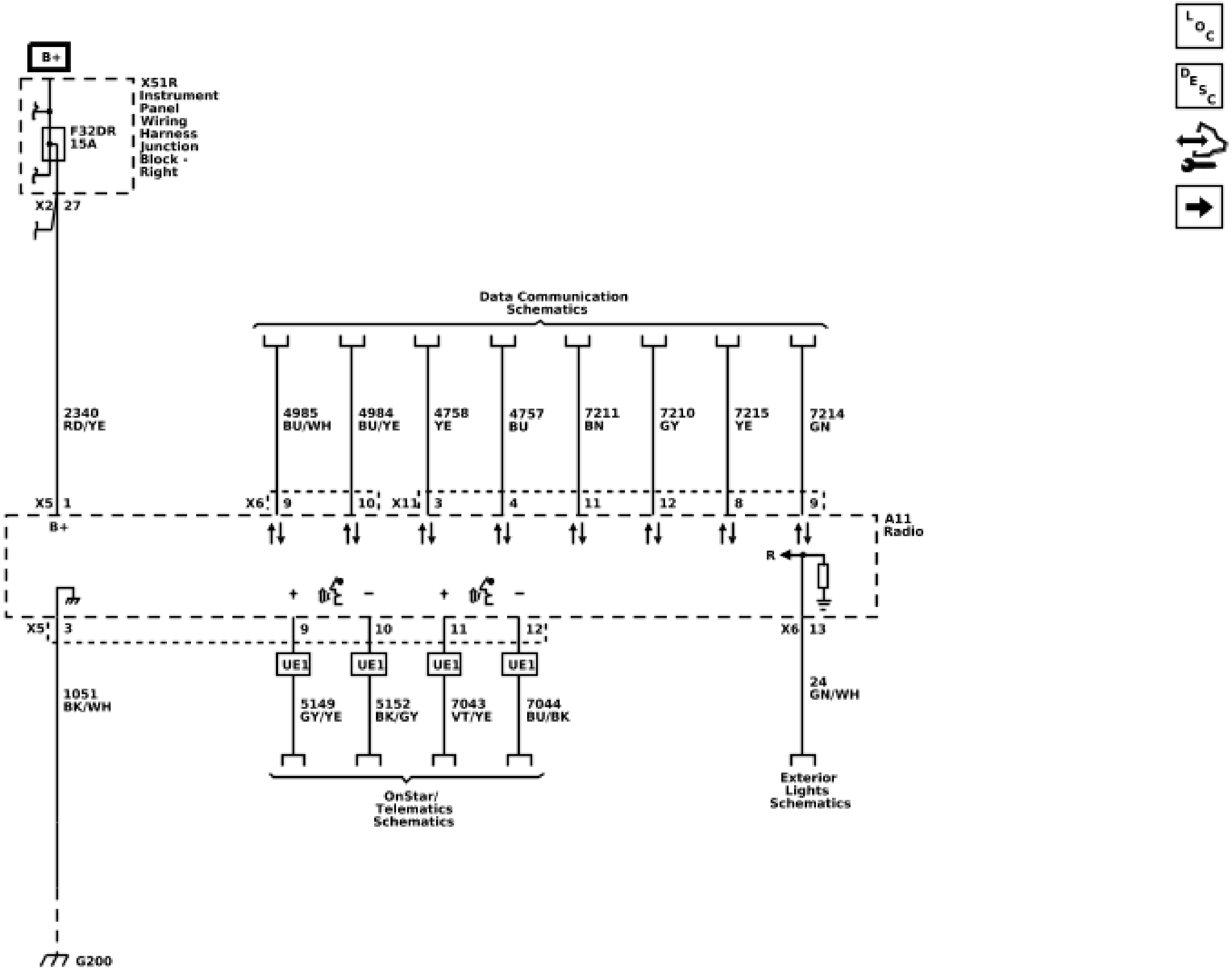
Radio/Navigation System Schematics (IOR) (Auxiliary Inputs)

6846918



B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F32DR 15A
X1 4
2640 RD/VT
J310
UBC
2640 RD/VT
X210 59
2640 RD/VT
X227 29
2640 RD/VT
2640 RD/VT
J342
2640 RD/VT
Interior Lights Dimming Schematics
6817 YE
X1 1
X1 2
B+
X92IP USB 2 Port Receptacle - Instrument Panel
A90 Logic
X3 BK
X2 GY
X1 3
USB
USB
1051 BK/WH
X226 BK
X4 BK_2
A11 Radio
X83B Audio/Video Receptacle
Interior Lights Dimming Schematics
6817 YE
A90 Logic
X1 3
UBC
1051 BK/WH
X2 GY
UBC
USB
G200

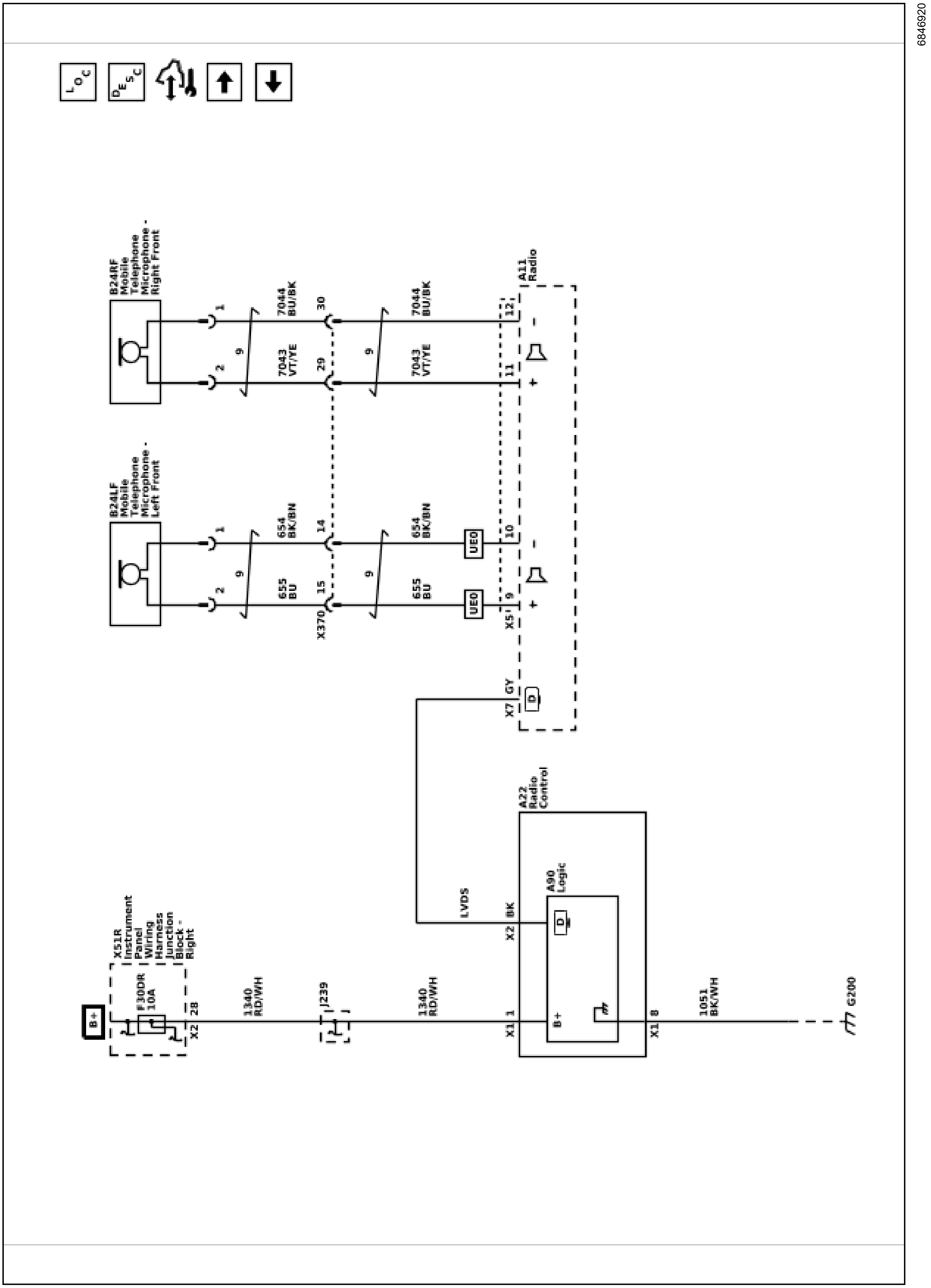
Radio/Navigation System Schematics (IOK) (Radio Power, Ground, Serial Data, and Subsystem References)



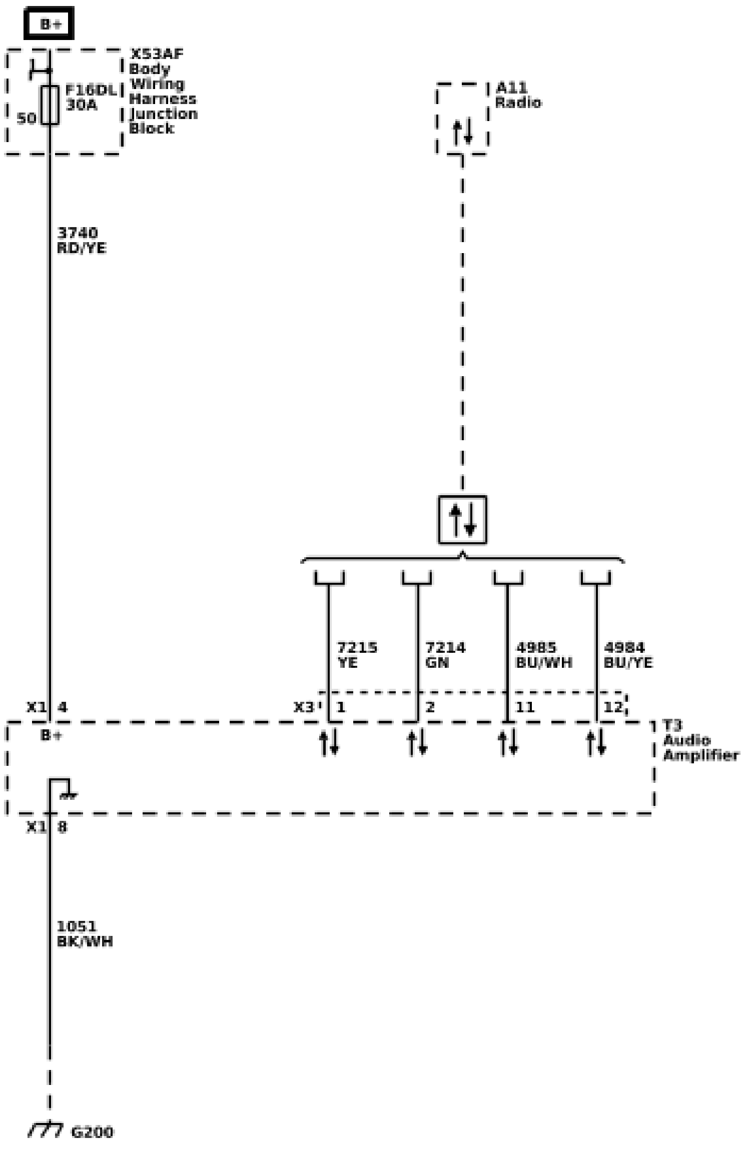
B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F32DR 15A
X2 27
2340 RD/YE
X5 1
B+
Data Communication Schematics
4985 BU/WH
4984 BU/YE
4758 YE
4757 BU
7211 BN
7210 GY
7215 YE
7214 GN
X6 9
10
X11 3
4
11
12
8
9
A11 Radio
R
+
-
+
-
X5 3
9
10
11
12
X6 13
UE1
UE1
UE1
UE1
1051 BK/WH
5149 GY/YE
5152 BK/GY
7043 VT/YE
7044 BU/BK
24 GN/WH
OnStar/ Telematics Schematics
Exterior Lights Schematics
G200

6846919

Radio/Navigation System Schematics (IOK) (Radio Controls and Microphones)

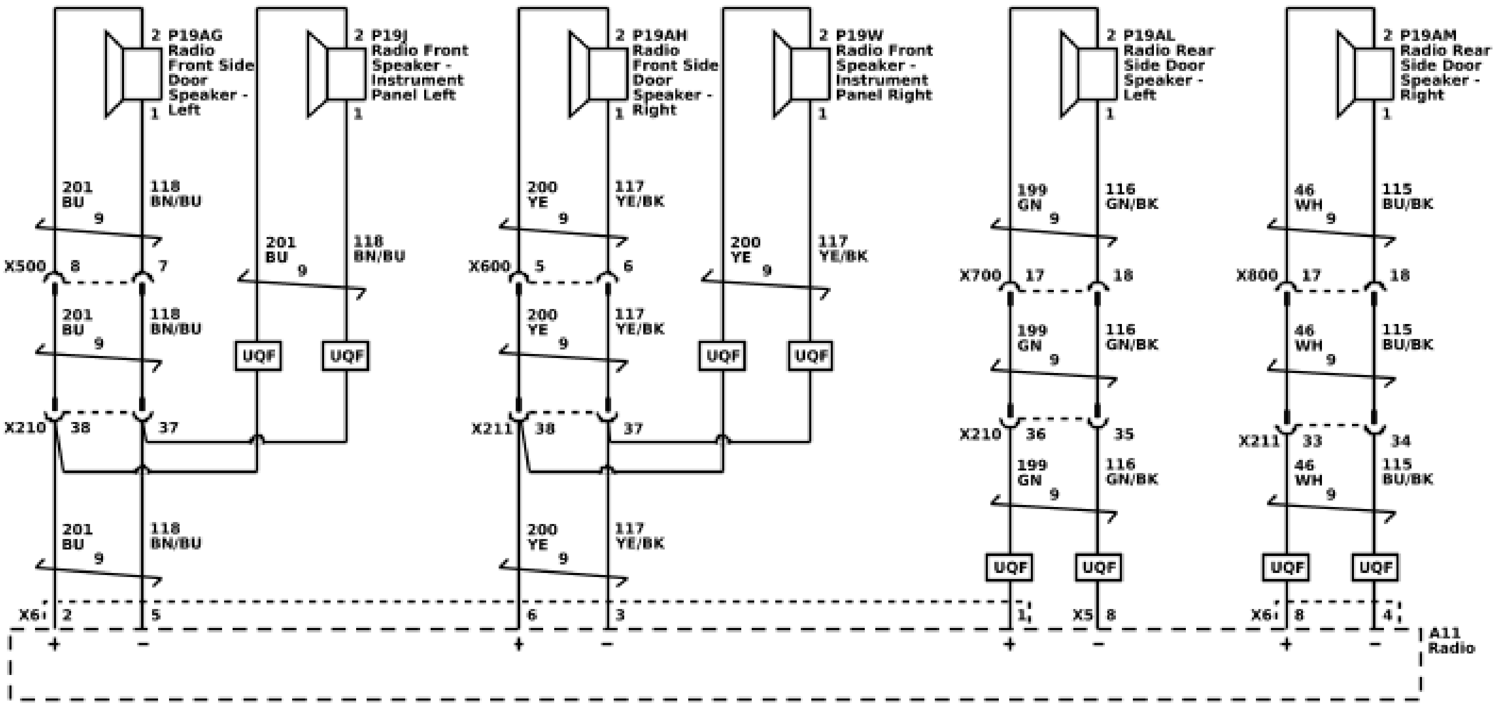

6846920
LOC
DESC
B24RF
Mobile
Telephone
Microphone -
Right Front
B24LF
Mobile
Telephone
Microphone -
Left Front
1
2
9
7044
BU/BK
7043
VT/YE
654
BK/BN
655
BU
30
29
14
15
X370
UE0
12
11
10
9
X5
+
-
A11
Radio
X7
GY
D
A22
Radio
Control
A90
Logic
LVDS
X2
8K
B+
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
F30DR
10A
X2
28
1340
RD/WH
J239
X1
1
1051
BK/WH
X1
8
G200

Radio/Navigation System Schematics (IOK) (Audio Amplifier Power, Ground and Serial Data)


B+
X53AF Body Wiring Harness Junction Block
F16DL 30A
50
3740 RD/YE
A11 Radio
7215 YE
7214 GN
4985 BU/WH
4984 BU/YE
X1 4
X3 1
2
11
12
B+
T3 Audio Amplifier
X1 8
1051 BK/WH
G200

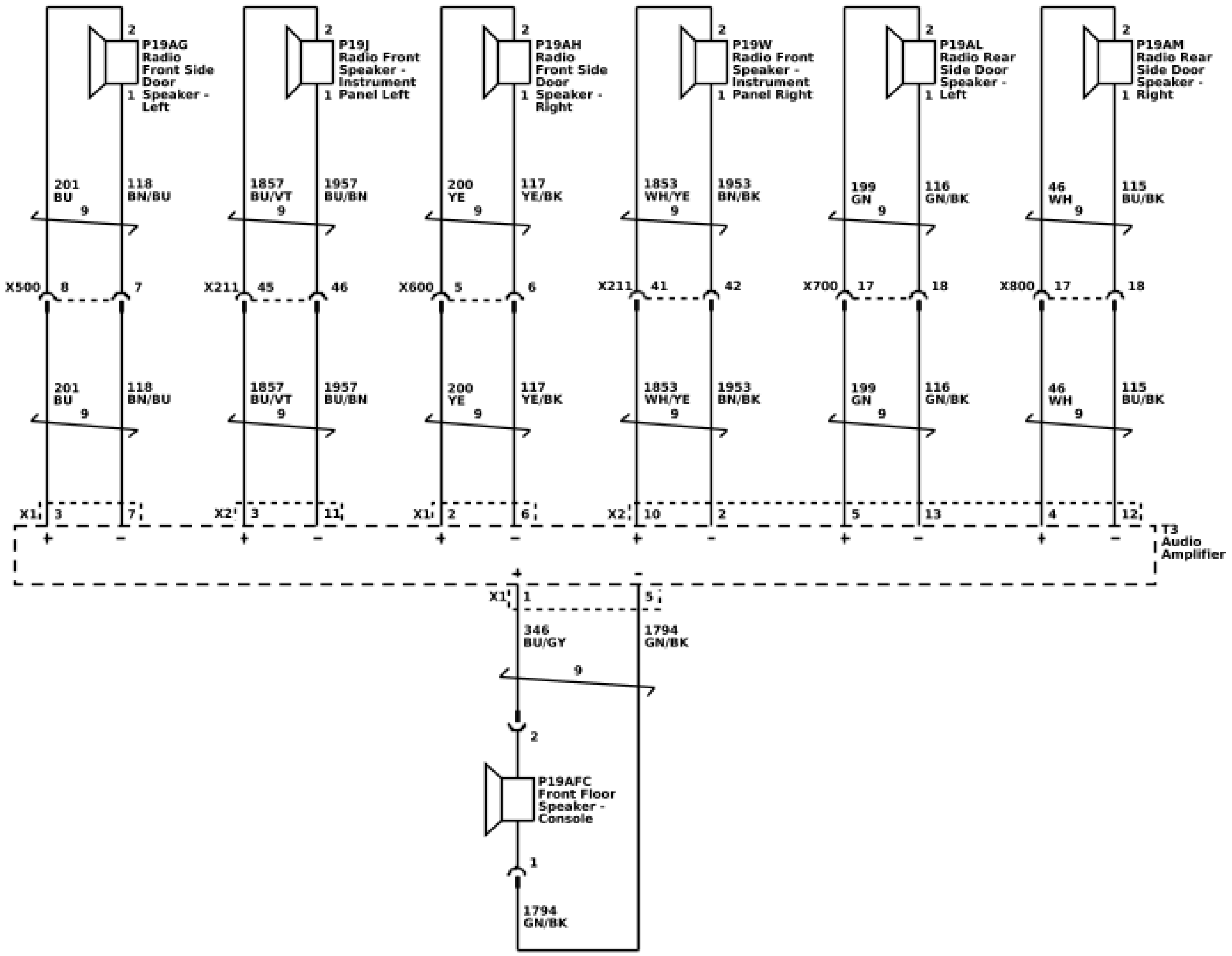
6846921

Radio/Navigation System Schematics (IOK) (Speakers (U95 / UQF - NKD))

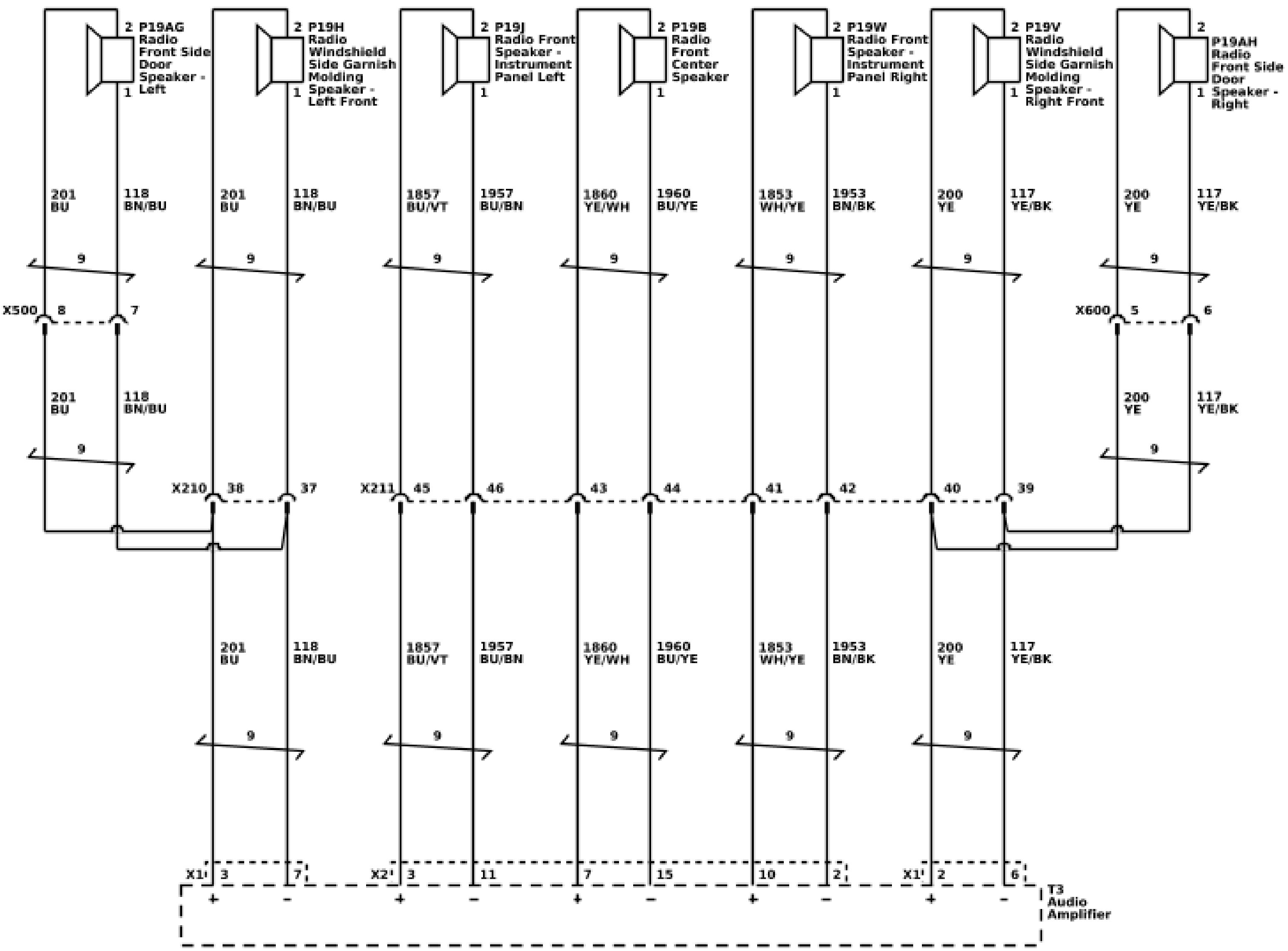

2 P19AG Radio Front Side Door Speaker - 1 Left
2 P19J Radio Front Speaker - Instrument Panel Left 1
2 P19AH Radio Front Side Door Speaker - 1 Right
2 P19W Radio Front Speaker - Instrument Panel Right 1
2 P19AL Radio Rear Side Door Speaker - Left 1
2 P19AM Radio Rear Side Door Speaker - Right 1
201 BU 9
118 BN/BU
200 YE 9
117 YE/BK
199 GN 9
116 GN/BK
46 WH 9
115 BU/BK
X500 8 7
X600 5 6
X700 17 18
X800 17 18
UQF
X210 38 37
X211 38 37
X210 36 35
X211 33 34
X6 2 5
6 3
1 X5 8
X6 8 4
+ −
A11 Radio

6846922

Radio/Navigation System Schematics (IOK) (Speakers (UQA / UQF & NKD))

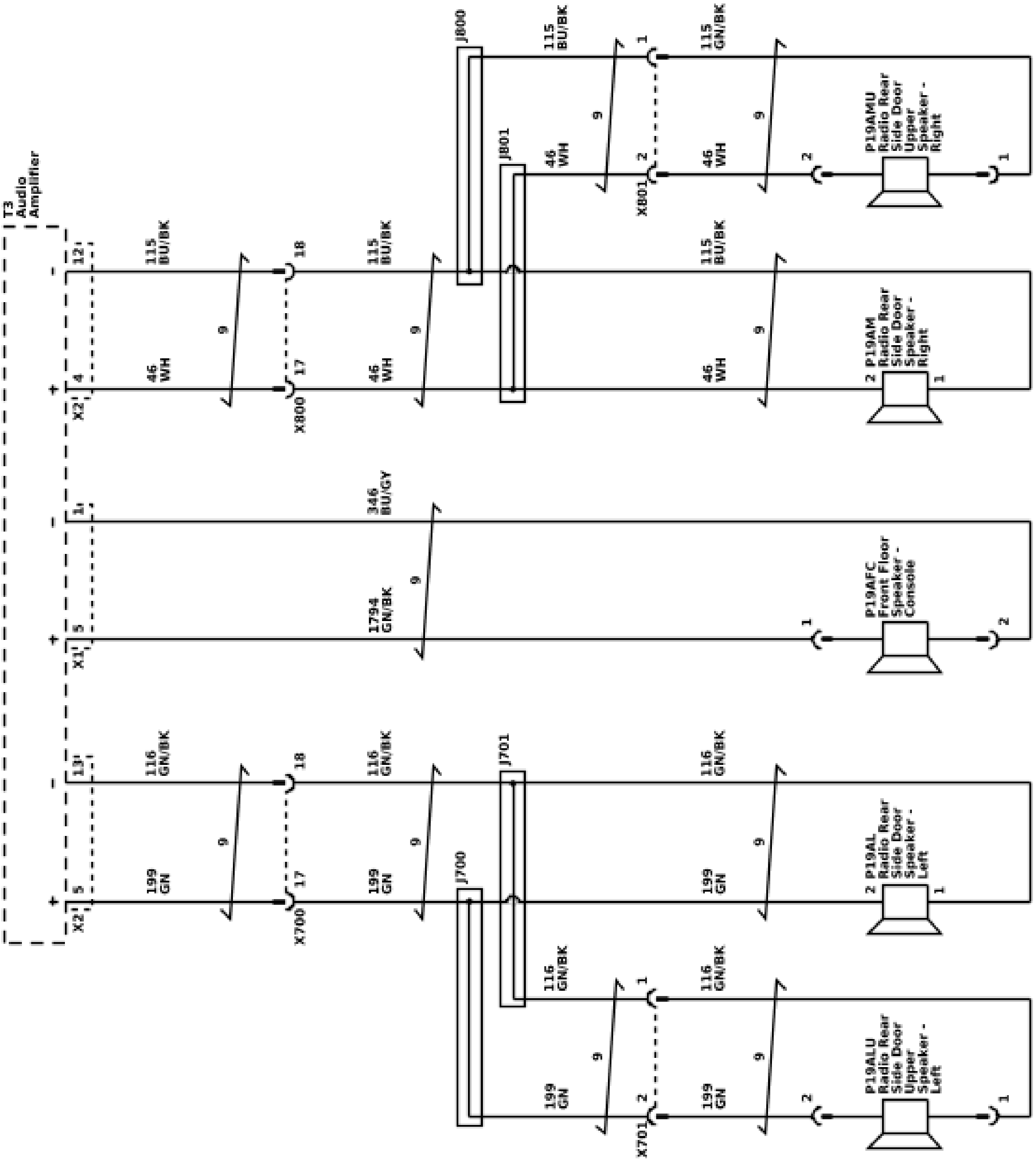

P19AG Radio Front Side Door Speaker - Left
2
1
201 BU
118 BN/BU
9
X500
8
7
X1
3
7
P19J Radio Front Speaker - Instrument Panel Left
1857 BU/VT
1957 BU/BN
X211
45
46
X2
3
11
P19AH Radio Front Side Door Speaker - Right
200 YE
117 YE/BK
X600
5
6
X1
2
6
P19W Radio Front Speaker - Instrument Panel Right
1853 WH/YE
1953 BN/BK
X211
41
42
X2
10
2
P19AL Radio Rear Side Door Speaker - Left
199 GN
116 GN/BK
X700
17
18
5
13
P19AM Radio Rear Side Door Speaker - Right
46 WH
115 BU/BK
X800
17
18
4
12
+
−
T3 Audio Amplifier
X1
1
5
346 BU/GY
1794 GN/BK
P19AFC Front Floor Speaker - Console
6846923

Radio/Navigation System Schematics (IOK) (Speakers - Front (UQS))


2 P19AG Radio Front Side Door Speaker - Left 1
2 P19H Radio Windshield Side Garnish Molding Speaker - Left Front 1
2 P19J Radio Front Speaker - Instrument Panel Left 1
2 P19B Radio Front Center Speaker 1
2 P19W Radio Front Speaker - Instrument Panel Right 1
2 P19V Radio Windshield Side Garnish Molding Speaker - Right Front 1
2 P19AH Radio Front Side Door Speaker - Right 1
201 BU
118 BN/BU
1857 BU/VT
1957 BU/BN
1860 YE/WH
1960 BU/YE
1853 WH/YE
1953 BN/BK
200 YE
117 YE/BK
9
X500 8 7
X600 5 6
X210 38 37
X211 45 46 43 44 41 42 40 39
X1 3 7
X2 3 11 7 15 10 2
X1 2 6
+
-
T3 Audio Amplifier

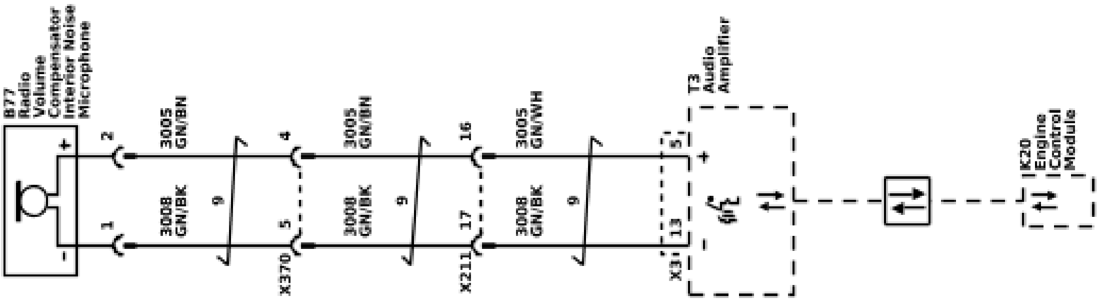
6846924

Radio/Navigation System Schematics (IOK) (Speakers - Floor Console and Rear (UQS))

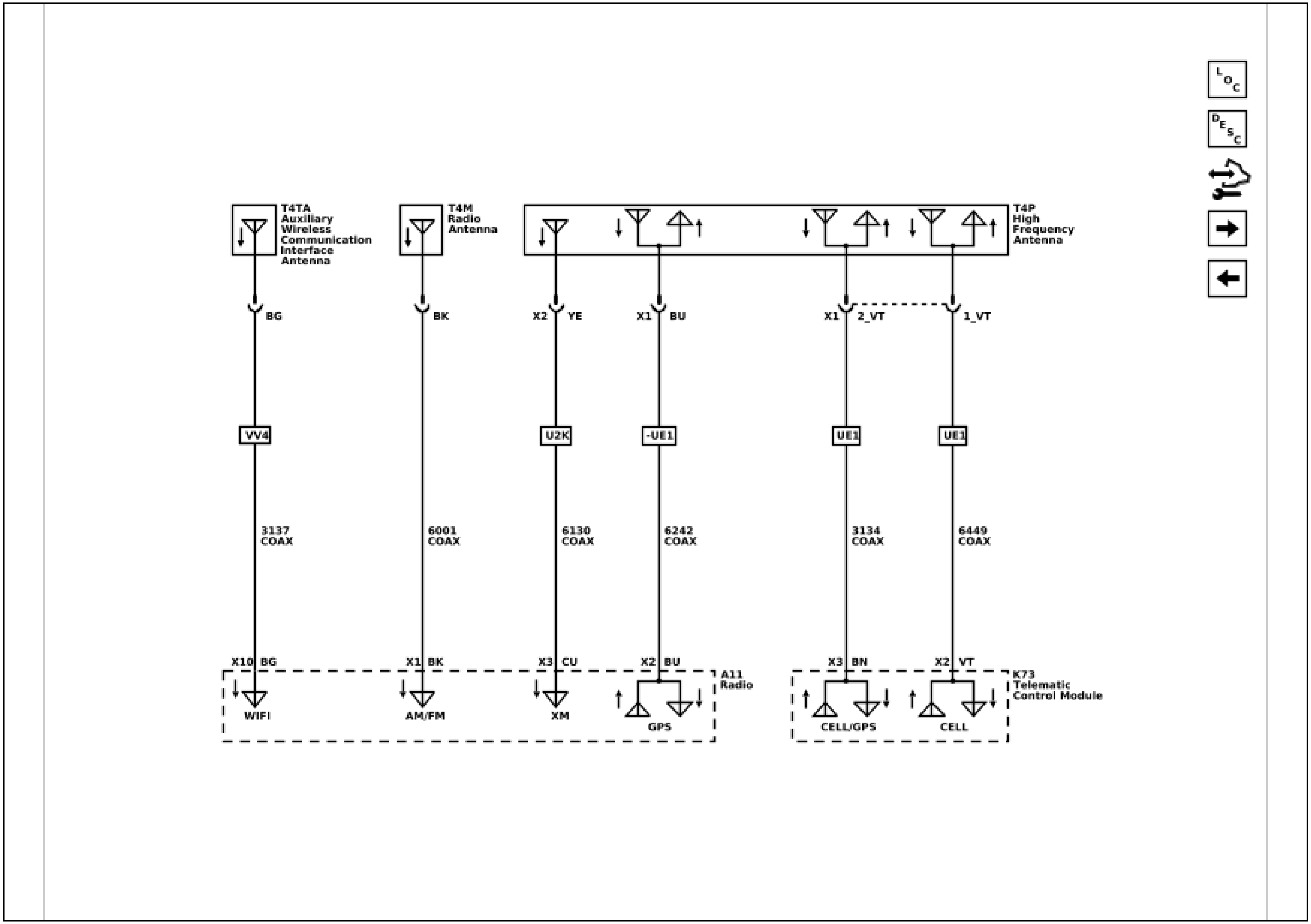

T3 Audio Amplifier
X2
X1
12
4
1
5
13
5
115 BU/BK
46 WH
346 BU/GY
1794 GN/BK
116 GN/BK
199 GN
115 GN/BK
9
X800
17
18
X700
17
18
J800
J801
J700
J701
X801
1
2
X701
1
2
P19AMU Radio Rear Side Door Upper Speaker - Right
P19AM Radio Rear Side Door Speaker - Right
P19AFC Front Floor Speaker - Console
P19AL Radio Rear Side Door Speaker - Left
P19ALU Radio Rear Side Door Upper Speaker - Left
6846925

Radio/Navigation System Schematics (IOK) (Active Noise Cancellation (UQS))

6846926

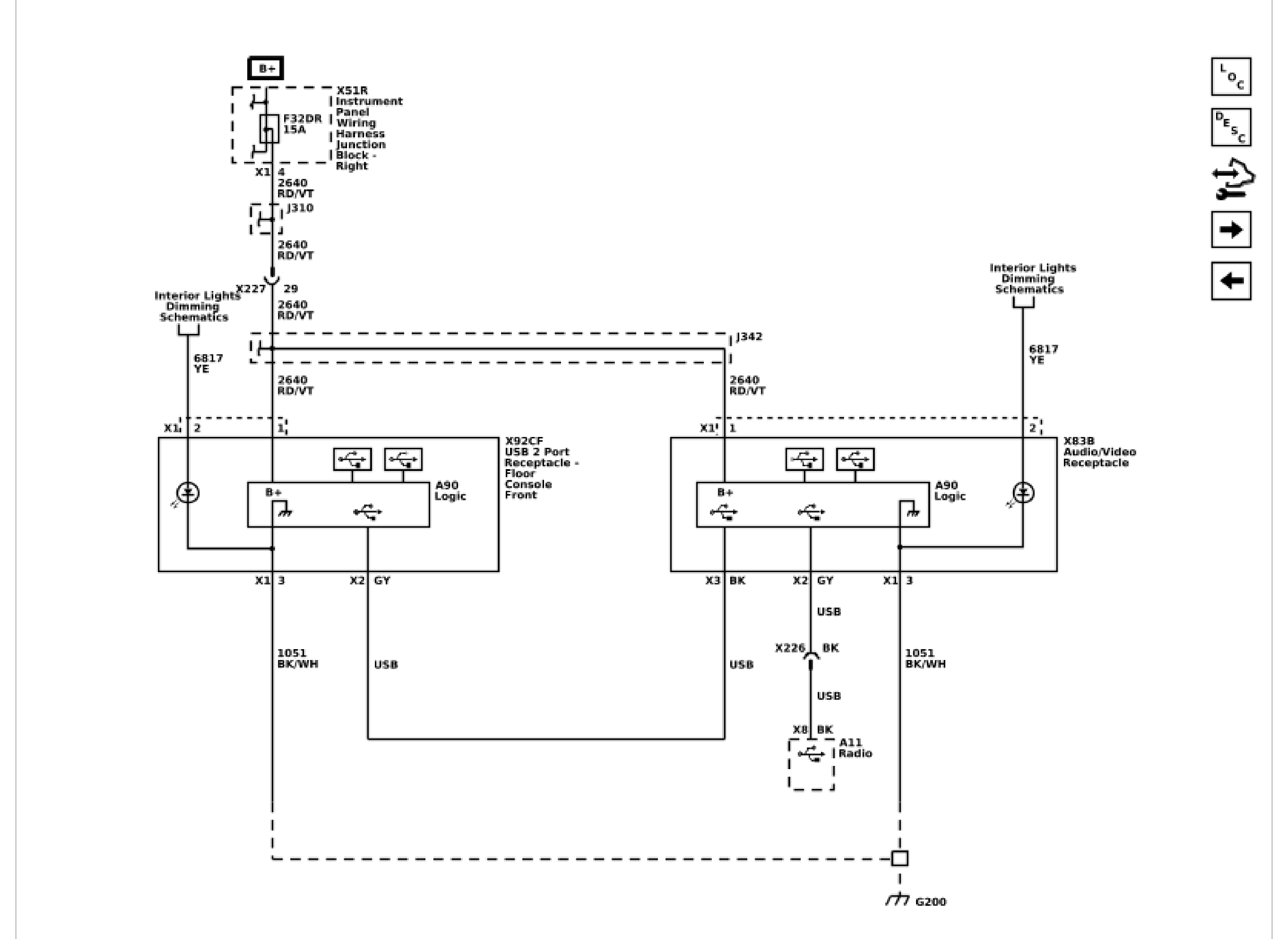

B77
Radio
Volume
Compensator
Interior Noise
Microphone
+
-
2
1
3005
GN/BN
3008
GN/BK
9
4
5
X370
3005
GN/BN
3008
GN/BK
9
16
17
X211
3005
GN/WH
3008
GN/BK
9
5
13
X3
+
-
T3
Audio
Amplifier
K20
Engine
Control
Module

Radio/Navigation System Schematics (IOK) (Antennas)


T4TA
Auxiliary
Wireless
Communication
Interface
Antenna
T4M
Radio
Antenna
T4P
High
Frequency
Antenna
BG
BK
X2 YE
X1 BU
X1 2_VT
1_VT
VV4
U2K
-UE1
UE1
UE1
3137
COAX
6001
COAX
6130
COAX
6242
COAX
3134
COAX
6449
COAX
X10 BG
X1 BK
X3 CU
X2 BU
X3 BN
X2 VT
A11
Radio
K73
Telematic
Control Module
WIFI
AM/FM
XM
GPS
CELL/GPS
CELL

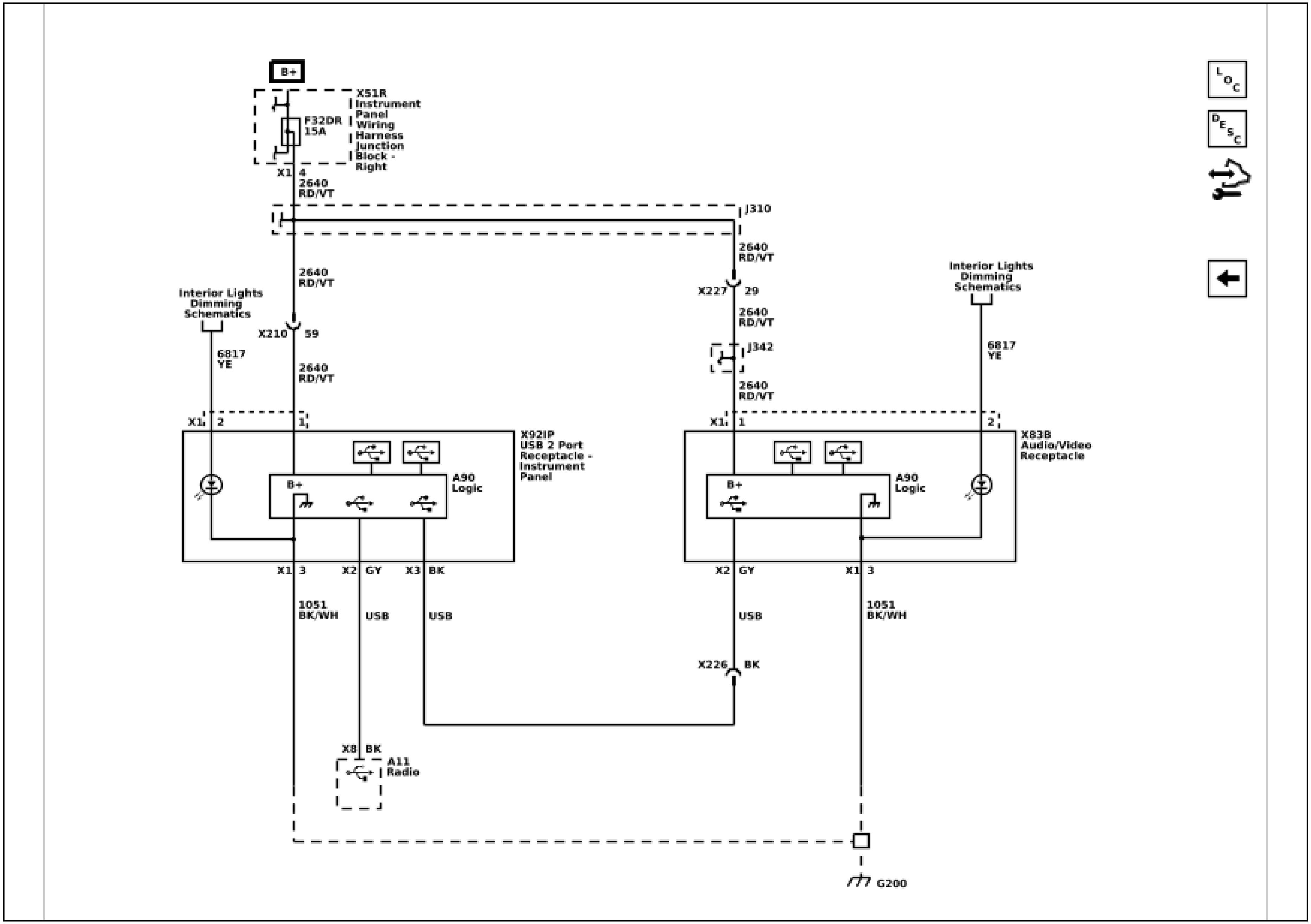
6846927

Radio/Navigation System Schematics (IOK) (Auxiliary Inputs - Front Floor Console USB 2 and Audio/Video Receptacle (GA4 / GFG / GFW / GFY))


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F32DR 15A
X1 4
2640 RD/VT
J310
2640 RD/VT
X227 29
2640 RD/VT
J342
2640 RD/VT
2640 RD/VT
Interior Lights Dimming Schematics
6817 YE
X1 2
1
X92CF USB 2 Port Receptacle - Floor Console Front
A90 Logic
B+
X1 3
X2 GY
1051 BK/WH
USB
Interior Lights Dimming Schematics
6817 YE
X1 1
2
X83B Audio/Video Receptacle
A90 Logic
B+
X3 BK
X2 GY
X1 3
USB
USB
X226 BK
USB
X8 BK
A11 Radio
1051 BK/WH
G200

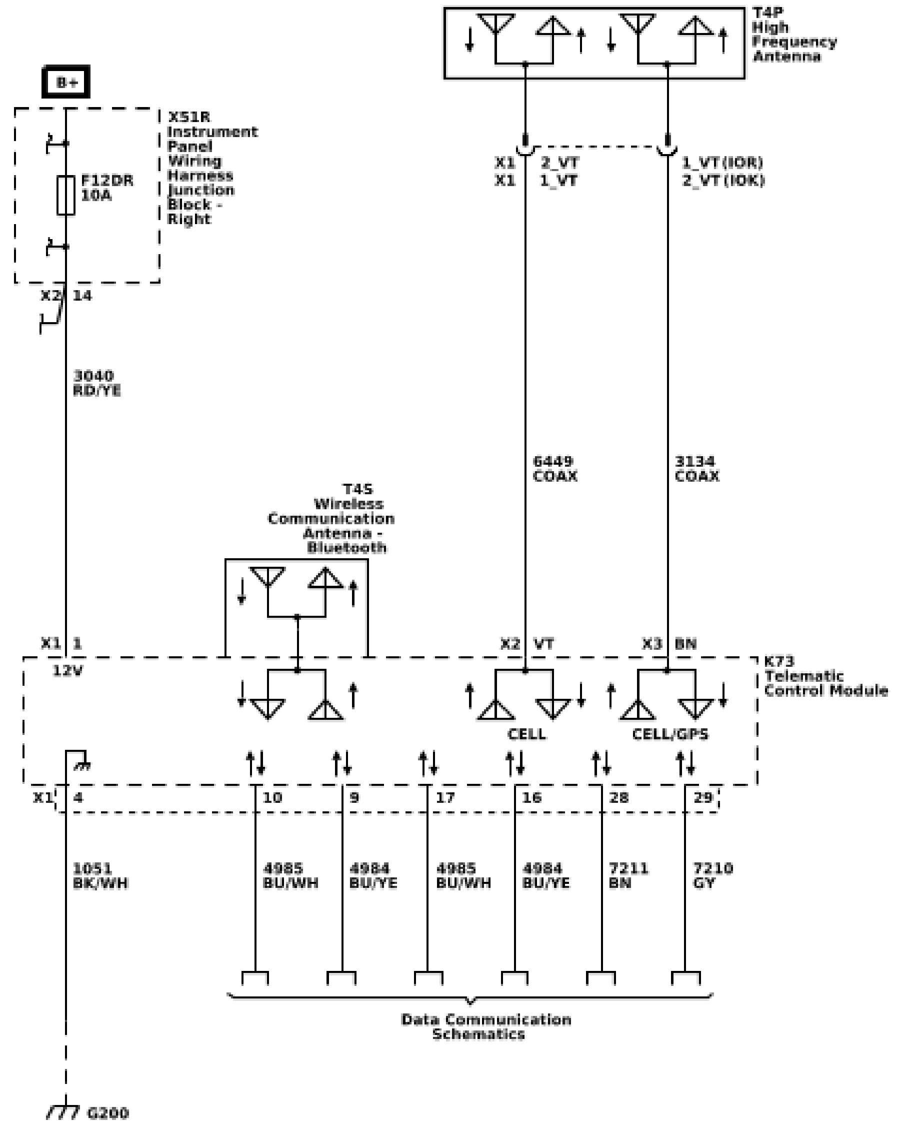
6846928

Radio/Navigation System Schematics (IOK) (Auxiliary Inputs - Instrument Panel USB 2 and Audio/Video Receptacle (GFF / GFI / GFJ / GFS / GFU))

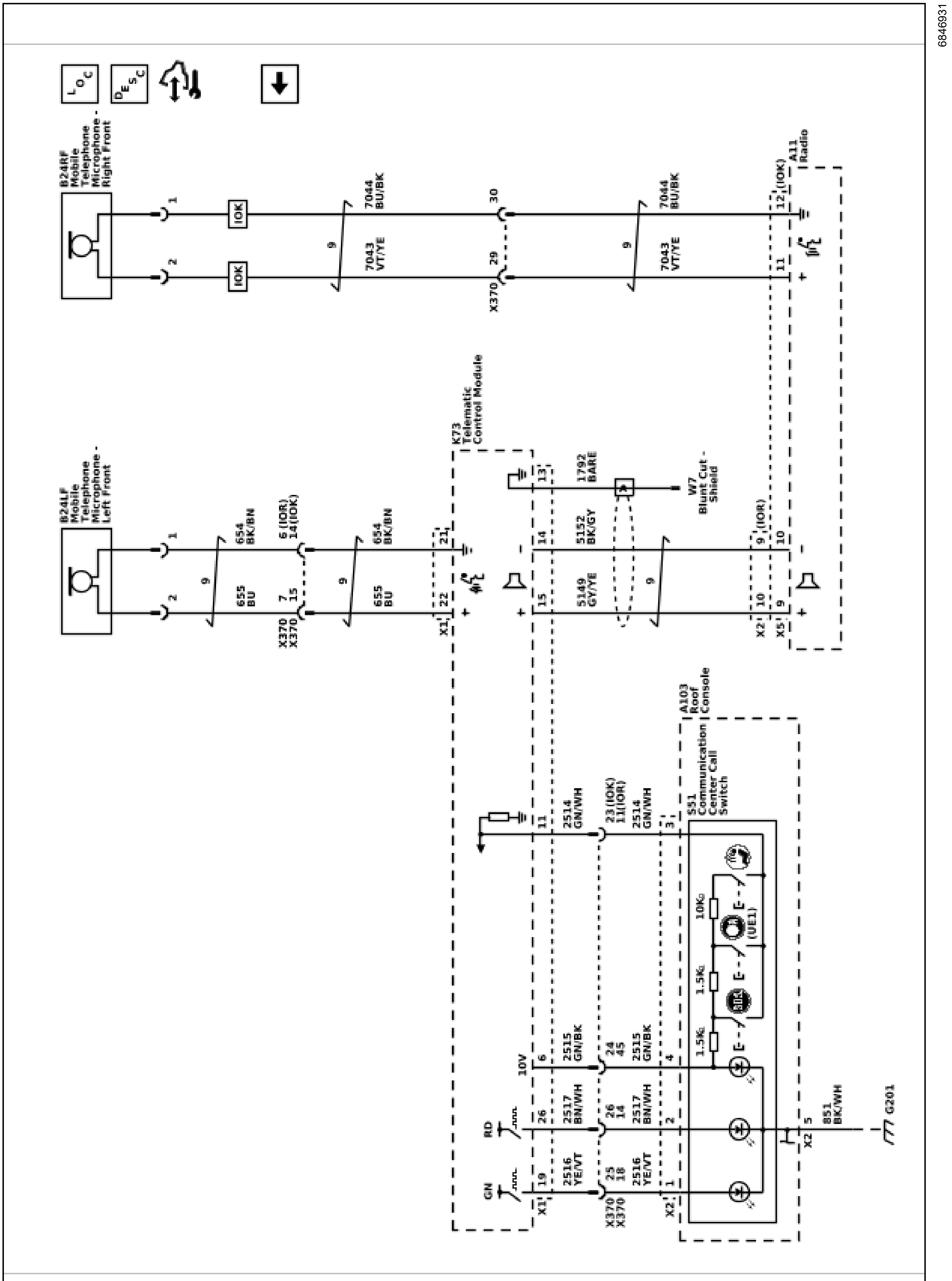

B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F32DR 15A
X1 4
2640 RD/VT
J310
2640 RD/VT
X227 29
2640 RD/VT
J342
2640 RD/VT
X210 59
2640 RD/VT
Interior Lights Dimming Schematics
6817 YE
X1 2
X1 1
X92IP USB 2 Port Receptacle - Instrument Panel
A90 Logic
B+
X1 3
X2 GY
X3 BK
1051 BK/WH
USB
USB
X8 BK
A11 Radio
X83B Audio/Video Receptacle
X1 1
2
A90 Logic
B+
X2 GY
X1 3
USB
1051 BK/WH
X226 BK
G200
LOC
DESC

6846929

OnStar/Telematics Schematics (Power, Ground, Serial Data and Antennas (UDA / UE1))


T4P
High
Frequency
Antenna
B+
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
F12DR
10A
X2 14
3040
RD/YE
X1 2_VT
X1 1_VT
1_VT (IOR)
2_VT (IOK)
6449
COAX
3134
COAX
T45
Wireless
Communication
Antenna -
Bluetooth
X1 1
12V
X2 VT
X3 BN
K73
Telematic
Control Module
CELL
CELL/GPS
X1 4
10
9
17
16
28
29
1051
BK/WH
4985
BU/WH
4984
BU/YE
4985
BU/WH
4984
BU/YE
7211
BN
7210
GY
Data Communication
Schematics
G200
6846930

OnStar/Telematics Schematics (Controls and Audio Signals (UDA / UE1))


6846931
B24RF Mobile Telephone Microphone - Right Front
B24LF Mobile Telephone Microphone - Left Front
K73 Telematic Control Module
A11 Radio
A103 Roof Console
S51 Communication Center Call Switch
W7 Blunt Cut - Shield
G201
IOK
7044 BU/BK
7043 VT/YE
654 BK/BN
655 BU
1792 BARE
5152 BK/GY
5149 GY/YE
2514 GN/WH
2515 GN/BK
2517 BN/WH
2516 YE/VT
851 BK/WH
X370
X1
X2
X5
6 (IOR) 14 (IOK)
7 15
12 (IOK)
9 (IOR)
23 (IOK) 11 (IOR)
24 45
26 14
25 18
10V
RD
GN
1.5KΩ
1.5KΩ
10KΩ
(UE1)

Description and Operation

Active Noise Cancellation Description and Operation

The entertainment system on this vehicle may have several different configurations. To determine the specific configuration of the vehicle, please see the Service Parts ID Label, and refer to *RPO Code List 0-2*.

The main components of the Active Noise Cancellation system are:

- Microphones in the vehicle headliner. Use schematics to determine the number of microphones in each vehicle.
- A discrete engine speed (RPM) signal from the engine control module to the amplifier/active noise cancellation module.
- Active Noise Cancellation electronics and software integrated into the audio amplifier/active noise cancellation module.
- The vehicle speaker system, connected to the amplifier/active noise cancellation module, to output the desired cancellation frequencies.

The Active Noise Cancellation system is operational under the following conditions:

- The amplifier/active noise cancellation module has passed all self diagnostic checks
- All doors are closed
- Battery voltage is between 9.5 V and 16 V
- The vehicle cabin temperature is less than 140°F (60°C)
- Engine speed is between 550 and 3000 RPM

The Active Noise Cancellation system is a method used to reduce the perception of certain undesirable sounds generated by the engine into the vehicle cabin. The systems uses microphone and engine speed signals, software integrated into the amplifier/active noise cancellation module, and the vehicle speakers to determine and generate the correct frequencies needed to achieve the desired reduction.

The microphones are located in the headliner to monitor noise/sounds in the vehicle cabin, and are directly connected to the amplifier/active noise cancellation module. The amplifier/active noise cancellation module also receives a discrete engine speed (RPM) signal from the engine control module. The amplifier/active noise cancellation module processes these inputs to determine the frequency of the undesirable sound. The amplifier/active noise cancellation module then calculates the appropriate cancellation frequency and outputs a cancellation signal (audio tone) to the vehicle speakers to reduce the perception of undesirable sounds by the vehicle occupants so the vehicle cabin appears quieter and without vibration.

ESE Engine Sound Enhancement (if equipped with NKD)

The ESE feature improves the natural sounds of powertrain and exhaust systems. It uses the microphones and tachometer inputs (under heavy acceleration conditions) to modify the sound and play it back through the speakers. This feature is always enabled and there are no controls to enable or disable the system.

OnStar Description and Operation

This OnStar® system consists of the following components:

- Telematics Communication Module
- OnStar® three button assembly
- Microphones
- Cellular antenna
- Navigation antenna
- Back up battery
- WiFi Support
- TTY (Teletypewriter)

This system also interfaces with the factory installed vehicle audio system.

Telematics Communication Module

The OnStar Telecommunications Platform (TCP) system communicates with various infotainment components via Ethernet. The OnStar TCP uses Global System for Mobile Communication (GSM) to communicate data and voice signals over the national cellular network. The Telematics Communication Module supports entertainment WiFi hotspots by providing a connection to the cellular network for internet access. The module is capable of up to 4G LTE speeds and houses two technology systems, one to process Global Positioning System (GPS) data, and another for cellular information. The module sends and receives all cellular communications over two cellular antennas and cellular antenna coax cables.

The OnStar TCP system has two antenna inputs, a primary cellular signal and a combined GPS/secondary cellular signal. OnStar can receive signals from multiple global navigation satellite systems, including the United States developed GPS and Russian developed Global Navigation Satellite System (GLONASS).

The module also has the capability of activating certain features such as, the horn, remote engine starting, initiating door lock/unlock, or activating the exterior lamps using the serial data circuits. These functions can be commanded by the OnStar® Call Center per a customer request or mobile device app depending on vehicle and customer subscription.

Dedicated circuits are used to connect the Telematics Communication Module to a microphone, the button assembly, and radio. When equipped, the Telematics Communication Module may contain a back up battery (BUB) which is internal to the control module and replaceable through an access cover. The Telematics Communication Module communicates with the rest of the vehicle over the serial data bus and Ethernet.

Power is provided by a dedicated, fused B+ circuit. Ground is provided through the vehicle wiring harness attached to the module. The power mode state is determined by the Telematics Communication Module through serial data messaging.

For China Only Battery Electric Vehicles- The Vehicle Data Monitor module collects vehicle and electrification state of health messages and sends this data to the Telematics Communication Module. The TCM is then responsible for sending the data to a SGM/government server via the 4G network.

OnStar® Three Button Assembly

- The OnStar® button assembly may be part of the rearview mirror, or a separate, stand alone unit. The button assembly is comprised of 3 buttons or 3 capacitive touch buttons and status LED’s or an error indicator. The buttons are defined as follows:
  - The answer/end button, which is black with a white phone icon or a white driver figure seated with voice signals near its face, allows the user to answer and end calls or initiate speech recognition.
  - The blue OnStar® call center button, which displays the OnStar® logo, allows the user to connect to the OnStar® call center.
  - The emergency button, which displays white letters “SOS” with red background, sends a high priority emergency call to the OnStar® call center when pressed.

If the LED does not illuminate, this may indicate that the customers OnStar® subscription is not active or has expired. Push the blue OnStar button to connect to an advisor who can then verify the account status.

The Telematics Communication Module supplies 10 volts to the OnStar® button assembly on the keypad supply voltage circuit. When pressed, each button completes a circuit across a resistor allowing a specific voltage to be returned to the Telematics Communication Module on the keypad signal circuit. Depending upon the voltage range returned the Telematics Communication Module is able to identify which button has been pressed.

The OnStar® status LED or error indicator is located near the buttons. The LED is green when the system is ON and operating normally. When any indicator is illuminated and flashing, it is an indication that a call is in progress. When the LED is red, this indicates a system malfunction is present. In the event there is a system malfunction and the OnStar® system is still able to make a call, the LED will flash red during the call.

Each LED or error indicator is controlled by either the Telematics Communication Module over dedicated LED signal circuits or by low speed GM LAN serial data depending on the inside rearview mirror option. Ground for the LED is provided by the wiring harness attached to the button assembly.

Secondary OnStar® Controls

Some vehicles may have an additional button that when pushed can engage the OnStar® system. The button may be a symbol of a face with sound waves, or may say MUTE, or be a symbol of a radio speaker with a slash through it.

By engaging the OnStar® system with this feature, the user can interact with the system by use of voice commands. A complete list of these commands is supplied in the information provided to the customer. If the information is not available for reference, at any command prompt the user can say "HELP" and the Telematics Communication Module will return an audible list of available commands.

Microphones

This system utilizes two hands free audio microphones, the primary microphone on the driver side and a secondary/reference microphone for the front passenger side. The primary microphone is connected directly to the Telematics Communication Module. It is also connected by an analog pass-through circuit to the radio from the Telematics Communication Module. The secondary microphone is connected directly to the radio.

The primary microphone is used for emergency and OnStar calls. During normal operating conditions it also provides Bluetooth calls and speech recognition to the radio. The secondary microphone is used as a reference for the primary microphone for passenger interference cancellation during speech recognition and also to enhance the driver side hands free calls. For MY18 and beyond the secondary microphone can also be used for front passenger hands free phone calls.

The front passenger secondary microphone is never used as a direct source for an OnStar call. The second microphone input modifies the primary microphone input to reduce background noise and other interference. An OnStar call requires the microphone to be directly connected to the Telematics Communication Module. During a normal (non-emergency) OnStar call the Telematics Communication Module receives an audio signal from the primary microphone and sends the signal to the radio via the Ethernet connection. The radio processes the OnStar call audio and sends it back to the Telematics Communication Module via the Ethernet connection. During an emergency button call the Telematics Communication Module contacts the OnStar call center directly and does not send the signal to the radio.

Cellular and GPS Antennas

The combination antenna will have any of the following antenna elements when equipped with OnStar:

- Primary cellular element
- Secondary cellular element
- GPS element
- Digital radio element
- AM/FM element

The OnStar® TCP system uses two cellular antenna elements to send and receive cellular data, the primary cellular element and the secondary cellular element. The primary cellular signal is carried by a coax cable that connects the antenna directly to the Telematics Communication Module. Details of the secondary cellular signal are further described below.

The GPS antenna element is used to collect the signals of the orbiting GPS satellites. GPS signals are output from the Telematics Communication Module on Ethernet. Other modules on Ethernet may use the GPS latitude, longitude and satellite time data broadcast by the Telematics Communication Module. Using positioning information from the vehicle Ethernet avoids the use of a coaxial signal splitter to pass the analog GPS signal to other modules. Within the antenna is housed a low noise amplifier that allows for a more broad and precise reception of this data. Also housed within the antenna is circuitry to combine the GPS signal and the secondary cellular signal. The combination GPS/secondary cellular signal is carried by a coax cable that connects directly to the Telematics Communication Module. The cable also provides a path for DC current for powering the antenna.

Compass Heading

The Telematics Communication Module has a compass feature to calculate vehicle direction which is displayed via the instrument panel cluster or designated display. The compass heading is determined by dead reckoning until the GPS 3D fix is established. The dead reckoning is accomplished by using the yaw rate sensors and wheel ticks to determine heading changes from a GPS known heading. The GPS 3D fix heading is determined by the deferential of two locations.

Bluetooth®

With the OnStar TCP system Bluetooth® resides in the radio. Refer to Radio/Audio System Description and Operation for further details.

Phantom Phone Calls

A customer may report that the OnStar® system is attempting and/or completing phone calls which the operator of the vehicle did not initiate.

It is important to know which type of reported phantom phone call the operator is reporting. Some phone calls of this nature are considered normal and cannot be addressed other than through education, while others may require some remedial action to resolve. When attempting resolve, it is very important to determine under which circumstances the reported Phantom Phone call resulted.

The following are different scenarios:

- The vehicle may receive an incoming call just like any other phone. Typically the customer will hear the phone ringing in the vehicle. This scenario also includes incoming Bluetooth calls.
- Because the button assembly and associated wiring feeds voltage back to the OnStar® system based on the amount of voltage drop through each

of the buttons, should the return line be partially shorted to voltage the system could interpret this voltage as a key press. If one of the buttons voltage is simulated, such as the Blue button. The system will make a phone call just as if the button had been pressed by the operator of the vehicle. Refer to the OnStar Button Malfunction document for diagnostics.

- Internal module fault. Some customers may report a condition where ″Phone Unavailable″ message is heard after the vehicle door is opened or key is cycled. The technician may find a DTC stored in the Telematics module (example: U1500 or B1000). Refer to diagnostics for the DTC making sure to follow any applicable Bulletins or PIs.
- Unwanted Hands free calling activation. A customer may report that the ″Ready!″ or ″OnStar® Ready!″ message is heard while driving. The customer may also advise that this seems to happen mostly while making a turn. In some cases it has been found that the customer is inadvertently pressing the ″push to talk″ button on the steering wheel controls. On rare occasions, other issues in the steering column or Steering Wheel Control system may induce this event.

The majority of reported Phantom Phone Calls can be attributed to accidental button presses or customer induced concern. In some cases an incoming call may be mistaken as a phantom call concern. It is important to verify all aspects of the customer concern in order to properly duplicate and diagnose the condition. If the concern points to normal operation and customer induced concern, please communicate to the customer this condition is a normal operating characteristic of their vehicle.

Back-up Battery

In some vehicles, the OnStar system is equipped with a Back-Up Battery (BUB) installed inside the Telematics Communication Module . This battery is a two-cell lithium-ion rechargeable battery assembly, connected with a short electrical harness, to the circuit board in the module. Contained within this two-cell battery package are a temperature-sensing thermistor, automatic-resetting circuit-overload protection, and a low-pressure vent valve. Nominal voltage of the battery pack is 7.3 Volts.

The BUB is only switched into service when the OnStar system is in normal On condition, vehicle power mode of either Run or On, and main vehicle battery power (B+) at the Telematics Communication Module suddenly becomes near-zero. At this time BUB power is connected to the main circuit board power using solid-state power switching circuits. After initiating BUB for module power, the CAN bus is monitored for a message confirming a collision-event, or near-collision event, has occurred. If a confirmation message is received, the Telematics Communication Module continues to use BUB as the power supply until it is depleted. If a confirmation message is not received within 10 seconds, the BUB power circuits are internally disconnected, preventing inadvertent discharge of the battery.

Charging circuitry within the Telematics Communication Module maintains the state of charge of the BUB. BUB charging occurs as determined by the module software, primarily based on temperature and state of charge. Battery state of charge is measured by the Telematics Communication Module circuitry, and remaining energy capacity calculated by the module software. On-board diagnostic tests check for circuit faults, over-temperature conditions, and low-energy capacity. Current DTCs will set for each of these conditions. No component checks are required, and are not recommended, for BUB diagnosis.

WiFi Support

The Telematics Communication Module supports entertainment WiFi hotspots by providing a connection to the cellular network for internet access. The radio acts as the central WiFi router and connects hardwire Ethernet to the Telematics Communication Module. The Telematics Communication Module completes the connection to the internet through the cellular network. It has the ability to connect up to 7 devices at one time.

Audio System Interface

When OnStar® requires audio output, a serial data message is sent to the audio system to mute all radio functions and transmit OnStar® originated audio. The OnStar® audio is transmitted to the vehicle audio system by Ethernet and circuitry .

The audio system will mute and an audible ring will be heard though the speakers if the vehicle receives a call with the radio ON.

On some vehicles, the HVAC blower speed may be reduced when the OnStar® system is active to aid in reducing interior noise. When the system is no longer active, the blower speed will return to its previous setting.

OnStar® Sleep Cycle

The OnStar® system uses a unique sleep cycle to allow the system to receive cellular calls while the ignition is in the OFF position and retained accessory power mode has ended. This cycle enables the Telematics Communication Module to perform remote functions, such as door unlock, as commanded over the air by the OnStar® Call Center, and to continue to maintain an acceptable level of battery electrical drain.

The OnStar® system uses 4 states of readiness, depending upon the type of cellular market the vehicle is in when the ignition is put into the OFF state:

- High power
- Low power
- Sleep
- Digital standby

The high power state is in effect whenever the ignition is in the ON or RUN position, or retained accessory power is enabled, and the OnStar® system is sending or receiving calls or when the system is performing a remote function.

The low power state is in effect when the OnStar® system is idle with the ignition in the ON or RUN position, or with retained accessory power enabled.

The digital standby power state is entered after the vehicle has been shut off and the retained accessory power has timed out while in a digital cellular area. When in digital standby mode, the OnStar® module is able to perform all remote functions as commanded by an OnStar® advisor at any time, for a continuous 120 hours. After 120 hours, the Telematics Communication Module will go into sleep mode until a wake up signal from the vehicle is seen by the Telematics Communication Module. If the Telematics Communication Module loses the digital cellular signal it will revert to analog mode and follow the standard sleep state (9 minutes OFF, 1 minute standby) based on the time of the GPS signals, this will continue until a digital cellular signal is again received.

If the OnStar® system loses battery power while the system is in a standby or sleep mode, the system will remain OFF until battery power is restored and the ignition is turned to the ON or RUN position.

Features

Turn by Turn Navigation (if equipped)

Turn by Turn Navigation allows the driver to contact OnStar® to obtain directions for driving from a current location to a desired location. The Turn by Turn Navigation system stores your planned route and continually checks your position along that route. When you deviate from the planned route, the system will recognize this and prompt the driver with verbal prompts for how to proceed.

Teletypewriter (TTY) Users

OnStar has the ability to communicate to deaf, hard-of-hearing, or speech-impaired customers while in the vehicle. The available dealer-installed TTY system can provide in-vehicle access to all of the OnStar services, except Virtual Advisor and OnStar Turn-by-Turn Navigation.

Deactivated OnStar® Accounts

In the event a customer has not renewed their OnStar® account after expiration or the account was never activated, OnStar® will make a discrete cellular call to the vehicle to deactivate the OnStar® system. Before taking this action, customers are notified that the OnStar® system in their vehicle will be deactivated unless they elect to renew the account. After the OnStar® account has been deactivated, customers will experience the following:

- The OnStar® status LED will not illuminate.
- The OnStar® system will NOT attempt to connect to the OnStar® Call Center in the event of a collision or if the vehicle's front air bags deploy for any other reason.
- An emergency button press will play a demo message indicating the service has been deactivated.
- An OnStar® Call Center button press will connect the customer with a dedicated sales team who can sell an OnStar® subscription and reactivate the vehicle. Depending on the type of OnStar® hardware in the vehicle, the customer may first hear a demonstration message stating there is no current OnStar® subscription for the vehicle, and directing the customer what to do to activate services.
- OnStar® personal calling will not be available, as this feature requires the customer to have a current OnStar® account. Attempts to use this feature may result in cellular connection failure messages and the inability to connect to the number dialed.

Certain vehicles that have never had an active OnStar® account, or that have been deactivated, may be unable to establish a connection with the OnStar® Call Center. When normal published diagnostic procedures do not indicate a possible cause for the no connect concern, the vehicle may have been deactivated. For deactivated vehicles, a no connect response should be considered normal operation. Further diagnosis and subsequent repair is only necessary should the customer elect to become an active OnStar® subscriber or renew the account subscription.

OnStar® Cellular, GPS, and Diagnostic Limitations

The proper operation of the OnStar® System is dependent on several elements outside the components integrated into the vehicle. These include the National Cellular Network Infrastructure, the cellular telephone carriers within the network, and the GPS.

The cellular operation of the OnStar® system may be inhibited by factors such as the users range from an analog or digital cellular tower, the state of the cellular carrier's equipment, and the location where the call is placed. Making an OnStar® key press in areas that lack sufficient cellular coverage or have a temporary equipment failure will result in either the inability of a call to complete with a data transfer or the complete inability to connect to the OnStar® Call Center. The OnStar® system may also experience connection issues if the identification numbers for the module, station identification number, electronic serial number or manufacturers electronic ID, are not recognized by the cellular carriers local signal receiving towers.

The satellites that orbit Earth providing the OnStar system with GPS data have almost no failures associated with them. In the event of a no GPS concern, the failure will likely lie with the inability of the system to gain GPS signals because of its location, i.e. in a parking structure, hardware failure, or being mistaken with an OnStar® call which has reached the Call Center without vehicle data.

During diagnostic testing of the OnStar® system, the technician should ensure the vehicle is located in an area that has a clear unobstructed view of the open sky, and preferably, an area where analog or digital cellular calls have been successfully placed. These areas can be found by successfully making an OnStar® keypress in a known good OnStar® equipped vehicle and confirming success with the OnStar® Call Center advisor. Such places can be used as a permanent reference for future OnStar® testing.

Mobile Identification Number and Mobile Directory Number

The Telematics Communication Module utilizes two numbers for cellular device identification, call routing and connection, a mobile identification number and a mobile directory number. The mobile identification number represents the number used by the cellular carrier for call routing purposes while the mobile directory number represents the number dialed to reach the cellular device.

Radio/Audio System Description and Operation

The entertainment system on this vehicle may have several different configurations available to it. To determine the specific configuration of the vehicle, please see the Service Parts ID Label, and refer to *RPO Code List 0-2*.

Each item in the list below represents topics covered in detail below.

- Demo Mode
- Data Communications
- Remote Radio Receiver
- Speaker Operation
- Antenna System
- Radio Reception
- Active Noise Cancellation/Auto Volume Control (If equipped)
- Microphones
- Bluetooth ® (if equipped)
- WiFi
- Back Office Registration
- Applications (if equipped)
- Speech Recognition
- Navigation System Components and Features (if equipped)
- Locations Services
- Valet Mode
- Teen Driver
- Passenger Mode
- Theft Deterrent
- Audio Amplifier (if equipped)
- Infotainment Controls and Display
- Steering Wheel Controls (If equipped)
- SD Card Reader, USB and Auxiliary port
- OnStar ®
- OTA (Over The Air) Programming
- GAS (Google Automotive Services) if equipped
- Compass Data
- Media Disc Player (if equipped)
- Digital Rearview Camera (if equipped)

Demo Mode

The radio on new unsold vehicles received at the dealer will be in Demo Mode. In Demo Mode a phone will only stay paired for the current key cycle and lose pairing to the radio after the vehicle shuts down and restarted after 10 min. Additional operational characteristics of Demo Mode include no retention of the following:

- Stored favorites
- Last station tuned
- Bluetooth synced devices
- Volume level
- Last app or screen view
- Audio/equalizer settings

Note: If a device was originally paired while in Demo Mode, a similar condition could occur that randomly continues to drop Bluetooth pairing after exiting Demo Mode. If the vehicle is not in Demo Mode, but it is believed the device was originally paired while in Demo Mode, then delete the device from the radio, delete the radio from the device, and perform the pairing process again.

Loss of functionality on the above items may be due to the design intent of the vehicle while in Demo Mode, no correction is needed for these conditions. This is the normal operating characteristic of the Demo Mode of the vehicle. Once the vehicle is sold, select the option labeled “Not a Demo Vehicle” to exit Demo Mode.

Data Communications

The infotainment system communicates with other devices on multiple serial data networks during operation.

Ethernet AVB

At the core of the infotainment system is the Radio Ethernet AVB (Audio Video Bridging) switch, which communicates directly to each contributing Infotainment module terminator. The Ethernet harness consists of twisted pair wires from point to point. Each module on the Ethernet infotainment system sends/receives data at 100 megabit per second (Mbps) to/from a specified port at the Radio. Some system configurations support a 1 Gigabit per second (Gbps) connection at the Radio to/from the TCP (Telematics) module. The Radio/Ethernet will also be used to program USB software update files to the modules connected to the Ethernet ports. Some of the data services performed over Ethernet AVB include: Chime, Service Programming via Over-The-Air updates, OnStar Turn-by-Turn directions and all other OnStar data services.

Local Interconnect Network (LIN)

The Local Interconnect Network (LIN) Bus is a single wire communication system. This bus is used to exchange information between a master control module and other smart devices which provide supporting functionality.

The Remote Radio Receiver, Information Display, Infotainment Controls and the Multifunction (tunnel) Controls all communicate on the LIN bus.

Controller Area Network (CAN)

The Radio will communicate with other modules and systems in the vehicle via CAN and CAN5. Diagnostic Trouble Codes will be read on CAN/CAN5 to diagnose Ethernet, LIN and system faults. CAN will also be used for programming calibrations using Tech Line Connect (TLC)/SPS. CAN takes the place of GMLAN on Global-B architecture systems. CAN5 is a sub-system of the entire CAN network on a vehicle and is the specific network that connects the Infotainment modules on the vehicle.

For additional information refer to *Data Link Communications Description and Operation 8-26*

Automotive Audio Bus (A2B)

The Automotive Audio Bus (A2B) uses a radio and one or more amplifiers. It is a private, digital, and high speed serial bus. The system contains a master (radio) and one or more slaves (amplifiers) connected by an unshielded twisted pair (UTP) wiring harness. Diagnostic Trouble Codes (DTCs) are set within the master node for all errors in the system, if the bus is up and communicating. The system operates on full duplex, where communication is possible over a single wire if the other wire is damaged or open. The network is daisy chained. A and B ports are isolated by the A2B transceiver. The A2B bus line doesn’t require any terminator. The last device is configured as end node by the A2B master processor during the network discovery process.

Remote Radio Receiver

Overview

The Radio is the Ethernet master. The radio also communicates with other components and systems within the vehicle via CAN/CAN5 and LIN. The remote radio receiver communicates with the info display module via the LIN bus for control information, touch communications and dimming level. Digital video data is sent to the display through a dedicated video cable.

The Radio receiver contains internal antennas for Bluetooth ® and WiFi. The Radio also has an external WiFi antenna (on applicable systems) that is used to receive local WiFi signals at increased distances. This is mainly used to support Over-the-Air updates. The Radio must be mounted properly to obtain proper wireless signals and GPS position. The remote radio receiver is responsible for receiving all broadcast audio bands. Broadcast signals from AM, FM, XM and DAB bands are transmitted to the radio via the vehicle antenna systems. The remote radio receiver is also responsible for the following: Video for the infotainment display, Bluetooth ®, USB, memory card reader, and speech recognition functions.

The Radio has phone projection capabilities that can transmit information directly to the vehicle infotainment system through Bluetooth or a USB connection. Downloadable applications will be available based on distracted driver safety requirements.

Radio Power

The radio receives battery power and ground from the vehicle harness.

The radio does not use a discrete ignition feed circuit for power moding. The power mode master provides the system power mode to the radio via serial data messages. The power mode master determines the system power mode by processing power mode information from ignition switch inputs. Serial data power modes supported by the radio are OFF, ACCESSORY, RUN, and CRANK REQUEST.

The radio can be turned ON with the ignition OFF. After 10 minutes of inactivity the radio will power down. If any setting (e.g. changing the station) or volume has been changed or if the radio has been powered OFF than back ON the 10 minute timer will reset from that point.

Radio Audio Outputs

When not equipped with an amplifier, the radio outputs all audio signals to the speakers via the vehicle wiring harness.

When equipped with an amplifier, the radio outputs all audio signals digitally over Ethernet.

Speaker Operation

Speakers turn electrical energy into mechanical energy to move air, using a permanent magnet and an electromagnet. The electromagnet is energized when the radio or amplifier (if equipped) delivers current to the voice coil on the speaker. The voice coil will form a north and south pole that will cause the voice coil and the speaker cone to move in relation to the permanent magnet. The current delivered to the speaker is rapidly changing alternating current (A/C). This causes the speaker cone to move in two directions producing sound.

Antenna System

Multi-Band Antenna

The multi-band antenna is located on the roof of the vehicle. This type of antenna may be used with the AM/FM radio, but is primarily for cellular, GPS signals, and XM, if the vehicle has these features. Keep this antenna clear of snow and ice for clear reception. If the vehicle has a sunroof, the performance of the system may be affected if the sunroof is open. Loading items onto the roof of the vehicle can interfere with the performance of the system. Ensure the multi-band antenna is not obstructed.

Diversity Antenna

The diversity antenna system can use up to two antenna amplifiers and an AM/FM element that is part of the rear end spoiler assembly or applied as appliqués to the rear glass. With two antennas the right antenna 1 receives both AM and FM signals, while the left antenna 2 may receive FM and Digital Audio Broadcast (DAB) signals only. The antenna amplifier receives the signals from the rear end spoiler antenna element or from the glass antenna element. Each antenna amplifier is connected to the radio by a coaxial cable.

The radio antenna amplifier is enabled when the radio is turned on. The radio provides battery voltage to the antenna amplifier using the center conductor of the antenna coaxial cable. When a 12 V signal is seen by the amplifier on the center conductor of the antenna coax, the received signals are amplified.

With a two antenna amplifier system when the AM band is selected on the radio, the antenna 1 amplifier connects the AM antenna to the radio. When the FM band is selected, both antenna amplifiers provide FM signals to the radio. The radio switches between the two FM antennas, monitoring the signal strength and combines the signals to create one stronger signal.

Global Positioning System (GPS) Antenna

The global positioning system (GPS) antenna is part of the multi-band antenna located on the roof of the vehicle. The GPS antenna is used to collect the signals of the orbiting GPS satellites. Within the antenna is housed a low noise amplifier that allows for a more broad and precise reception of this data. The GPS antenna amplifier is powered through the coaxial cable.

The GPS antenna is connected to the telematics communication interface control module via a coax cable. The GPS signal is sent to the navigation radio via an Ethernet harness.

External WiFi Antenna

On some system configurations, an external WiFi antenna is connected to the radio to support longer range reception, compared to the internal Wifi antenna. Over-the-air updates is the main feature supported by this antenna. Data transfers used for consumer media will also be supported by this antenna when connected to a local network. The antenna is connected to the radio via coaxial cable.

Radio Reception

AM/FM Radio Signal

The radio signal is sent from a broadcast station and is then received by an antenna. The strength of the signal received depends on the following:

- The power output (wattage) of the broadcasting station
- The location of the vehicle (or receiver) relative to the broadcast tower.
- Height of the broadcast antenna
- Height of the receiving antenna
- Obstacles between the tower and the receiver
- Atmospheric conditions
- What band (AM or FM) the station is broadcasting
- Type of antenna and the ground plane

Sirius XM (SXM) Digital Radio Receiver (If equipped)

A service fee is required in order to receive the XM service.

The XM satellite receiver is integrated into the radio. XM satellite radio provides digital radio reception. The XM signal is broadcast from two satellites and, where necessary, terrestrial repeaters. The high power satellites allow the antenna to receive the XM signal even when foliage and other partial obstructions block the antennas view of the satellite. Terrestrial repeaters are used in dense urban areas. These repeaters will receive the satellite signal and re-broadcast them at much higher power levels in order to ensure reception in areas with densely packed tall buildings. Even with repeaters the signal can be compromised resulting in loss of XM.

SiriusXM 360L

SiriusXM with 360L interface has enhanced in-vehicle listening experience for subscribers. The experience now offers more categories and system learned recommendations toward discovering more personalized content.

To use the full SiriusXM 360L program, including streaming content and listening recommendations, OnStar Connected Access is required. Connected vehicle services vary by model and require a complete working electrical system, cell reception, and GPS signal. An active OnStar connected plan is required, if the customer declines OnStar Terms and Conditions the following message can be displayed: Connection Unavailable, Please call OnStar Agent. Reference the SiriusXM user guide for use and subscription information.

SiriusXM Tune Start

SiriusXM Tune Start is a feature that begins playing the current song from the beginning when you tune to a SiriusXM music channel in the stored Favorites. This feature can be enabled/disabled through the radio Settings menu.

When equipped, Tune Start works with most SiriusXM music channels when the channel has been saved as a Favorite in the radio. The SiriusXM app in the radio also has a list of Favorites. Saving a SiriusXM music channel as a Favorite automatically saves it in the hidden SiriusXM Favorites list. If a SiriusXM music channel is not working in Tune Start ensure the channel exists in the SiriusXM Favorites list. SiriusXM Favorites can be found in the SiriusXM Settings menu under Listener Options. Note that SiriusXM channels stored by default in new vehicles are not stored in the SiriusXM Favorites list. These channels would need to be stored as Favorites by the user for them to appear in the SiriusXM Favorites list. The radio may require a sleep cycle before Tune Start will begin to function on newly saved Favorites. Tune Start will only begin to record SiriusXM Favorites with the Ignition On, so some buffering time is required before Tune Start can function after the vehicle is started.

Tune Start is a SiriusXM feature. Reference the SiriusXM user guide, or contact SiriusXM for use and subscription information.

High Definition (HD) Radio (If equipped)

HD Radio delivers subscription free local broadcasting in a digital format which may include song title, artist name, album art, weather, traffic data, etc., on AM/FM bands. Up to four stations could be available on a single frequency for e.g. if radio station is 96.9 FM, the HD enabled radio would have additional broadcasts on 96.9 HD1, HD2, HD3 and HD4. The digital technology allows for clear reception quality and additional information.

Active Noise Cancellation/Auto Volume Control (If equipped)

Active Noise Cancellation (or sometimes referred to as Auto Volume Control) may have several different configurations. To determine the specific configuration of the vehicle, please see the Service Parts ID Label, and refer to *RPO Code List 0-2*.

The main components of the Active Noise Cancellation system are:

- Microphones in the vehicle headliner. Use schematics to determine the number of microphones in each vehicle.

- An engine speed (RPM) signal from the engine control module to the amplifier/active noise cancellation module/radio.
- Active Noise Cancellation electronics and software integrated into the audio amplifier/active noise cancellation module/radio.
- The vehicle speaker system, connected to the amplifier/active noise cancellation module/radio, to output the desired cancellation frequencies.

The Active Noise Cancellation system is operational under the following conditions:

- The amplifier/active noise cancellation module/ radio has passed all self diagnostic checks.
- All doors are closed.
- Battery voltage is between 9.5 V and 16 V.
- The vehicle cabin temperature is less than 140°F (60°C).
- For internal combustion engines- Engine speed is between 550 and 3000 RPM

The Active Noise Cancellation/Auto Volume Control system is a method used to reduce the perception of certain undesirable sounds generated by the engine into the vehicle cabin. The systems uses microphone and engine speed signals, software integrated into the amplifier/active noise cancellation module/radio, and the vehicle speakers to determine and generate the correct frequencies needed to achieve the desired reduction.

The microphones are located in the headliner to monitor noise/sounds in the vehicle cabin, and are directly connected to the amplifier/active noise cancellation module/radio. For internal combustion engines the amplifier/active noise cancellation module/radio also receives an engine speed (RPM) signal from the engine control module. The amplifier/active noise cancellation module/radio processes these inputs to determine the frequency of the undesirable sound. The amplifier/active noise cancellation module/radio then calculates the appropriate cancellation frequency and outputs a cancellation signal (audio tone) to the vehicle speakers to reduce the perception of undesirable sounds by the vehicle occupants so the vehicle cabin appears quieter and without vibration.

Microphones

This system utilizes two hands free audio microphones, the primary microphone on the driver side and a secondary/reference microphone for the front passenger side. The primary microphone is connected directly to the Telematics Control Module. It is also connected by an analog pass-through circuit to the radio from the Telematics Control Module. Without OnStar the primary microphone is connected directly to the radio. The secondary microphone is always connected directly to the radio.

The primary microphone is used for emergency and OnStar calls. During normal operating conditions it also provides Bluetooth calls and speech recognition to the radio. The secondary microphone is used as a reference for the primary microphone for Barge-in and Passenger Interference Cancellation during speech recognition and also to enhance the driver side hands free calls. For MY18 and beyond the secondary microphone can also be used for front passenger hands free phone calls. Barge-in allows a user to speak over the system prompts. Passenger Interference Cancellation ignores unwanted inputs from cabin noise that is not related to the prompts given by the user.

The front passenger secondary microphone is never used as a direct source for an OnStar call. The second microphone input modifies the primary microphone input to reduce background noise and other interference. An OnStar call requires the microphone to be directly connected to the Telematics Control Module. During a normal (non-emergency) OnStar call the Telematics Control Module receives an audio signal from the primary microphone and sends the signal to the radio via the Ethernet connection. The radio processes the OnStar call audio and sends it back to the Telematics Control Module via the Ethernet connection. During an emergency button call the Telematics Control Module contacts the OnStar call center directly and does not send the signal to the radio.

Bluetooth ® (If equipped)

Bluetooth ® wireless technology is a short-range communications technology intended to replace the cables connecting portable and/or fixed devices while maintaining high levels of security. The operating range of the signal is approximately 30 feet.

The available features and functions are determined by the type of device and the software within the devices being used. For a feature or function to operate, it must be supported in both devices.

The first connection between devices is established through a process called pairing. In order to pair two devices, a password (passkey) has to be exchanged between the two devices. One device will generate the password, the other device accepts the password to complete the process. Once the devices are paired, future connections between the devices will occur automatically when the devices are on and within range of each other.

The Bluetooth ® hardware is internal to the Remote Radio Receiver. The antenna is internal to the Remote Radio Receiver. The Remote Radio Receiver supports streaming of data (music, voice, information) from cellular phones and other mobile devices that support those features. The Remote Radio Receiver is also capable of interfacing with cellular phones for hands-free features.

- The device must be paired to the system to use the available Bluetooth ® feature(s). The pairing process must only be performed once for each device, unless that device's information is deleted.
- Depending on model year up to 10 devices can be paired, refer to owners manual for details.
- Streaming Audio allows playing music from the mobile device wirelessly. Music stored on the mobile device can be viewed and controlled from the display.
- To stream audio from a mobile device, the device must be unlocked, and any additional applications should be closed.

Refer to the owners manual, supplements, and the device manufacturers information for pairing instructions.

WiFi

The WiFi hardware is internal to the Remote Radio Receiver. The WiFi or WLAN antenna is called the Wireless Communication Antenna which is connected to the Remote Radio Receiver. WiFi expands the abilities of the vehicle as described below:

- Connect to home WiFi to update software.
- When used with OnStar 4G LTE HotSpot service, it provides internet access to devices in the vehicle when connected to the HotSpot. This requires the purchase of OnStar WiFi data plan.
- Enables in-vehicle networking between passengers' devices, like home WiFi network.
- Allows remote access to external connected device application data for vehicle internet application use.

Back Office Registration

The Radio must be registered with the GM Back Office in order to receive downloaded information such as approved applications, module software updates, weather and traffic information for current location. The vehicle must have a Cellular or WiFi connection to complete the initial registration process. This process will verify the assembly plant factory feed data from the BCM, CGM and Radio serial numbers to the VIN and if the security checks are met, then the user must complete the registration process by entering email and required personal information. The registration status can be verified through the Radio "Setting – About" selection.

When any of these secured ECU's are replaced, a new serial number will be recorded during the service calibration process and appended to the vehicles history data for uninterrupted back office connection.

If the Radio is replaced, the user can recover settings/ applications by reregistering the email account. During the initial registration process the user will enter an email/password. The user will then be sent a follow up verification email link to setup the account completely. If the complete account setup is not performed the password reset security questions will not be entered, which will prevent reregistering this email account in the future if the password is forgotten. The radio will operate in Demo Mode or as Guest until a user profile has been set up.

Applications (If equipped)

Note: For vehicles equipped with Google Automotive Services (GAS) refer to that section below.

When the system is equipped with Bluetooth ® or WiFI, the system is capable of using applications, commonly referred to as apps.

The term application refers to any piece of software that works on a system (hardware) that is being operated by it's own software. Applications are typically small software programs which uses the hardware to perform a specific task, as opposed to operating the entire system.

- For an application to be used, it must be installed on both the vehicle infotainment system and a compatible mobile device.
- The device must be connected to the system. this may be done wirelessly via Bluetooth ®, WiFi, or via the vehicle USB port. Refer to the device manufacturers information for the proper connection method.
- When the device is connected, the vehicle infotainment system is used to remotely access and control the application on the mobile device.

- The application must work correctly on the device to work with the vehicle infotainment system.
- The user may be required to log-in to the application on the mobile device before using the application from the vehicle controls.
- Using applications will use the device's data plan.
- The device must be unlocked, and any additional applications should be closed.

Refer to the owners manual and supplements for information on mobile devices, control, and operation.

Speech Recognition

The Speech Recognition feature is implemented only in a Mid/High System Radio module. There is no Speech Recognition in a Low System. Speech Recognition allows the user to command various features of the radio via voice commands. For addition information refer to the owners manual. For model year 2018 (and forward) Mid/High systems, part of the speech recognition functionality is controlled via off-board cloud connection. A speech icon in the radio allows user to see if an utterance has been received by the off-board cloud. Points-of-interest (POIs) data are also stored off-board. Any disruption in the connection to the cloud will cause a partial loss of functionality for these systems.

For model year 2018 (and forward) there will also be a new speech recognition feature called Barge-in. This allows the user to speak over the voice prompts generated by the system. This feature is turned off by default from the factory and must be enabled by the user.

Navigation System Components and Features (if equipped)

There are two different navigation systems- SD card based where the map data is stored on the SD card or through the Google Maps app which is a subscription based service (depending on available options).

The navigation system provides the following:

- A global positioning system (GPS) signal, which provides the vehicle location information.
- Map data for navigation and map route guidance.
- Route guidance with verbal prompts to the operator.
- Traffic and weather information for display on the navigation system map (with active subscription, where available).
- For SD card navigation periodic Map updates can be performed by inserting an updated SD card.

GPS signals are an output from the telematics communication interface control module on Ethernet. Other modules on Ethernet, such as the radio may use the GPS latitude, longitude and satellite time data broadcast by the telematics communication interface control module.

The On-board navigation feature (SD card based) uses an on-board navigation engine with an optimized map display that is calculated and rendered locally.

Route Guidance

The map will display the route to the selected destination. Voice prompts alert the operator of upcoming events (turns) and arrivals at the destination. The navigation system will automatically recalculate if the route is not followed. The remote radio receiver uses data received from the global positioning system (GPS) satellites, the vehicle speed signal, and serial data information to accurately display the current position of the vehicle.

Points of Interest

The map database provides point of interest information. Points of interests are locations that are frequently visited. Points of interest can be can be displayed on the map or set as a destination. The following are some of the available Points of interests:

- Gas Station
- Restaurant
- College
- Police Station

Locations Services

"Locations Services Off" also referred to as Location Masking, is a feature in select 2019 and beyond Infotainment 3 systems that allows customers to enable or disable location services in their vehicle. This allows customers to control what data is being sent from their vehicle, and has important implications for other connected services.

The default setting is "Locations Services On", however, customers can enable or disable Locations Masking in two ways:

1. Press and hold the white button next to the blue OnStar® button in the overhead console.
2. In the Setting menu, select System>Privacy>Location Services>ON or OFF.

- Look for the white LOCATIONS SERVICES icon in the status bar on the Home Screen, next to the clock and outside temperature in the lower right corner of the screen.
- When Locations Services are On, there will be no circle around the icon.

- When the Locations Services are Off, the icon will be circled in red.

Certain functions that require the vehicle’s location may not operate properly when Location Services are Off, including:

- Connected Navigation services, if equipped and active, will not work (the system will operate as a non-connected Navigation system).
- Speech recognition may not offer full functionality.
- OnStar advisors will be unable to provide Turn-by-Turn Navigation services.
- Customers may receive error messages in their myChevrolet, myBuick, myGMC, or myCadillac mobile app when trying to use Vehicle Locate.
- Some features of Smart Driver may be inoperable or not work properly, including the score being replaced by dashes.

Note: Emergency services, such as Automatic Crash Notification and Stolen Vehicle Assistance, are NOT impacted by Location Masking.

Valet Mode (If equipped)

Valet Mode is a customer enabled feature of the infotainment system, found in the settings menu, if equipped. The customer creates and inputs a four digit code using the infotainment controls. Confirming the code and selecting LOCK will lock the infotainment system, steering wheel controls and other vehicle features, dependent on vehicle equipment. The vehicle will remain in valet mode until the same four digit code is re-entered.

In the event that the four digit code is forgotten, it can be reset with the scan tool under BCM.

Teen Driver

The teen driver feature puts the vehicle into a mode that can only be unlocked with a valid PIN. It allows various restrictive features for safer driving. Some of the features include Speed Limiter, Speed Warning, Register Key, Report Card, etc. For additional information refer to owners manual.

In the event that the four digit code is forgotten, it can be reset with the scan tool under BCM.

Passenger Mode

A “Passenger Mode Disable Lockouts Y/N” message may appear on the center display when there is a front seat passenger sensed in the seat. Disabling the driving lockouts allows for the passenger to accomplish some tasks that a driver should not while the vehicle is in motion.

Theft Deterrent

The radio theft deterrent system is intended to disable or limit radio functionality if incorrect vehicle information is received by the radio. The radio disables functionality if the VIN information received by the radio does not match the VIN information that has been learned by the radio. The radio receives this information via serial data. A possible cause of incorrect VIN info could be the radio was originally installed in another vehicle.

The radio has the following theft operating modes as part of the theft deterrent system:

- Normal Mode: The radio has learned a correct VIN sequence and the VIN information received via serial data matches the learned VIN sequence. In this mode the radio has full functionality.
- No VIN Mode: The radio has not received or learned a correct VIN sequence. In this mode the radio has limited functionality.
- Theft Detected Mode: The radio has learned a correct VIN sequence and the VIN information received via serial data does NOT match the learned VIN sequence. In this mode the radio may be disabled or have limited functionality. The radio display will indicate that theft protection is active.

Audio Amplifier (If equipped)

Amplifier Interface

A fused battery voltage circuit provides the main amplifier power. The audio amplifier (when equipped) is a participant on the Ethernet bus. The audio amplifier receives audio signals and control information from the Radio. The Amplifier receives battery power and ground from the vehicle harness.

Amplifier Operation

The purpose of the amplifier is to increase the power of a voltage or current signal. The output signal of an amplifier may consist of the same frequencies as the input signal or it may consist of only a portion of the frequencies as in the case of a subwoofer or midrange speaker. The audio amplifier amplifies the signal and sends it to the appropriate speakers.

Each of the audio output channel circuits (+) and (−), at the audio amplifier have a DC bias voltage that is approximately one half of the battery voltage. When using a DMM, each of the audio output channel circuits will measure approximately 6.5V DC. The audio being played on the system is produced by a varying AC voltage that is centered around the DC bias voltage on the same circuit. The AC voltage is what causes the speaker cone to move and produce sound. Both the DC bias voltage and the AC voltage signals are needed for the audio system to properly produce sound.

The audio amplifier is also responsible for operation of active noise cancellation if equipped. Refer to Active

Noise Cancellation Description and Operation for more information.

Infotainment Controls and Display

The infotainment display and controls are a separate component from the radio, combined into an assembly. The assembly contains the control knobs and buttons for all audio and HVAC functions and the information display. The assembly is supplied battery voltage and ground from the vehicle harness.

Control information, touch communications and dimming level for the display are communicated via a Low Speed serial data circuit or LVDS cable to the Radio.

The remote radio receiver sends the display digital video data for on-screen display through a dedicated video cable.

The information display provides a feedback on the touch screen and certain controls.

The controls communicate via a Low Speed serial data circuit or LVDS cable with the remote radio receiver. Messages communicated include the following:

- Wake-up/power state messages
- Diagnostic information
- Button presses/knob rotations
- Commands for the state of indicators
- Back-lighting dimming level

Steering Wheel Controls (If equipped)

Some audio functions are available using the steering wheel controls. The steering wheel controls duplicate the function of the primary controls available on the radio.

For additional information on steering wheel controls, refer to Steering Wheel Controls Description and Operation.

USB Port, SD Card Reader and Auxiliary port (If equipped)

The infotainment system may contain an assembly that has either a USB port, Auxiliary port, and may even have an SD card reader located within the drivers reach. The assembly interfaces with a hub device, internal to the auxiliary jack, USB, and memory card receptacle assembly. The auxiliary jack, USB, and memory card receptacle assembly receives fused battery voltage and ground from the harness to power the internal hub device as well as providing additional amperage to power USB devices.

The internal hub device interfaces directly with the remote radio receiver via a standard USB cable. A Mini type USB connector is used to connect the cable at the USB port and at the remote radio receiver and at the auxiliary jack, USB, and memory card receptacle. Standard USB male to female connections are typically used for connecting USB cables together where an in-line connection is required. An in-line cable connection is typically found between the console and I/P harness.

USB Port
The USB port allows connectivity to the infotainment system from portable media players or a USB storage device (memory stick/ flash drive). When a device is connected to the USB port, the device can be controlled from the radio controls.

Not all portable media player devices or file types are compatible. Connection to USB hub devices is not supported.

To ensure a USB drive is compatible, it should be formatted as either FAT32 or exFAT. FAT32 is widely compatible and recommended for drives 32GB and smaller, while exFAT is better for larger drives.

Formatting will erase all data on the USB drive, so back up any important files before proceeding.

Supported music file types: MP3, OGG, ACC, and 3GP audio file formats.

SD Card Reader (if equipped)
On certain Navigation vehicles the SD card will contain the Map information for the vehicle region. The Map data will be updated either by replacing the SD card with the latest release or in regions that support it, OTA wireless updates via WiFi on MY18> vehicles.

Refer to the owners manual for information on the Navigation system.

Auxiliary Audio Input Jack (if equipped)
The infotainment system may have a 3.5mm (1/8 in.) auxiliary audio input jack located in the center console. The auxiliary audio input jack interfaces directly with the radio. When a portable audio playback device is connected to the auxiliary jack, an internal switch detects the connection and the radio will switch to AUX as the audio source. Audio signals from the device are sent to the radio from the auxiliary jack via USB.

- When a device is first connected to the 3.5mm (1/8 in.) input jack the infotainment system automatically switches to that device. If an auxiliary device has already been connected, press the AUX or CD/AUX button to select the device.
- Playback of an audio device that is connected to the 3.5mm jack can only be controlled using the controls on the device.

- The volume control on the device may need to be adjusted eo ensure sufficient playback volume through the infotainment system.

OnStar ® (If equipped)

When OnStar is activated, a serial data message is sent to the radio that activates default audio settings. The fade will be set to the front, Bass and Treble are set to the mid range, the outputs are mono, when the audio source is OnStar. OnStar takes priority over any other audio source.

For additional OnStar information, refer to OnStar Description and Operation.

Over The Air Programming

The Over The Air Programming feature was designed to reflash software remotely. Remote reflash is an in-vehicle feature that enables the installation of a software package to update the infotainment system without requiring service test equipment to be physically connected to the vehicle. Remote reflash will utilize a long range or short range connection from the host module to a remote IT system. There must be an active OnStar account to receive Over The Air programming or updates. To verify the status of the account perform a blue button press and verify the account is active and connects with data and location. Customers need to accept the OnStar terms and conditions, and must have an active OnStar account to receive any Over The Air programming or updates.

Note: A data plan is not required to receive Over The Air programming or updates. Also the programming or updates do not consume a customers available data.

Note: Fleet vehicles must be activated as a Fleet account (not a business account) and require a separate Terms and Conditions agreement to be completed. Please see your fleet administrator for assistance with completing this agreement.

GAS (Google Assistant Services) if equipped

Some of the GAS features are:

- Maps – Benchmark maps, navigation, traffic and point of interest data and legal speed limit sign information.
- Assistant – Voice assistant cloud services with vehicle integration (e.g., radio, HVAC).
- Play Store – Access to favorite media streaming apps plus first party GM apps.
- Keyguard – similar to a code to unlock your cell phone. When this feature is enabled a customer created lock (pattern, PIN or password) will need to be entered to unlock the radio at every ignition cycle. When the radio is locked SPS diagnostics will be unavailable. To utilize SPS diagnostics when the radio is locked enter the “Guest Mode” feature.

A connectivity package needs to be purchased to have the full experience. Refer to the Owner Manual for further information on Google Automotive Services.

Compass Data

With the Base Radio the Telematics Control module provides compass and GPS position information on the Info-CAN bus when it is present.

In a Mid / High Radio System configuration without a Telematics Control Module and equipped with GPS, the radio shall provide the GPS and heading information on Info-CAN as shown below.

An external Remote Compass Module (RCM) is required to transmit the heading and position information on Info-CAN if either:

- The Base Radio is present in a system configuration with no Telematics control module.
- The radio variant without GPS is present in a system configuration with no Telematics control module.

Media Disc Player (if equipped)

The Remote Media Player feature sends information through a USB connection to the Rear Seat Infotainment and outputs digital audio/video to vehicle displays and to the Radio over the Ethernet bus. The Rear Seat Infotainment system also has a USB hub with an auxiliary port for digital media file access.

The media disc player receives battery power and ground from the vehicle harness.

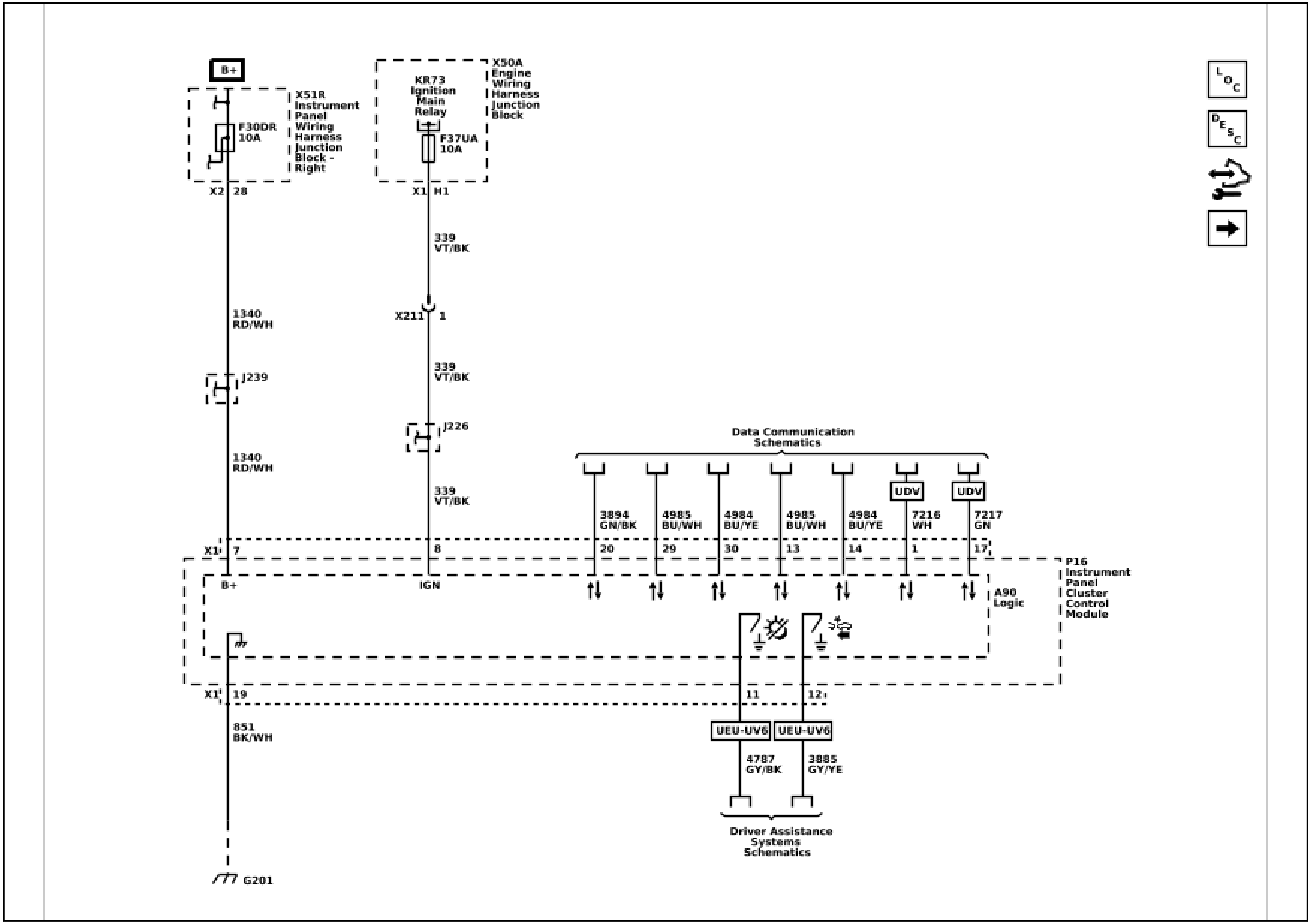
Digital Rearview Camera (if equipped)

For model year 2018 (and forward), the digital rearview camera is a direct input to the radio via coaxial cable. Camera and image activation are driven by reverse gear signal from the reverse lamp input. This function is used for reverse guidance. For radio systems that manage the camera signal, the system does not have video bypass module, as this functionality is managed onboard the radio.

Displays and Gauges

Schematic and Routing Diagrams

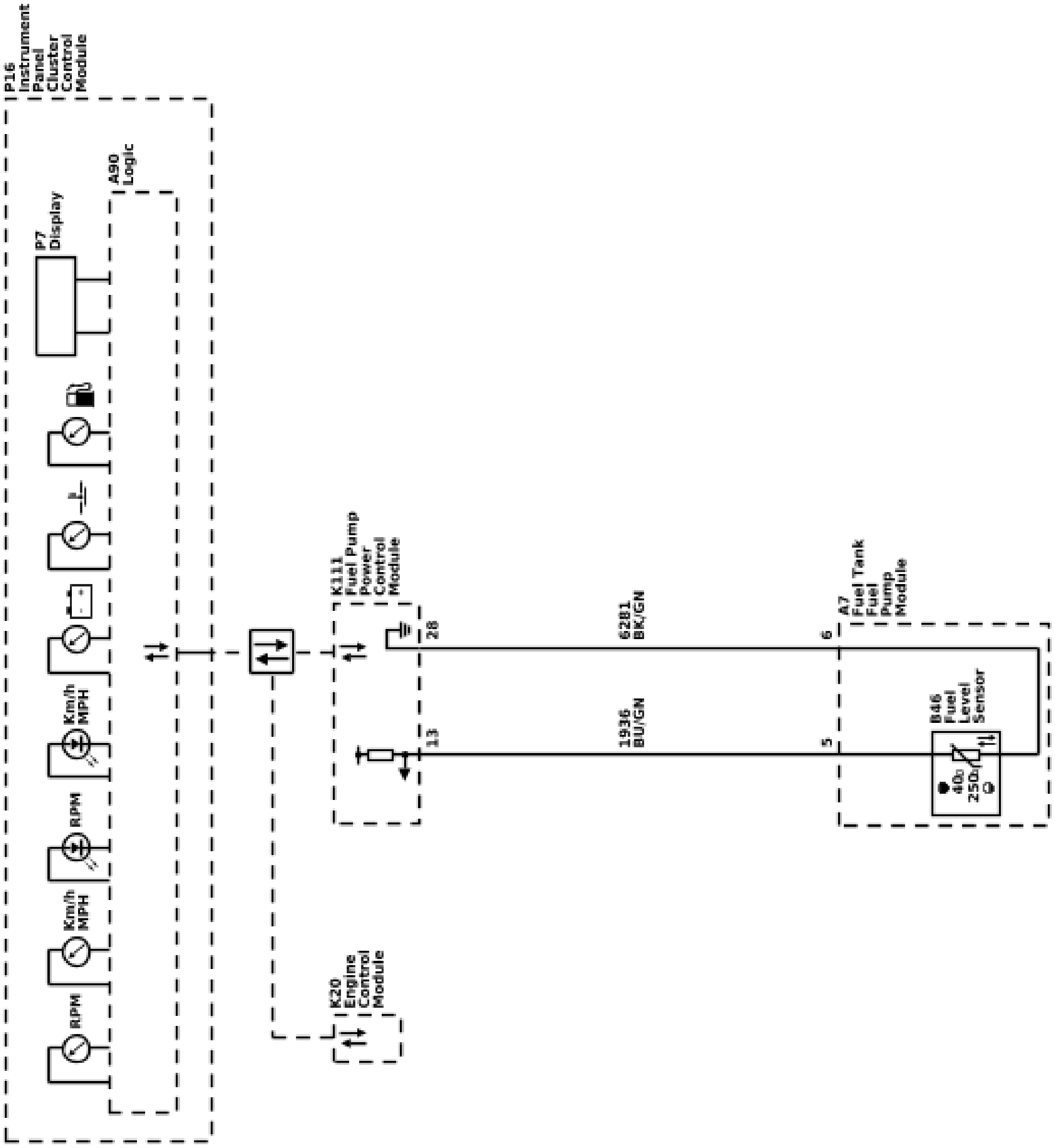
Instrument Cluster Schematics (Power, Ground, Serial Data, and Subsystem References)


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F30DR 10A
X2 28
1340 RD/WH
J239
1340 RD/WH
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F37UA 10A
X1 H1
339 VT/BK
X211 1
339 VT/BK
J226
339 VT/BK
Data Communication Schematics
UDV
UDV
3894 GN/BK
4985 BU/WH
4984 BU/YE
4985 BU/WH
4984 BU/YE
7216 WH
7217 GN
X1 7
8
20
29
30
13
14
1
17
B+
IGN
A90 Logic
P16 Instrument Panel Cluster Control Module
X1 19
11
12
851 BK/WH
UEU-UV6
UEU-UV6
4787 GY/BK
3885 GY/YE
Driver Assistance Systems Schematics
G201

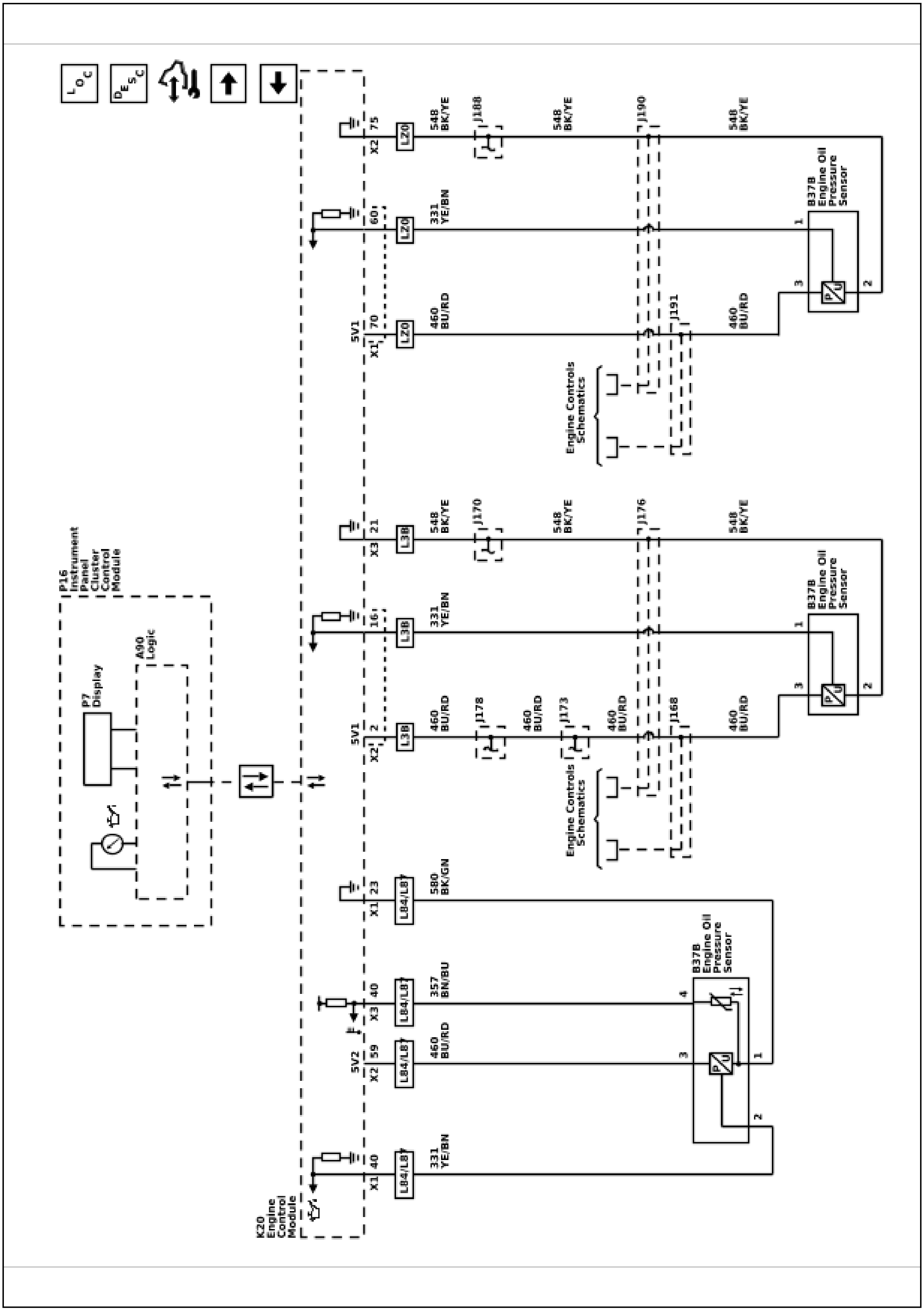
6846934

Instrument Cluster Schematics (Gauges - 1 of 2)

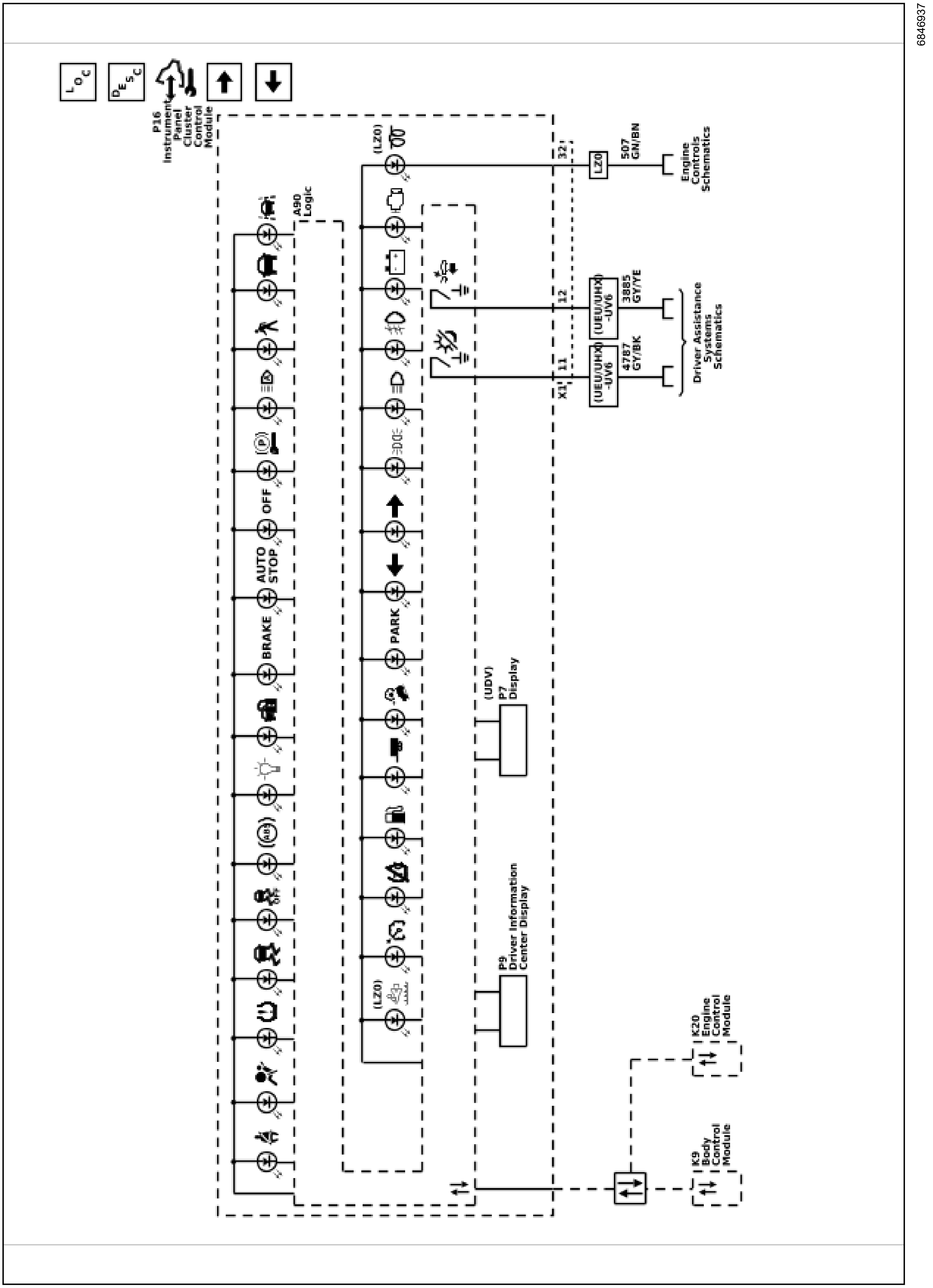
6846935


P16
Instrument
Panel
Cluster
Control
Module
A90
Logic
P7
Display
RPM
Km/h
MPH
RPM
Km/h
MPH
K111
Fuel Pump
Power
Control
Module
28
13
6281
BK/GN
1936
BU/GN
6
5
A7
Fuel Tank
Fuel
Pump
Module
B46
Fuel
Level
Sensor
40Ω
250Ω
K20
Engine
Control
Module

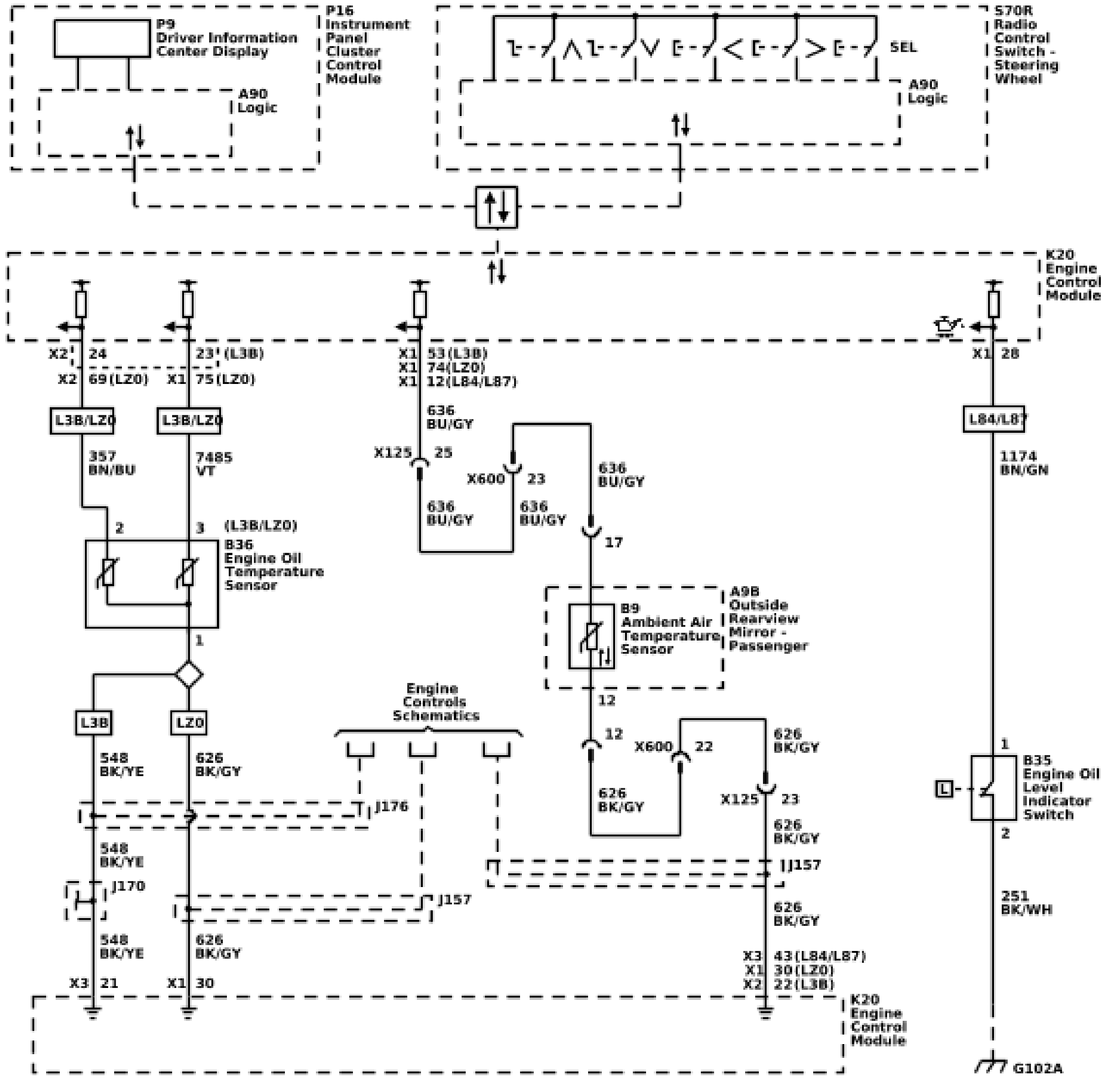
Instrument Cluster Schematics (Gauges - 2 of 2)


6846936
K20 Engine Control Module
P16 Instrument Panel Cluster Control Module
P7 Display
A90 Logic
X1 40
X2 59
5V2
X3 40
X1 23
X2 2
5V1
X3 16
X3 21
X1 70
X1 60
X2 75
L84/L87
L3B
L20
331 YE/BN
460 BU/RD
357 BN/BU
580 BK/GN
548 BK/YE
J178
J173
J168
J170
J176
J191
J190
J188
Engine Controls Schematics
B378 Engine Oil Pressure Sensor
1
2
3
4
P/U

Instrument Cluster Schematics (Indicators)

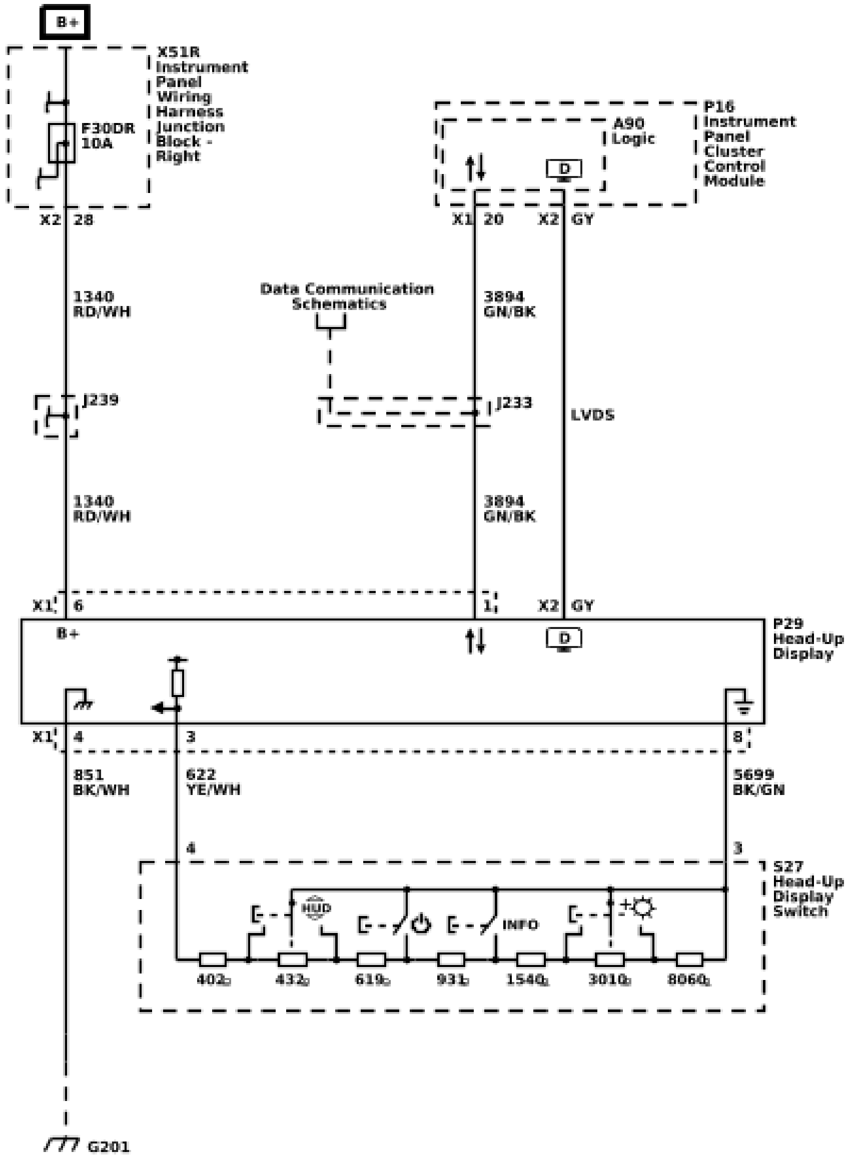

6846937
LOC
DESC
P16 Instrument Panel Cluster Control Module
A90 Logic
AUTO STOP
OFF
BRAKE
PARK
(LZ0)
(LZ0)
32
12
11
X1
LZ0
507 GN/BN
Engine Controls Schematics
(UEU/UHX) -UV6
(UEU/UHX) -UV6
3885 GY/YE
4787 GY/BK
Driver Assistance Systems Schematics
(UDV) P7 Display
P9 Driver Information Center Display
K20 Engine Control Module
K9 Body Control Module

Instrument Cluster Schematics (Driver Information Center)


P9
Driver Information
Center Display
P16
Instrument
Panel
Cluster
Control
Module
A90
Logic
S70R
Radio
Control
Switch -
Steering
Wheel
SEL
A90
Logic
K20
Engine
Control
Module
X2 24
X2 69 (LZ0)
23 (L3B)
X1 75 (LZ0)
X1 53 (L3B)
X1 74 (LZ0)
X1 12 (L84/L87)
X1 28
L3B/LZ0
L3B/LZ0
L84/L87
357
BN/BU
7485
VT
636
BU/GY
X125 25
X600 23
636
BU/GY
636
BU/GY
636
BU/GY
17
1174
BN/GN
2
3
(L3B/LZ0)
B36
Engine Oil
Temperature
Sensor
1
B9
Ambient Air
Temperature
Sensor
A9B
Outside
Rearview
Mirror -
Passenger
12
12
X600 22
626
BK/GY
626
BK/GY
X125 23
Engine
Controls
Schematics
L3B
LZ0
548
BK/YE
626
BK/GY
J176
548
BK/YE
J170
J157
J157
626
BK/GY
548
BK/YE
626
BK/GY
626
BK/GY
X3 21
X1 30
X3 43 (L84/L87)
X1 30 (LZ0)
X2 22 (L3B)
K20
Engine
Control
Module
1
B35
Engine Oil
Level
Indicator
Switch
L
2
251
BK/WH
G102A

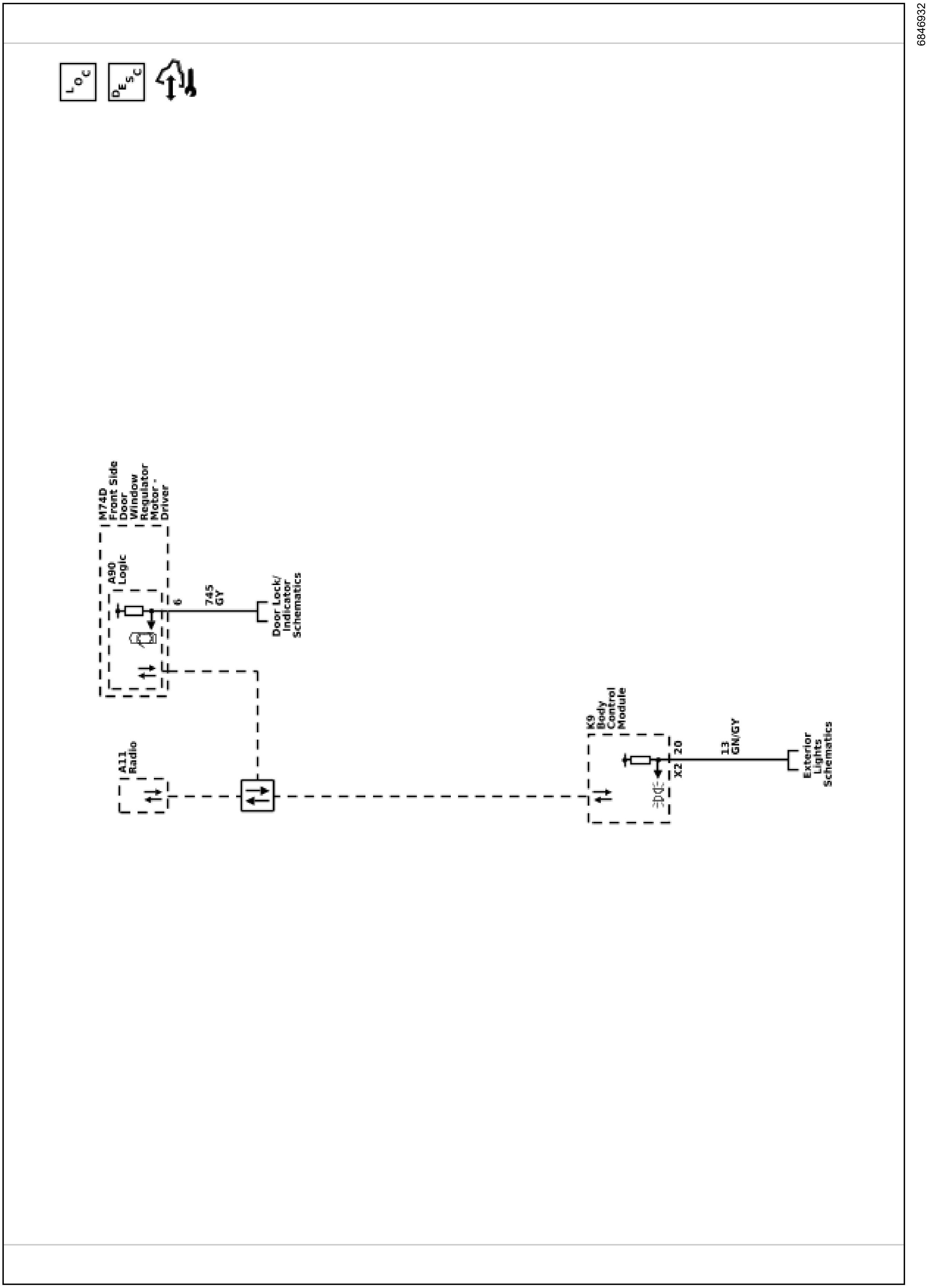
6846938

Head-Up Display Schematics (UV6) (Head-Up Display)


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F30DR 10A
X2 28
1340 RD/WH
J239
1340 RD/WH
Data Communication Schematics
P16 Instrument Panel Cluster Control Module
A90 Logic
D
X1 20
X2 GY
3894 GN/BK
J233
3894 GN/BK
LVDS
X1 6
1
X2 GY
B+
D
P29 Head-Up Display
X1 4
3
8
851 BK/WH
622 YE/WH
5699 BK/GN
4
3
S27 Head-Up Display Switch
HUD
INFO
+
-
402Ω
432Ω
619Ω
931Ω
1540Ω
3010Ω
8060Ω
G201

6846933

Audible Warnings Schematics (Audible Warnings)


6846932
LOC
DESC
M74D Front Side Door Window Regulator Motor - Driver
A90 Logic
6
745 GY
Door Lock/ Indicator Schematics
A11 Radio
K9 Body Control Module
X2 20
13 GN/GY
Exterior Lights Schematics

Description and Operation

Audible Warnings Description and Operation

The audible warnings alert the driver of a system concern or a critical vehicle condition. If equipped with an serial data communicating audio amplifier, the audio amplifier generates the audible warnings through the speakers. If not equipped with an audio amplifier, the radio generates the audible warnings through the speakers. The radio or audio amplifier receives audible warning requests via serial data. If the radio or audio amplifier receives multiple audible warning requests, the warning with the highest priority sounds first. Different audible warnings may sound with a different frequency or a different chime pattern, depending on the system or module making the request. The chime volume may be selectable through vehicle personalization.

Audible Warnings or Chimes

The following is a list of common audible warnings or chimes that may be present on the vehicle. For additional chimes or complete system description, refer to the appropriate system's Description and Operation or the vehicle owner's manual.

- Driver Seat Belt Reminder – If the vehicle is started and the seat belt is unbuckled, the BCM requests the radio or audio amplifier sound a chime to indicated that the belt is unbuckled. This is accompanied by a flashing driver seat belt indicator on the instrument cluster. If the belt remains unbuckled, the chime cycle may continue multiple times if the vehicle is driven and the indicator will remain on solid.
- Passenger Seat Belt Reminder – If the passenger presence system determines that their is an occupant in the passenger seat and the vehicle is started with the passenger seat belt unbuckled, the BCM requests the radio or audio amplifier sound a chime to indicated that the belt is unbuckled. This is accompanied by a flashing passenger seat belt indicator. If the belt remains unbuckled, the chime cycle may continue multiple times if the vehicle is driven and the indicator will remain on solid. If an object is placed on the passenger seat, the passenger presence system may interpret this as a passenger occupying the seat. Because the passenger seat belt is unbuckled, the passenger seat belt reminder chime will sound. To correct this, remove the object from the passenger seat.
- Exterior Lamps On Warning – If the exterior lamps are left on after the ignition is turned off and the driver door is opened, the BCM will request the radio or audio amplifier sound a chime as an indicator that the exterior lamps are on.
- Electric Parking Brake (if equipped) – If the electric parking brake switch is pressed while the vehicle is in motion, the parking brake control module will request the radio or audio amplifier sound a chime. To release the parking brake, the brake pedal must be pressed when the electric parking brake switch is pressed. If the brake pedal is not pressed, the parking brake control module will request the radio or audio amplifier sound a chime. A message will also appear on the driver information center.
- Delayed Locking – If the keyless entry transmitter is not in the vehicle and the door lock switch is pressed with the driver door open, the BCM will request the radio or audio amplifier sound a chime three times to indicate that the vehicle has entered a delayed locking state. The doors will automatically lock five seconds after the last door is closed.
- Object Detection – The object detection system sends various chime requests to the radio or audio amplifier during normal operation.
- REAR SEAT REMINDER LOOK IN REAR SEAT displays under certain conditions indicating there may be an item or passenger in the rear seat. This feature will activate when a second-row door is opened while the vehicle is on or up to 10 minutes before the vehicle is turned on. There will be an alert when the vehicle is turned off. The alert does not directly detect objects in the rear seat; instead, under certain conditions, it detects when a rear door is opened and closed, indicating that there may be something in the rear seat.

Additional Warnings

The following warnings have an associated instrument cluster indicator or driver information center message:

- Turn Signal Indicators – The radio or audio amplifier activates the audible warning as requested by the BCM.
- Vehicle Overspeed Message – The radio or audio amplifier activates the audible warning as requested by the BCM.
- Fuel Level Low Message – The radio or audio amplifier activates the audible warning as requested by the BCM.
- Oil Pressure Indicator – The radio or audio amplifier activates the audible warning as requested by the BCM.
- Tire Pressure Low Indicator – The radio or audio amplifier activates the audible warning as requested by the BCM.
- Antilock Brake Indicator – The radio or audio amplifier activates the audible warning as requested by the electronic brake control module.

- Engine Cooling System Messages – The radio or audio amplifier activates the audible warning as requested by the engine control module.
- Transmission Messages – The radio or audio amplifier activates the audible warning as requested by the transmission control module.

Backup Alarm (with 8S3)

When transmission placed in reverse, the Body Control Module (BCM) activates the KR61 Trailer Backup Lamps Relay which supplies 12V to the reverse lamps and the Backup Alarm simultaneously.

Head-Up Display Description and Operation

The head-up display projects an image on the windshield that is viewed from the driver seat. Information that is relevant to what the drive is currently doing is displayed, as well as any safety-critical information as it is happening.

The components of the head-up display are:

- Head-Up Display
- Instrument Cluster
- Head-Up Display Switch

Head-Up Display

The head-up display is a slave device to the instrument cluster. The head-up display is powered through ignition voltage and ground. It communicates directly with instrument cluster via serial data and only has limited self-diagnosis capacity. Head-up display DTCs are reported through the instrument cluster.

The head-up display projects a full color image onto the windshield and is only viewable from the driver seat. The image location and brightness is adjustable using the head-up display switch. The image information is received from the instrument cluster through a video cable.

On some models, the head-up display image rotation is also adjustable in the DIC customizations using the steering wheel controls.

Instrument Cluster

The instrument cluster sends the image information to the head-up display via a discrete video cable. The image sent to the head-up display is closely related to the information currently being displayed on the instrument cluster or driver information center. For example, if an incoming phone call is displayed in the cluster, this information will be displayed on the head-up display. If a navigation alert is shown in the cluster, then a turn-by-turn alert will display on the head-up display. When the operator interacts with the instrument cluster using the steering wheel mounted driver information center switch, the head-up display also responds to the interaction. If the operator dismisses the navigation alert on the instrument cluster, it is also removed from the head-up display.

Head-Up Display Switch

The head-up display switch is a multiplexed switch that controls the head-up display based on driver inputs. The head-up display provides the switch with a low reference and monitors a signal circuit. The head-up display switch is made up of a resistor ladder and three switches: Dim +/-, Up/Down, and Page. When a switch is pressed, the signal voltage is pulled low through the resistor ladder. When pressed, each of the switches will result in a different signal voltage seen by the head-up display, depending on the switch’s location on the resistor ladder.

Head-Up Display Operation

In normal operation, the operator may select from three different display configurations. These display configurations provide the operator with different information, with the vehicle speed being the primary item, along with the following standard indicators:

- Turn signal indicators
- High beam indicator
- Lane departure warning indicator (if equipped)
- Vehicle detected ahead indicator (if equipped)
- Adaptive cruise control on indicator (if equipped)

Standard/Speed Configuration

The head-up display projects only the vehicle speed. Additionally, the outside air temperature, compass, and time may also be displayed.

Audio Configuration

The head-up display will project the current audio information when listening to the audio system and the active phone information if the operator is on a phone call.

Navigation Configuration

The head-up display will project navigation information. If a current route is being followed, turn by turn instructions and arrows will be displayed. If no route is programed, the compass heading is displayed.

Performance Configuration
The head-up display will project RPM and PRNDL information.

Adaptive Cruise Control Configuration (if equipped)
The head-up display will project the selected following distance when adaptive cruise control is active.

Indicator/Warning Message Description and Operation

INDICATOR LIGHT ON

Refer to the OWNER'S MANUAL for the descriptions and explanations of all indicator lights.

For diagnosis and repair information related to an indicator light refer to the System Diagnosis and the Description of Operation that the message relates to.

MESSAGE DISPLAYED

Refer to the OWNER'S MANUAL for descriptions and explanations of all messages displayed.

For diagnosis and repair information related to a displayed message refer to the System Diagnosis and the Description of Operation that the message relates to.

CHANGE TIMING BELT MESSAGE (without LWN/LIH)

The Instrument Cluster monitors the odometer mileage to determine when timing belt (if equipped) replacement may be necessary. After the vehicle has accumulated approximately 100,000 miles (160,000 kilometers), the Instrument Cluster may display the CHANGE TIMING BELT message. After the engine timing belt has been replaced, reset the CHANGE TIMING BELT message by locating and removing the fuses that supply power to the Instrument Cluster for two minutes.

CHANGE TIMING BELT MESSAGE (LWN/LIH)

The Instrument Cluster monitors the odometer mileage to determine when timing belt replacement may be necessary. After the vehicle has accumulated approximately 150,000 miles (240,000 kilometers), the Instrument Cluster may display the CHANGE TIMING BELT message. After the engine timing belt and oil pump drive belts have been replaced, reset the CHANGE TIMING BELT message by performing the Instrument Cluster control function Timing Belt Life Reset (if available), using the scan tool. Without scan tool control function, reset the CHANGE TIMING BELT message by locating and removing the fuses that supply power to the Instrument Cluster for two minutes.

BRAKES OVERHEATED

The Electronic Brake Control Module monitors brake usage and compares it to an internal thermal model to determine if the brakes could become overheated. If the Electronic Brake Control Module determines the brakes pads have exceeded a desirable temperature based on the thermal model, it sends a serial data message to the Instrument Cluster to display the BRAKES OVERHEATED message. The message remains displayed until the estimated temperature returns to a desirable range.

Transmission Shift Lever Position Indicator

The Transmission Shift Lever Position Indicator (if equipped) is located on the center console and indicates the current transmission shift lever position. The Transmission Shift Lever Position Indicator receives power and ground and is controlled by the Body Control Module (BCM) via serial data. The Transmission Control Module determines transmission shift lever position based on signals from the Transmission Internal Mode Switch and sends the shift lever position information to the BCM via serial data.

Instrument Cluster Description and Operation

Instrument Panel Cluster Control Module (with RPO UHS)

The Instrument Panel Cluster Control Module is a multi-function module that provides the vehicle operator with information such as vehicle speed and engine RPM using analog gauges. Oil pressure, battery voltage, fuel level, and coolant temperature can also be displayed using an interactive LCD display. The Instrument Panel Cluster Control Module is highly reconfigurable, with four different themes available for selection. The Instrument Panel Cluster Control Module also provides the operator with operational warnings and message through various indicators and the driver information center. Because the Instrument Panel Cluster Control Module is an LCD display, driver information center elements are located in various zones of the display, depending on how the instrument panel is configured.

Instrument Panel Cluster Control Module (with RPO UDD)

The instrument cluster is a multifunction module that provides the vehicle operator with information that is critical to vehicle operation, such as vehicle speed, engine RPM, oil pressure, battery voltage, fuel level, and coolant temperature, using analog gauges. The instrument cluster also provides the operator with operational warnings and message through various indicators and the driver information center. The Driver Information Center (DIC) is a full color multifunction display that is located in the instrument cluster. The driver information center is also tightly integrated with the vehicle's infotainment system and is highly reconfigurable.

Instrument Panel Cluster Control Module (with RPO UDV)

The Instrument Panel Cluster Control Module is a multifunction module that provides the vehicle operator with information that is critical to vehicle operation, such as vehicle speed, engine RPM, and coolant temperature, using an interactive LCD display. The Instrument Panel Cluster Control Module is highly reconfigurable, with multiple themes available for selection. The Instrument Panel Cluster Control Module also provides the operator with operational warnings and message through various indicators and the driver information center. Because the Instrument Panel Cluster Control Module is an LCD display, driver information center elements are located in various zones of the display, depending on the selected configuration.

Indicators and Warning Messages

Refer to *Indicator/Warning Message Description and Operation 5-47*.

Engine Coolant Temperature Gauge

The Instrument Panel Cluster Control Module displays the engine coolant temperature as determined by the Engine Control Module (ECM). The ECM sends the engine coolant temperature information via serial data to the Body Control Module (BCM). The BCM then sends the information via a serial data to the Instrument Panel Cluster Control Module to display the engine coolant temperature.

Engine Oil Pressure Gauge (if equipped)

The Instrument Panel Cluster Control Module displays the engine oil pressure as determined by the ECM. The ECM monitors the engine oil pressure sensor. The Instrument Panel Cluster Control Module receives a serial data message from the ECM indicating the engine oil pressure. The engine oil pressure gauge defaults to 0 kPa (0 psi) or below if:

- The ECM detects a malfunction in the engine oil pressure sensor signal circuit.
- The Instrument Panel Cluster Control Module detects a loss of serial data communication with the ECM.

Fuel Level Gauge

The Instrument Panel Cluster Control Module displays the fuel level based on the information from the ECM. The ECM converts the data from the fuel level sensors to a fuel level signal. The ECM sends the fuel level signal via serial data to the BCM. The BCM then sends the information via serial data to the Instrument Panel Cluster Control Module to display the fuel level. If the fuel level falls under 11% the Instrument Panel Cluster Control Module will illuminate the low fuel level indicator. The fuel gauge defaults to empty if:

- The ECM detects a malfunction in the fuel level sensor circuit.
- The BCM detects a loss of serial data communications with the ECM.
- The Instrument Panel Cluster Control Module detects a loss of serial data communications with the BCM.

In order to reduce false fuel level readings due to variations such as fuel slosh, the displayed fuel level is a buffered value. Therefore, increases or decreases in actual fuel level may take several minutes to change the gauge position, especially if the fuel level change occurs while the ignition is ON. Also, due to irregular fuel tank shapes and fuel level sensor arm travel limitations, the fuel gauge may display FULL even after several gallons of fuel have been used since the tank was filled. This can be especially apparent if the tank is over-filled, as it would require more fuel be used before the level gets low enough to allow the fuel sensor arm to start to move again. This is a normal characteristic, and no repairs should be attempted.

Speedometer

The Instrument Panel Cluster Control Module displays the vehicle speed based on the information from the ECM. The ECM sends the vehicle speed information via serial data to the BCM. The BCM then sends the vehicle speed information via serial data to the Instrument Panel Cluster Control Module to display the vehicle speed.

Odometer

The Instrument Panel Cluster Control Module displays the vehicle odometer in the driver information center. The ECM sends a distance rolling count serial data message to the body control module (BCM). The BCM uses this information to calculate the vehicle odometer value. This calculated odometer value is then sent via serial data to the Instrument Panel Cluster Control Module to be displayed.

Software checks are in place to ensure these modules, and their stored odometer information, can not be moved or transferred between different vehicles.

Navigation System Components and Features

The navigation system operates through the Google Maps app which is a subscription based service (depending on available options). The navigation system is based in the radio. Navigation system information can be displayed on the Drivers Information Center display (DIC) located in the Instrument Panel Cluster.

The navigation system provides the following:

- A global positioning system (GPS) signal, which provides Speed Limit information (where available).
- A global positioning system (GPS) signal, which provides the vehicle location information.
- Map data for navigation and map route guidance.
- Route guidance with verbal prompts to the operator.
- Traffic and weather information for display on the navigation system map (with active subscription, where available).

GPS signals are an output from the telematics communication interface control module on Ethernet. Other modules on Ethernet, such as the radio may use the GPS latitude, longitude and satellite time data broadcast by the telematics communication interface control module.

Route Guidance

The map will display the route to the selected destination. Voice prompts alert the operator of upcoming events (turns) and arrivals at the destination. The navigation system will automatically recalculate if the route is not followed. The remote radio receiver uses data received from the global positioning system (GPS) satellites, the vehicle speed signal, and serial data information to accurately display the current position of the vehicle.

Points of Interest

The map database provides point of interest information. Points of interests are locations that are frequently visited. Points of interest can be can be displayed on the map or set as a destination. The following are some of the available Points of interests:

- Gas Station
- Restaurant
- College
- Police Station

Tachometer

The Instrument Panel Cluster Control Module displays the engine speed based on the information from the ECM. The ECM converts the data from the crankshaft position sensor to an engine revolution signal. The ECM sends the engine speed information via serial data to the BCM. The BCM then sends the information via serial data to the Instrument Panel Cluster Control Module to display the engine speed.

Compass

The vehicle compass information is gather through the compass module or vehicle communication interface module (VCIM). The compass module or VCIM determines vehicle direction and communicates this with the BCM through serial data. The BCM sends the compass information to the Instrument Panel Cluster Control Module via serial data, where it is displayed.

Outside Air Temperature

The Ambient Air Temperature Sensor is located in the passenger side outside rearview mirror housing and varies it’s resistance with temperature. The Engine Control Module (ECM) reads the resistance value to determine temperature. The time of and rate of the temperature update is based on an algorithm in the ECM software. Factors such as, last reading, current reading, length of time vehicle is been off/on, power mode, vehicle speed, driven distance, and sensor location are all considered by the ECM to know when to update the displayed temperature. For example, if the vehicle has been turned off for only 10 minutes then restarted, the ECM will wait until the vehicle is driven to get more accurate air flow across the sensor before it updates the display.

The Outside Air Temperature (OAT) display uses a filter routine to minimize false updates due to engine heat or road heat.

Vehicle Outside

- Vehicle parked more than 2 hours: The OAT updates to the current sensor reading
- Vehicle parked less than 2 hours AND the new reading is LESS than the vehicle shutdown reading: The OAT updates to the current reading.

- Vehicle parked less than 2 hours AND the new reading is MORE than the vehicle shutdown reading: The vehicle will startup with the shutdown reading. As the vehicle is driven at speeds over 19 mph (30km/h) the filter counter starts to count up. When vehicle speed is under 19 mph (30km/h) the filter counter counts down. Once the counter reaches a predetermined maximum, the old OAT is updated to the current OAT reading.
- Example 1: Vehicle is OFF for 1 hour, OAT is 70 degrees F (21 degrees C). The ambient temperature has increased during the shut down to 74 degrees F (23 degrees C). The vehicle is started, OAT will still be displayed at 70 degrees F (21 degrees C), the driver drives at a stable speed over 19 mph (30km/h) for a minimum of 3 to 8 minutes with no stops, OAT display updates to current temp of 74 degrees F (23 degrees C).
- Example 2: Vehicle is shutoff for 1 hour, OAT is 70 degrees F (21 degrees C). The outside temperature has increased during the shut down to 74 degrees F (23 degrees C). The vehicle is started, OAT will still be clamped at 70 degrees F (21 degrees C). However, this time the driver is in heavy city traffic driving for 10 minutes of speeds below 19 mph (30km/h), then drives on the highway at speeds above 19 mph (30km/h) for a minimum of 2 to 6 minutes. The OAT display updates to the current temp of 74 degrees F (23 degrees C). This time it took longer to update because of all the stop and go driving below 19 mph (30km/h).

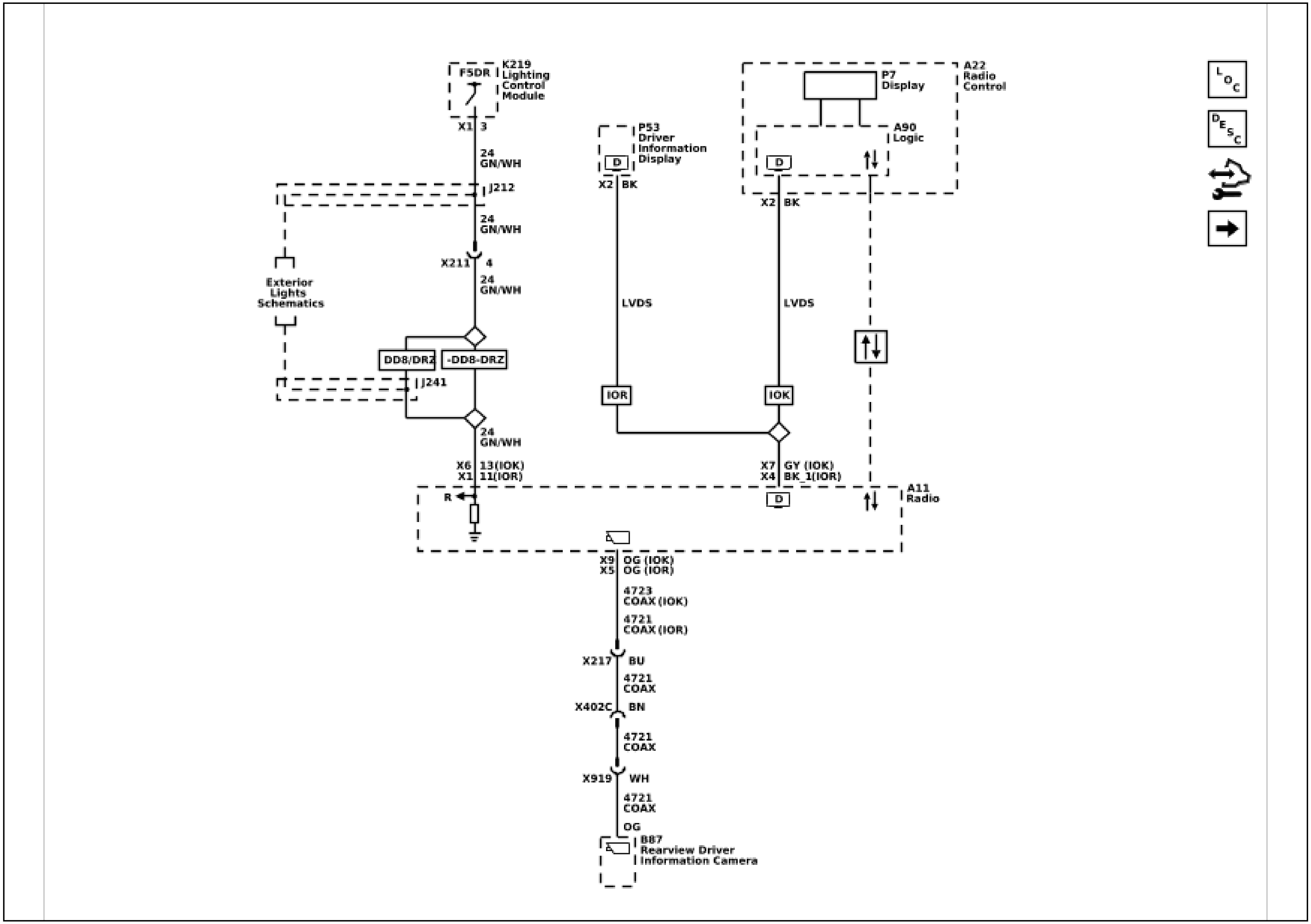
Vehicle in Warm Garage

- If the vehicle is started in a garage that is warmer than the outside temperature, it may take some time to update to the new cooler ambient temperature. It may take up to 10 minutes to reach the new ambient temperature.
- Example 1: Vehicle is OFF for short time, or for overnight. Heated garage temp is 70 degrees F (21 degrees C). The outside temperature has decreased during the shut down to 60 degrees F (16 degrees C). The vehicle is started, OAT will register 70 degrees F (21 degrees C) (heated garage temperature). When driven outside the OAT will start to update lower to 60 degrees F (16 degrees C) as the sensor cools off, should take less than 8 minutes.
- Example 2: Same as above: Vehicle is OFF for short time, or for overnight. Heated garage temp is 70 degrees F (21 degrees C). The outside temperature has decreased during the shut down to 60 degrees F (16 degrees C). The vehicle is started, OAT will register 70 degrees F (21 degrees C) (heated garage temperature). However, this time, the driver does heavy city traffic driving for 10 minutes of speeds below 19 mph (30km/h), then gets on the highway at speeds above 19 mph (30km/h) for at least 2 minutes. When driven outside, the OAT will start to update lower to 60 degrees F (16 degrees C) as the sensor cools off. This should take less than 10 minutes to reach 60 degrees F (16 degrees C).

Image Display Cameras

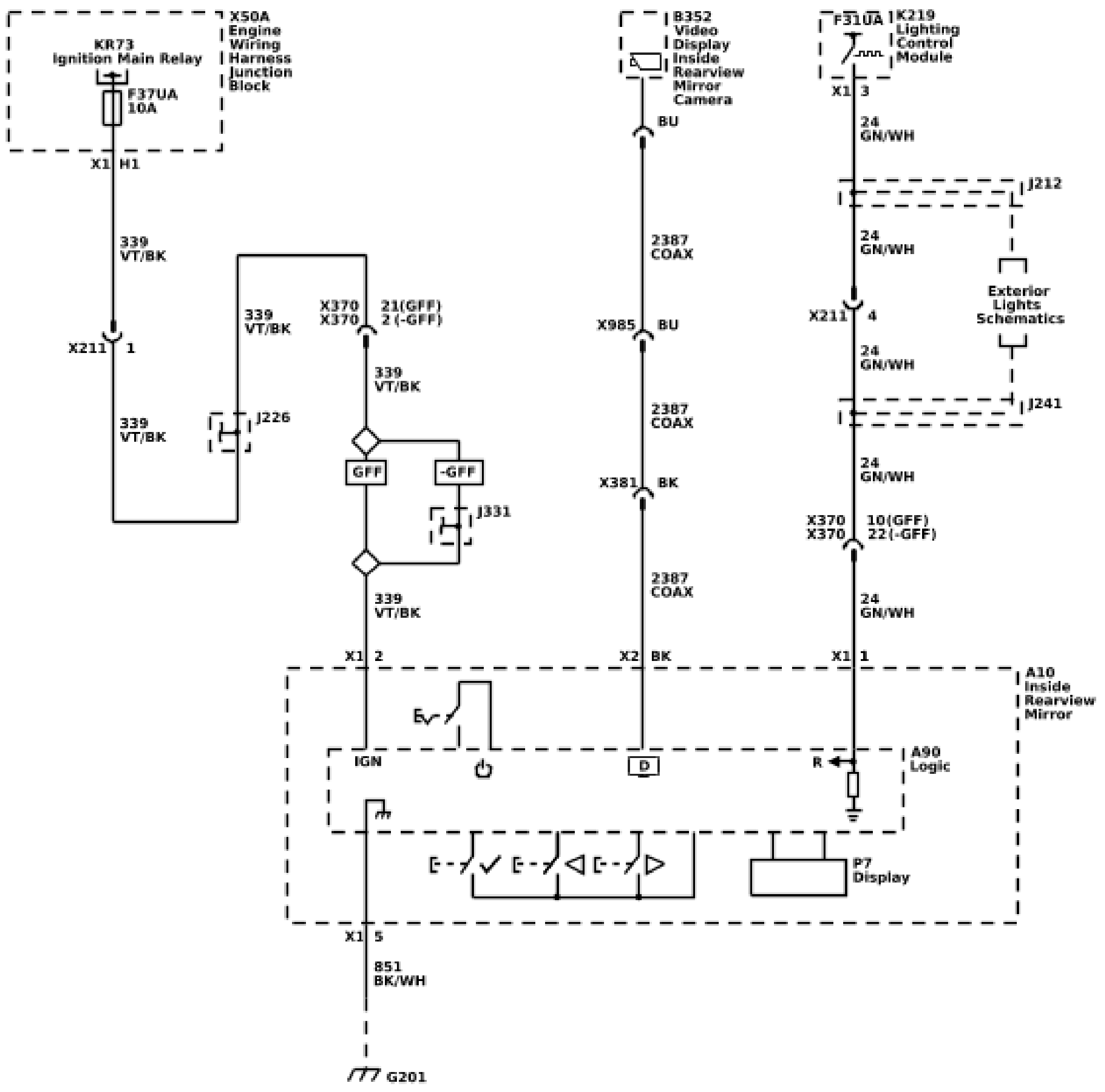
Schematic and Routing Diagrams

Image Display Camera Schematics (Rearview Driver Information Camera (UVB))


F5DR
K219
Lighting
Control
Module
X1 3
24
GN/WH
J212
24
GN/WH
X211 4
24
GN/WH
Exterior
Lights
Schematics
DD8/DRZ
-DD8-DRZ
J241
24
GN/WH
X6 13(IOK)
X1 11(IOR)
R
P53
Driver
Information
Display
D
X2 BK
LVDS
IOR
P7
Display
A22
Radio
Control
A90
Logic
D
X2 BK
LVDS
IOK
X7 GY (IOK)
X4 BK_1(IOR)
D
A11
Radio
X9 OG (IOK)
X5 OG (IOR)
4723
COAX (IOK)
4721
COAX (IOR)
X217 BU
4721
COAX
X402C BN
4721
COAX
X919 WH
4721
COAX
OG
B87
Rearview Driver
Information Camera
LOC
DESC

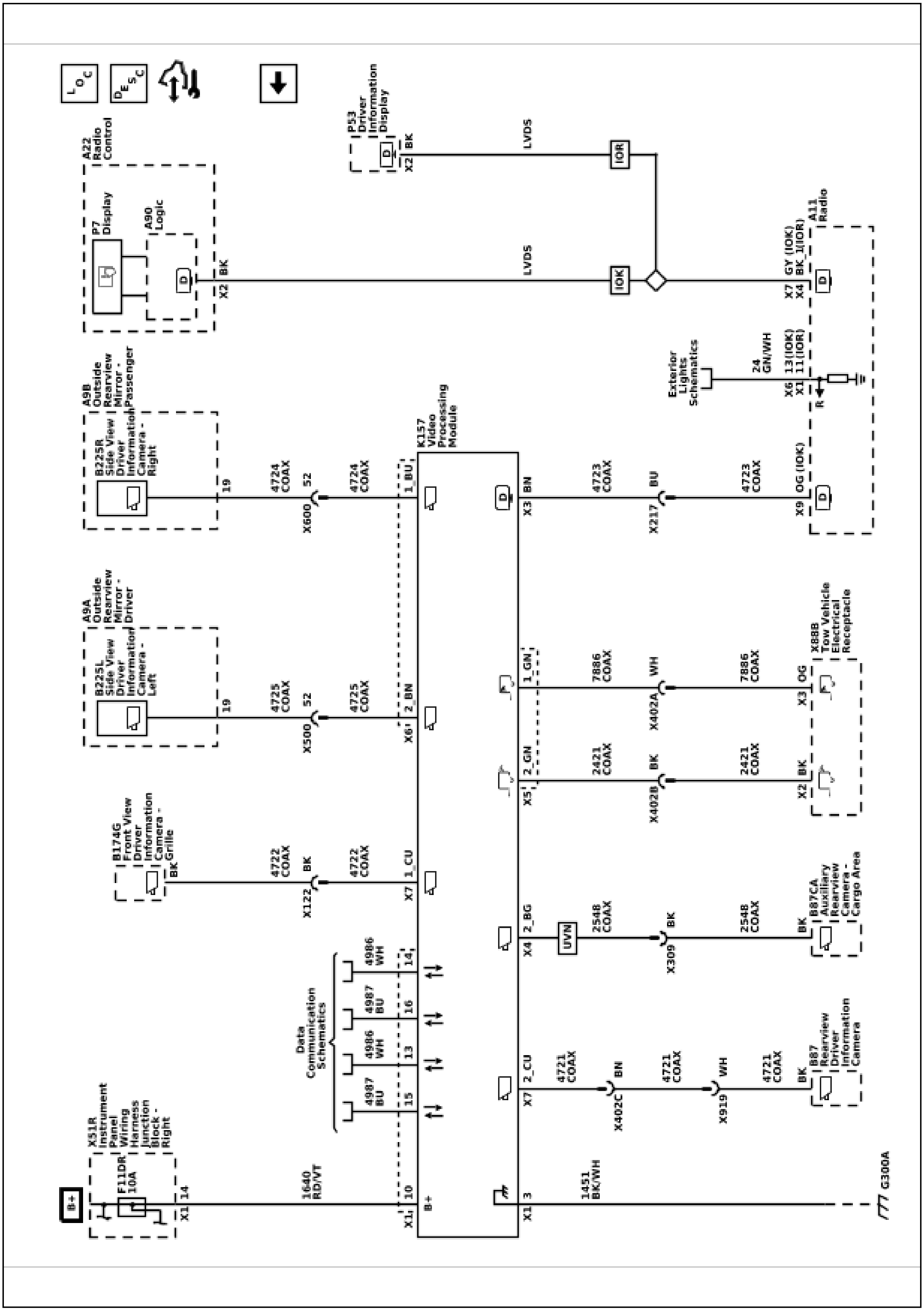
6846939

Image Display Camera Schematics (Inside Rearview Mirror Camera (DRZ))


X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F37UA 10A
X1 H1
339 VT/BK
X211 1
339 VT/BK
J226
339 VT/BK
X370 21(GFF)
X370 2 (-GFF)
339 VT/BK
GFF
-GFF
J331
339 VT/BK
X1 2
B352 Video Display Inside Rearview Mirror Camera
BU
2387 COAX
X985 BU
2387 COAX
X381 BK
2387 COAX
X2 BK
F310UA
K219 Lighting Control Module
X1 3
24 GN/WH
J212
24 GN/WH
X211 4
Exterior Lights Schematics
24 GN/WH
J241
24 GN/WH
X370 10(GFF)
X370 22(-GFF)
24 GN/WH
X1 1
A10 Inside Rearview Mirror
IGN
D
R
A90 Logic
P7 Display
X1 5
851 BK/WH
G201

6846940

Image Display Camera Schematics (360 Degree Vision (UV2))


6846941
B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F11DR 10A
X1 14
1640 RD/VT
X1 10 B+
K157 Video Processing Module
Data Communication Schematics
4987 BU
4986 WH
4987 BU
4986 WH
15
13
16
14
X1 3
1451 BK/WH
G300A
X7 2_CU
4721 COAX
X402C BN
4721 COAX
X919 WH
4721 COAX
BK
B87 Rearview Driver Information Camera
X4 2_BG
UVN
2548 COAX
X309 BK
2548 COAX
BK
B87CA Auxiliary Rearview Camera - Cargo Area
X5 2_GN
2421 COAX
X402B BK
2421 COAX
X2 BK
1_GN
7886 COAX
X402A WH
7886 COAX
X3 OG
X88B Tow Vehicle Electrical Receptacle
X7 1_CU
4722 COAX
X122 BK
4722 COAX
BK
B174G Front View Driver Information Camera - Grille
X6 2_BN
4725 COAX
X500 52
4725 COAX
19
B225L Side View Driver Information Camera - Left
A9A Outside Rearview Mirror - Driver
1_BU
4724 COAX
X600 52
4724 COAX
19
B225R Side View Driver Information Camera - Right
A9B Outside Rearview Mirror - Passenger
X3 BN
4723 COAX
X217 BU
4723 COAX
X9 OG (IOK)
A11 Radio
Exterior Lights Schematics
24 GN/WH
X6 13(IOK)
X1 11(IOR)
R
X7 GY (IOK)
X4 BK_1(IOR)
IOK
LVDS
X2 BK
A22 Radio Control
P7 Display
A90 Logic
IOR
LVDS
X2 BK
P53 Driver Information Display
L O C
D E S C

Description and Operation

Rearview Camera Full Display Mirror Description and Operation

If equipped, full display mirror provides a wider field of view than normally seen from the inside rearview mirror to assist when driving and changing lanes. When the tab under the inside rearview mirror is pulled rearward, a view of the area behind the vehicle displays on the mirror. The inside rearview camera full display mirror is connected to the outside rearview camera via a shielded coaxial cable.

When the tab under the inside rearview mirror is pulled rearward, a view of the area behind the vehicle displays on the mirror.

Adjust the rearview mirror for a clear view of the area behind the vehicle before turning on full display mirror. Use the three buttons on the bottom of the mirror to adjust the brightness, zoom, and tilt of the display. Make sure the light sensor is not covered when adjusting the brightness.

The inside rearview camera full display mirror may not work properly or display a clear image if:

- It is dark.
- The sun or the beam of headlamps are shining directly into the camera lens.
- Ice, snow, mud, or anything else builds up on the camera lens. Clean the lens, rinse it with water, and wipe it with a soft cloth.

When the mirror detects that the camera is not sending a valid video signal, it “blue screens” with a “no video” decal for 3 seconds, then reverts back to the mirror.

Rear Vision Camera Description and Operation

Rear Vision Camera System Operation

The rear vision camera system consists of a video camera located at the rear of the vehicle and the A11 Radio.

When the transmission is placed into REVERSE, a signal is sent to the A11 Radio indicating that camera operation is requested. The rearview camera sends video information to the A11 Radio through a coax cable. The coax cable also provides power from the A11 Radio to the rearview camera.

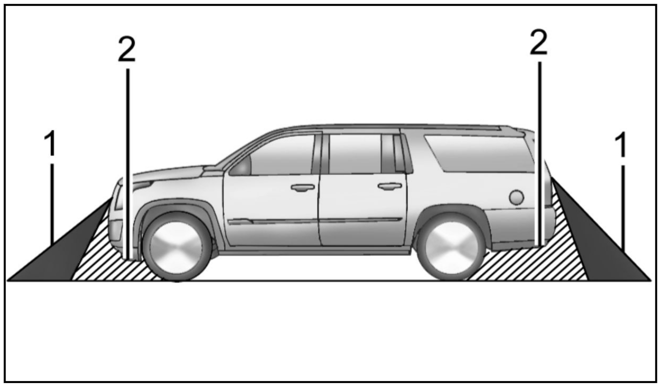
The following conditions may cause a degraded rear vision camera image:

- Ice, snow, or mud has built up on the rear vision camera
- Dark conditions
- Extreme light conditions, such as glare from the sun or the headlights of another vehicle
- Damage to the rear of the vehicle
- Extreme high temperatures or extreme temperature changes

If a malfunction is detected in the system, SERVICE REAR VISION CAMERA may be displayed on the Info Display Module as an indicator to the customer that a problem exists that requires service.

Surround Vision Camera Description and Operation

Warning: The Surround Vision cameras have blind spots and will not display all objects near the corners of the vehicle. Folding outside mirrors that are out of position may not display surround view correctly. Always check around the vehicle when parking or backing.



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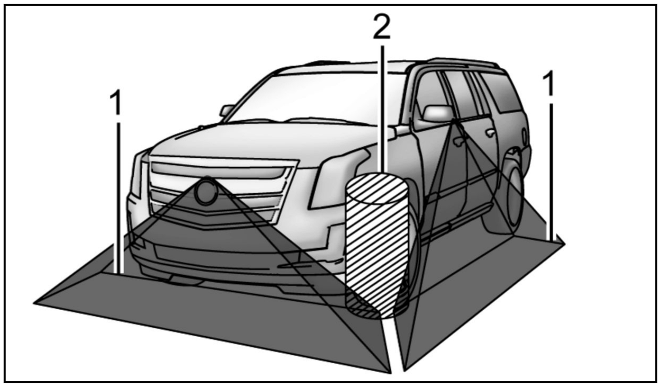
1. View displayed by the surround vision camera
2. Area not shown



4291749

1. View displayed by the surround vision camera
2. Area not shown

The surround vision camera system consists of the following components:

- B87 Rearview Camera
- B174G Frontview Camera – Grille

- K157 Video Processing Control Module
- A11 Radio **OR** K74 Human Machine Interface Module
- B225L Sideview Camera – Left
- B225R Sideview Camera – Right
- X20 Memory Card Receptacle (with XVR)

When the vehicle is traveling at speeds slower than 6 mph (10kph) the video processing control module will power up the cameras and send a video signal to the radio or human machine interface module.

The following conditions may cause a degraded surround vision camera image:

- Ice, snow, or mud has built up on the rear vision camera
- Dark conditions
- Extreme light conditions, such as glare from the sun or the headlights of another vehicle
- Damage to the rear of the vehicle
- Extreme high temperatures or extreme temperature changes

Surround Vision displays an overhead view of the area surrounding the vehicle, along with the front or rear camera views in the center stack. The front camera is in the grille or near the front emblem, the side cameras are on the bottom of the outside rearview mirrors, and the rear vision camera is above the license plate.

Note: Images from the Sideview Cameras are only displayed when both front doors are properly closed.

Features of the Surround Vision System

- Rear camera (B87 Rearview Camera) view alongside overhead view is displayed in reverse
- Front camera (B174G Frontview Camera – Grille) view alongside overhead view is displayed after shifting out of reverse to Neutral or Drive
- Will display front view when front park assist object is within trigger range calibration value (30 cm (12 in) in a forward gear
- Image is removed from display when vehicle speed exceeds speed calibration (10kph/6 mph) or button press / screen touch

System Operation

The video processing control module is connected to each camera via a shielded coaxial cable. The coaxial cable provides power for the camera and also carries the video image from the cameras to the video processing control module for processing. The video processing control module will then send the processed image output to infotainment system via another coaxial cable.

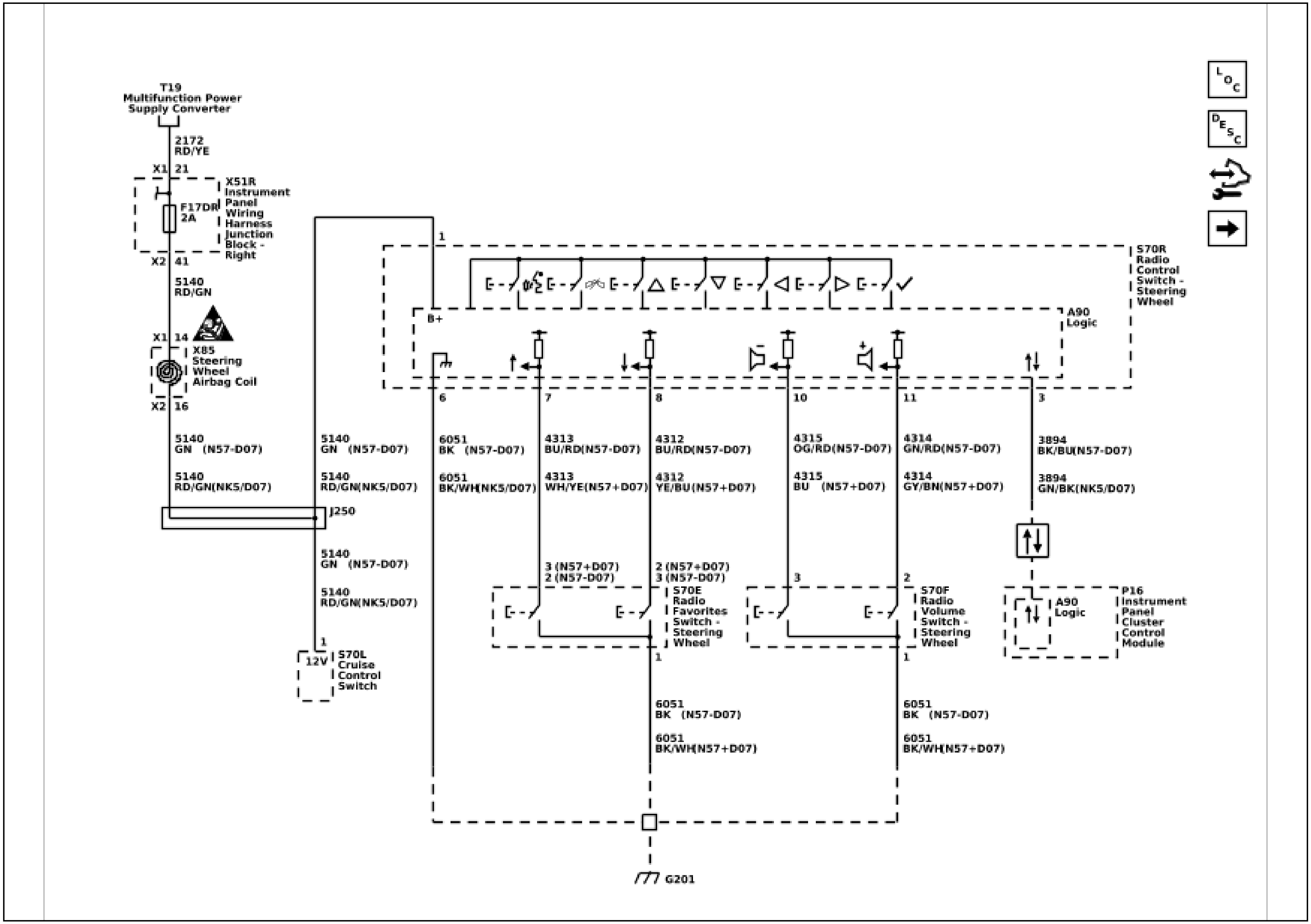
The video processing module receives various vehicle information (such as steering wheel angle, object detection, etc) from other sources such as parking assist modules and the Body Control Module via serial data. This information is used to produce the enhanced surround vision system images that include a warning triangle that may display if an object is detected nearby. This triangle changes from amber to red and increases in size as the object gets closer to the vehicle. Also, dynamic guidelines are displayed in Reverse to show the projected path of the vehicle based on steering wheel angle. Due to this use of vehicle information, any faults or DTCs in these related systems can prohibit proper surround vision operation.

If equipped, the video processing control module system may have a memory card receptacle (with XVR) located in the trunk. The memory card receptacle interfaces with the video processing control module via a USB cable. The memory card receptacle also receives fused battery voltage and ground from the video processing control module. The video processing control module uses the memory card as a mass storage device, similar to a USB storage device.

Secondary and Configurable Customer Controls

Schematic and Routing Diagrams

Steering Wheel Secondary/Configurable Control Schematics (Steering Wheel Controls)


T19
Multifunction Power
Supply Converter
2172
RD/YE
X1 21
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
F17DR
2A
X2 41
5140
RD/GN
X1 14
X85
Steering
Wheel
Airbag Coil
X2 16
5140
GN (N57-D07)
5140
RD/GN(NK5/D07)
J250
5140
GN (N57-D07)
5140
RD/GN(NK5/D07)
1
12V
S70L
Cruise
Control
Switch
1
B+
6
6051
BK (N57-D07)
6051
BK/WH(NK5/D07)
7
4313
BU/RD(N57-D07)
4313
WH/YE(N57+D07)
8
4312
BU/RD(N57-D07)
4312
YE/BU(N57+D07)
10
4315
OG/RD(N57-D07)
4315
BU (N57+D07)
11
4314
GN/RD(N57-D07)
4314
GY/BN(N57+D07)
3
3894
BK/BU(N57-D07)
3894
GN/BK(NK5/D07)
S70R
Radio
Control
Switch -
Steering
Wheel
A90
Logic
3 (N57+D07)
2 (N57-D07)
2 (N57+D07)
3 (N57-D07)
S70E
Radio
Favorites
Switch -
Steering
Wheel
1
3
2
S70F
Radio
Volume
Switch -
Steering
Wheel
1
A90
Logic
P16
Instrument
Panel
Cluster
Control
Module
6051
BK (N57-D07)
6051
BK/WH(N57+D07)
6051
BK (N57-D07)
6051
BK/WH(N57+D07)
G201
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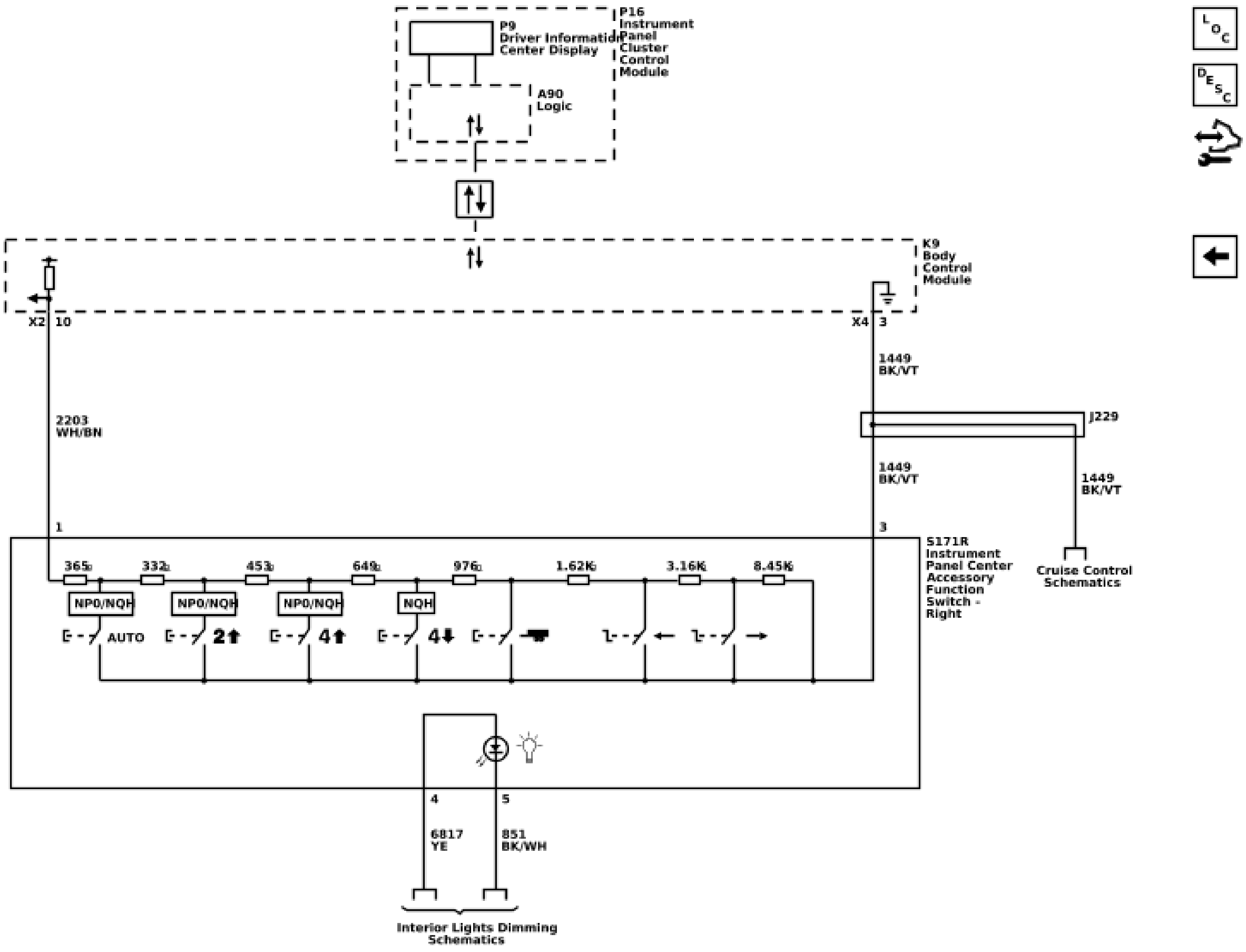
Steering Wheel Secondary/Configurable Control Schematics (Ride Control Switch)


P9
Driver Information Center Display
P16
Instrument
Panel
Cluster
Control
Module
A90
Logic
K9
Body
Control
Module
X2 10
X4 3
2203
WH/BN
1449
BK/VT
J229
1449
BK/VT
1449
BK/VT
Cruise Control Schematics
1
3
S171R
Instrument
Panel Center
Accessory
Function
Switch -
Right
365Ω
332Ω
453Ω
649Ω
976Ω
1.62KΩ
3.16KΩ
8.45KΩ
NP0/NQH
NP0/NQH
NP0/NQH
NQH
AUTO
2⬆
4⬆
4⬇
←
→
4
5
6817
YE
851
BK/WH
Interior Lights Dimming Schematics

6846943

Description and Operation

Steering Wheel Controls Description and Operation

The steering wheel control switches duplicate the function of the primary controls of the associated component, through a network of momentary contact switches.

The steering wheel controls are divided into a right-hand set and left-hand set. The switches are connected to a dedicated LIN data circuit.

- The S70E Radio Favorites Switch-Steering Wheel controls the favorites function of the radio.
- The S70F Radio Volume Switch-Steering Wheel allows for volume control of the radio.
- The S70L Cruise Control Switch consists of various cruise control specific functions including cruise on/off functions.
- The S70R Radio Control Switch controls various audio, communication and vehicle systems

Refer to the owners manual for more detailed operation of each steering wheel switch.

Steering Wheel Control Components

S70E Radio Favorites Switch-Steering Wheel
The S70E Radio Favorites Switch-Steering Wheel is a momentary contact switch located on the left rear side of the steering wheel. The S70E Radio Favorites Switch-Steering Wheel has two dedicated 5V Reference circuits for each switch function, the 5V Reference circuits come directly from the S70R Radio Control Switch. When a switch is depressed the signal is sent to the S70R Radio Control Switch that outputs a request through the LIN serial data circuit to perform the requested function.

S70F Radio Volume Switch-Steering Wheel
The S70F Radio Volume Switch-Steering Wheel is a momentary contact switch located on the right rear side of the steering wheel. The S70F Radio Volume Switch-Steering Wheel has two dedicated 5V Reference circuits for each switch function, the 5V Reference circuits come directly from the S70R Radio Control Switch. When a switch is depressed the signal is sent to the S70R Radio Control Switch that outputs a request through the LIN serial data circuit to perform the requested function.

S70L Cruise Control Switch
The S70L Cruise Control Switch is a resistive ladder design located on the left side of the steering wheel, each control function button having a different resistance value. The S70L Cruise Control Switch has its own 5V reference circuit from the BCM. The BCM detects a specific voltage value that is associated with the cruise control function switch being activated and sends the appropriate serial data message to complete the request.

For information on Cruise Control, refer to *Cruise Control Description and Operation 6-5*

S70R Radio Control Switch - Steering Wheel
The S70R Radio Control Switch is a set of momentary contact switches located on the right side of the steering wheel. When a switch is depressed the signal is grounded, the S70R Radio Control Switch sends a request through the LIN serial data circuit to the A11 Radio to perform the requested function.

Section 6

Engine/Propulsion

Cruise Control **6-3**
  Schematic and Routing Diagrams **6-3**
    Cruise Control Schematics 6-4
  Description and Operation **6-5**
    Cruise Control Description and Operation 6-5
Engine Controls and Fuel - 3.0L Diesel **6-11**
  Schematic and Routing Diagrams **6-11**
    Engine Controls Schematics (LZ0) 6-12
  Description and Operation **6-31**
    Inspection/Maintenance Description and Operation 6-31
Engine Controls and Fuel - 2.7L **6-33**
  Schematic and Routing Diagrams **6-33**
    Engine Controls Schematics (L3B) 6-34
  Description and Operation **6-53**
    Catalytic Converter Description and Operation 6-53
    Heated Oxygen Sensor Description and Operation 6-53
    Inspection/Maintenance Description and Operation 6-54
Engine Controls and Fuel - 5.3L, 6.2L **6-56**
  Schematic and Routing Diagrams **6-56**
    Engine Controls Schematics (L84 / L87) 6-57
  Description and Operation **6-73**
    Heated Oxygen Sensor Description and Operation 6-73
    Inspection/Maintenance Description and Operation 6-73
Engine Heating and Cooling **6-75**
  Schematic and Routing Diagrams **6-75**
    Engine Heating/Cooling Schematics 6-76
  Description and Operation **6-83**
    Cooling Fan Description and Operation 6-83
    Cooling Fan Description and Operation 6-83
    Cooling System Description and Operation 6-84
    Cooling System Description and Operation 6-107
    Cooling System Description and Operation (High Temperature Coolant Loop) 6-109
    Cooling System Description and Operation (Low Temperature Coolant Loop) 6-131
Engine Mechanical - 3.0L Diesel **6-136**
  Schematic and Routing Diagrams **6-136**
    Engine Mechanical Schematics (LZ0) 6-137
Engine Mechanical - 2.7L **6-138**
  Schematic and Routing Diagrams **6-138**
    Engine Mechanical Schematics (L3B) 6-139
Engine Mechanical - 5.3L, 6.2L **6-140**
  Schematic and Routing Diagrams **6-140**
    Engine Mechanical Schematics (L84 / L87) 6-141
Starting, Charging, and Low Voltage Energy Storage **6-142**
  Schematic and Routing Diagrams **6-142**
    Starting and Charging Schematics 6-143
  Description and Operation **6-148**
    Battery Description and Operation 6-148
    Charging System Description and Operation 6-149
    Electrical Power Management Description and Operation 6-151
    Starting System Description and Operation 6-154

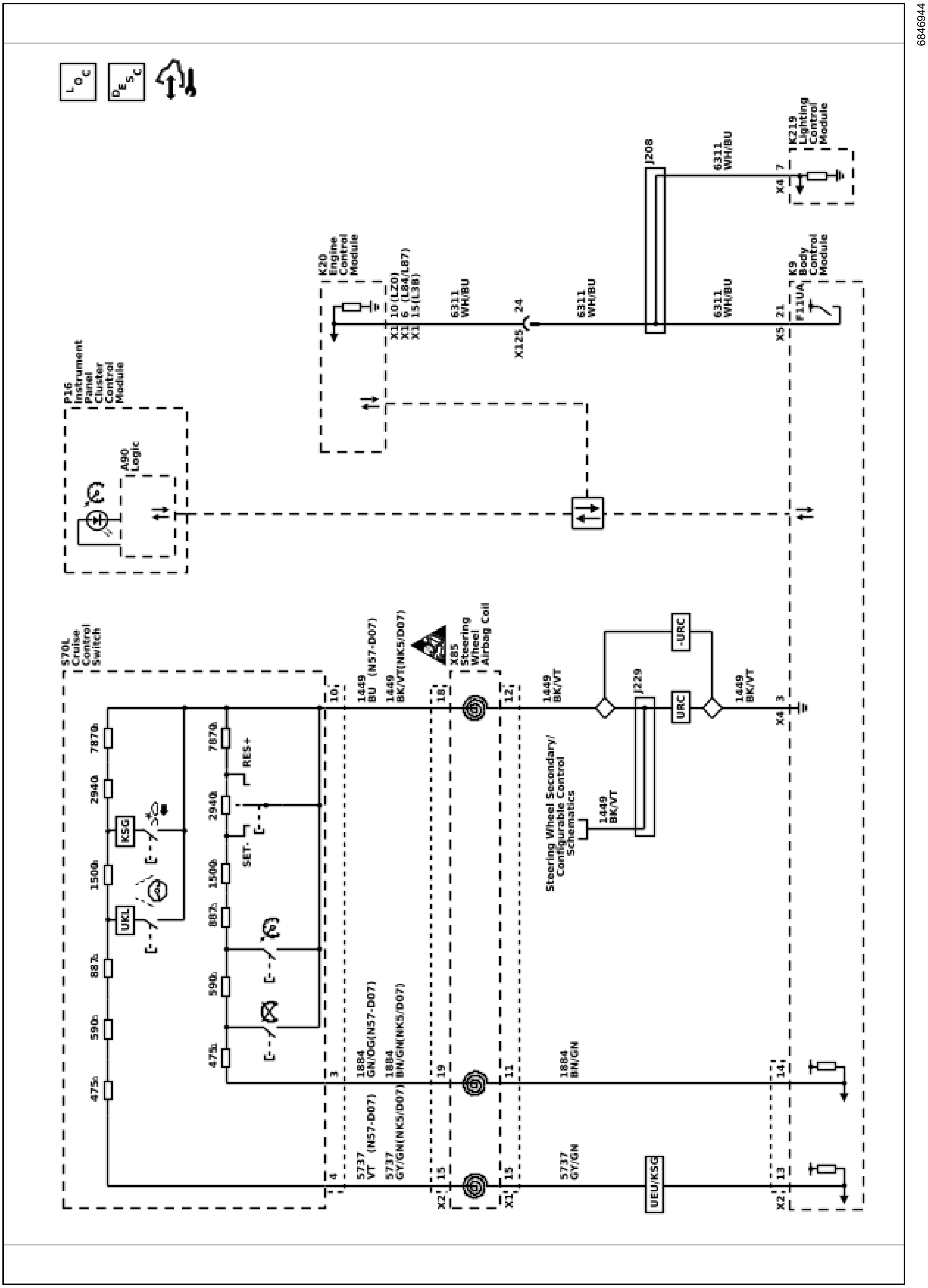
Stop/Start System Description and Operation 6-155

Engine/Propulsion

Cruise Control

Schematic and Routing Diagrams

Cruise Control Schematics (Cruise Control)


6846944
LOC
DESC
S70L Cruise Control Switch
P16 Instrument Panel Cluster Control Module
A90 Logic
K20 Engine Control Module
X1 10 (LZ0)
X1 6 (L84/L87)
X1 15 (L3B)
6311 WH/BU
X125 24
J208
K219 Lighting Control Module
X4 7
K9 Body Control Module
F11UA
X5 21
7870Ω
2940Ω
1500Ω
887Ω
590Ω
475Ω
KSG
UKL
RES+
SET-
10
1449 BU (N57-D07)
1449 BK/VT(NK5/D07)
X85 Steering Wheel Airbag Coil
18
12
1449 BK/VT
J229
-URC
URC
X4 3
Steering Wheel Secondary/ Configurable Control Schematics
3
1884 GN/OG(N57-D07)
1884 BN/GN(NK5/D07)
19
11
1884 BN/GN
14
4
5737 VT (N57-D07)
5737 GY/GN(NK5/D07)
X2 15
X1 15
5737 GY/GN
UEU/KSG
X2 13

Description and Operation

Cruise Control Description and Operation

Note: If the vehicle is equipped with RPO KSG, it also has Adaptive Cruise Control. Refer to the Object Detection or the Driver Assistance Systems subsection for schematics, diagnostics, and description and operation related to Adaptive Cruise Control functions.

Cruise control is a speed control system that maintains a desired vehicle speed under normal driving conditions at speeds above 40 km/h (25 mph). Steep grades may cause variations in the selected vehicle speeds.

The following are the main components of the Cruise Control System:

- The accelerator pedal
- The brake pedal position (BPP) sensor
- The body control module (BCM)
- The cruise on/off switch
- The cruise control cancel switch
- The + RES switch (equivalent to resume/accelerate switch)
- The − SET switch (equivalent to set/coast switch)
- The engine control module (ECM)
- The throttle actuator control (TAC) motor (gasoline engines only)
- The vehicle speed sensor

The body control module (BCM) monitors the signal circuit of the cruise control switches, which are located on the steering wheel. The BCM relays the cruise control switch status to the engine control module (ECM) via the serial data circuit. The ECM uses the status of the cruise control switch to determine when to capture and maintain the vehicle speed. The ECM monitors the vehicle speed signal circuit in order to determine the desired vehicle speed.

Voltage is supplied to the cruise control switch via the steering wheel control switch reference voltage circuit supplied by the BCM. The cruise control function switches are arranged in a resistive ladder design, with each cruise control function switch having a different resistance value. The BCM detects a specific voltage value that is associated with the cruise control function switch being activated. The BCM sends a serial data message to the ECM indicating that the on/off switch is active. Similarly, when the normally open + RES switch or the normally open − SET switch are pressed, the switch closes and the BCM detects the predetermined voltage signal on the cruise control resume/accel and set/coast switch signal circuit. The BCM sends a serial data message to the ECM indicating that the + RES switch or the − SET switch is active.

Cruise Control Engaged

The Cruise Control System will engage and adjust vehicle speeds, based on the activation of the following cruise control switches, which are located on the steering wheel:

- On/Off
- + RES
- − SET

To engage the Cruise Control System, ensure that the vehicle speed is above 40.2 km/h (25 mph), turn the cruise On/Off switch ON and momentarily press the − SET switch. The ECM will engage the Cruise Control System and record the vehicle speed. The ECM sends a serial data message to the instrument panel cluster (IPC) in order to illuminate the Cruise Engaged indicator in the IPC. Refer to the vehicle owner’s manual for the location and operation of the cruise control On/Off indicators and driver information center (DIC) messages.

Pressing the accelerator pedal while the Cruise Control System is engaged, allows the driver to override the Cruise Control System in order to accelerate the vehicle beyond the current set vehicle speed. When the accelerator pedal is released, the vehicle will decelerate and resume the current set vehicle speed.

The driver can also override the current set vehicle speed via the − SET switch and the + RES switch. When the Cruise Control System is engaged, pressing and holding the − SET switch will allow the vehicle to decelerate from the current set vehicle speed without deactivating the Cruise Control System. When the − SET switch is released, the ECM will record the vehicle speed and maintain the vehicle speed as the new set vehicle speed. When the Cruise Control System is engaged, momentarily pressing the − SET switch will allow the vehicle to decelerate at a vehicle specific calibratable increment, commonly 1 km/h or 1 mph, each time that the − SET is momentarily pressed, with a minimum vehicle speed of 38 km/h (24 mph). Refer to the vehicle Owner’s Manual for more information.

Pressing and holding the + RES switch, when the Cruise Control System is engaged, will allow the vehicle to accelerate to a greater vehicle speed than the current set vehicle speed. When the + RES switch is released, the ECM will record the vehicle speed and maintain the vehicle speed as the new set vehicle speed. When the Cruise Control System is engaged, momentarily pressing the + RES switch will allow the vehicle to accelerate at a vehicle specific calibratable increment, commonly 1 km/h or 1 mph, each time that the + RES switch is momentarily pressed. Momentarily activating the + RES switch will recall the previous vehicle speed, after the cruise control system has been disengaged by pressing the brake pedal, or CANCEL switch. Refer to the vehicle Owner's Manual for more information.

Cruise Control Disengaged

The engine control module (ECM) disengages the cruise control operation based on the signals from the following switches:

- The brake pedal position (BPP) sensor
- The On/Off switch
- The cruise control cancel switch

The Cruise Control System will disengage when the brake pedal is applied. The body control module (BCM) monitors the BPP sensor via the BPP sensor signal circuit as the voltage signal increases while the pedal is further applied. The ECM monitors the BPP signal through a discrete input and a serial data message signal from the BCM indicating the brake status. When either signal indicates the brake pedal is applied, the ECM will disengage the cruise control system.

The Cruise Control System will also disengage when the cruise control on/off switch is switched OFF, or the cruise control cancel switch is activated. The body control module (BCM) determines when the cruise control cancel switch is activated. When the normally open cancel switch is closed, the BCM detects the predetermined voltage signal on the cruise control function switch circuit. The vehicle speed stored in the memory of the engine control module will be erased when the cruise control On/Off switch is turned OFF, or the ignition switch is turned OFF. The BCM sends a serial data message to the ECM in order to disengage the cruise control system. When the Cruise Control System has been disengaged, the ECM sends a serial message to the instrument panel cluster (IPC) in order to turn OFF the Cruise Engaged indicator.

Every time the Cruise Control System is disengaged, the ECM will keep track of the reason for system disengagement. The last 8 disengagement reasons will be recorded within the ECM memory. The scan tool will display the last 8 Cruise Disengage History parameters, in which one out of approximately 50 possible reasons will be displayed in each of these 8 parameters. For the disengagement reason to be displayed within the scan tool parameter the Cruise Control System is active and disengagement is requested.

When engagement of the system is requested but an engagement inhibit is present, the most recent inhibit reason is recorded in the ECM history. The scan tool will display the most recent inhibit reason, in which one out of approximately 50 possible reasons will be displayed.

Cruise Control Inhibited

The engine control module (ECM) inhibits the cruise control operation when any of the following conditions exist:

- The ECM has not detected a brake pedal activation from the body control module (BCM) this ignition cycle.
- A Cruise Control System DTC has been set.
- The vehicle speed is less than 38.6 km/h (24 mph).
- The vehicle speed is too high.
- The vehicle is in PARK, REVERSE, NEUTRAL, or 1st gear.
- The engine RPM is low.
- The engine RPM is high.
- The system voltage is not between 9 volts and 16 volts.
- The Antilock Brake System (ABS)/Traction Control System (TCS) is active for more than a calibratable time (typically 0.3 to 0.7 seconds).

Cruise Control Inhibit Reasons

This is a general list of inhibit reasons. Not every inhibit reason is applicable to all vehicles. Refer to the scan tool inhibit reason list for the last 8 reasons that have been recorded during the current ignition cycle.

Scan Tool Name	Description	Long Description
Acceleration Rate too High	High acceleration	The vehicle acceleration rate is too high.
TRAILER BRAKES APPLIED	Trailer brakes applied	The trailer brake system has been activated.

Scan Tool Name	Description	Long Description
Acceleration Time	Rate limiting fault	Cruise torque request rate limiting active too long.
Adaptive Cruise Control Configuration Incorrect	Adaptive cruise control option mismatch	The cruise control type (adaptive cruise or conventional cruise) is mismatched between the engine control module (ECM) and the body control module (BCM).
Antilock Braking System Active	Antilock Braking System Active	The antilock braking system was active. Only reported on enhanced cruise control vehicles.
Automatic Braking Engine Torque Request Signal Communication Malfunction	Automatic braking engine torque request signal communication malfunction	An engine control module to electronic brake control module (EBCM) serial data fault is active or communication has been lost between the modules.
Automatic Braking Malfunction	Brake system malfunction	The electronic brake control module has detected a failure that does not allow automatic braking to be performed.
Axle Torque Serial Communication Malfunction	Axle Torque Serial Communication Malfunction	The adaptive cruise control is being inhibited by the ECM because a serial data signal timeout error has occurred with the hybrid max/min torque signals.
Battery Voltage Too High	Voltage above high voltage threshold	The ignition voltage is too high at the engine control module (typically 18 volts).
Battery Voltage Too Low	Voltage below low voltage threshold	The ignition voltage is low at the engine control module (typically 9 volts).
Brake Pedal Applied	Brake pedal apply	The brake pedal was applied.
Brake Pedal Not Initialized	Brake before cruise	The brake pedal has not been seen as applied prior to driver request to engage cruise with set switch. A brake pedal apply must be seen before allowing cruise engagement during each key cycle. On a vehicle equipped with a manual transmission, a clutch pedal apply may satisfy the brake pedal apply criteria.
Brake Pedal Position Malfunction	Brake pedal position signal invalid	A brake pedal apply circuit fault has been detected.
Brake Pedal Position Signal Malfunction	DTC P0703 is active or maximum time elapsed without receiving a valid Brake Pedal Position signal.	A serial data fault is active or communication has been lost with the module sending the brake pedal apply state.
Brake Pedal Pressure Detected	Brake pedal driver applied pressure detected	A brake pedal apply has been detected based on brake pedal pressure as measured by the electronic brake control module.
Brake Pedal Released Position Not Learned	Brake apply sensor home position not learned	The brake pedal position sensor released position is not learned.
Brake System Malfunction	Adaptive cruise control automatic braking failed	Adaptive cruise control automatic braking inoperative.
Calculated Torque	Calculated engine torque	The engine torque calculation is incorrect.
Clutch Pedal Applied	Clutch switch active	The clutch pedal was applied.
Coast Below Minimum Speed	Coast below low speed inhibit	The Set/Coast switch was depressed and the vehicle slowed below the minimum cruise control operating speed.
Coast Mode	Coast disengage	Cruise control is in coast mode with the Set/ Coast switch depressed and is requesting no throttle.
Control Function Active	DLC override	A scan tool is plugged into the Data Link Connector (DLC) connector.
Control Module Memory Malfunction	Memory failure	A control module memory failure has been detected.
Control Module Processor Malfunction	Processor integrity fault (random access memory corruption)	An engine control module software error has occurred.

Scan Tool Name	Description	Long Description
Crawl Mode Active	Crawl Mode Active	Crawl mode is active and inhibiting cruise control.
Cruise Control Cancel Switch Active	Cancel switch active	The cruise control cancel switch was depressed.
Cruise Control Software Malfunction	Sequence of completion checks	A cruise control software execution error has occurred.
Cruise Control Switch Inactive	On/Off switch in Off state	The cruise control On/Off switch is turned off.
Cruise Control Switch Invalid	Analog cruise switch input out of range	The cruise control switch voltage signal is in an invalid range.
Cruise Control Switch Serial Communication Malfunction	Serial data fault (cruise switch serial communication fault)	The cruise control switch serial data fault is active or communication has been lost with the module sending cruise control switch states.
Deceleration Rate Too High	High deceleration	The vehicle deceleration rate is too high.
Diagnostic Trouble Code (DTC) Set	Malfunction in PCM/ECM (DTC active)	A DTC is active or in history that inhibits cruise control operation.
Distance Sensing Cruise Control Brake Pedal Applied	Distance Sensing Cruise Control Brake Pedal Applied	Adaptive cruise control is being inhibited by the ECM because a brake pedal apply has occurred.
Distance Sensing Cruise Control Cancel Switch Active	Distance Sensing Cruise Control Cancel Switch Active	Adaptive cruise control is being inhibited by the ECM because the driver applied the cancel switch.
Distance Sensing Cruise Control Data	Serial data fault for adaptive cruise control throttle control and brake control signals sent by the distance sensing cruise control module	A distance sensing cruise control module serial data fault is active or communication has been lost between the distance sensing cruise control module and the engine control module.
Distance Sensing Cruise Control Inhibit	Distance sensing cruise control inhibited	The distance sensing cruise control system is inhibited.
Distance Sensing Cruise Control Invalid Engage	Distance Sensing Cruise Control Invalid Engage	Adaptive cruise control is being inhibited by the ECM because an invalid sequence of cruise control applies, brake pedal applies, or an invalid speed range has been detected.
Distance Sensing Cruise Control Off	Distance Sensing Cruise Control Off	Adaptive cruise control is being inhibited by the ECM because the driver has turned off the cruise on/off switch.
Distance Sensing Cruise Control Reduced Engine Power	Distance Sensing Cruise Control Reduced Engine Power	Adaptive cruise control is being inhibited by the ECM due to a fault resulting in “Reduced Engine Power”.
Driven Wheel Speed Higher Than Non Driven Wheel Speed	Driven wheel speed greater (wheel slip detection)	The driven wheel speed is greater than the non driven wheel speed (slip detection).
Engine Control Module	PCM/ECM inhibit (RAM corruption)	Engine control module internal communication error.
Engine Control Module (ECM) Reset	ECM running reset	An engine control module running reset has occurred.
Engine Overspeed Protection Active	Injectors disabled (engine overspeed fuel cut-off active)	Engine RPM limiter active with fuel cut off active.
Engine Overtemperature Protection Active	Engine metal overtemp active	The engine is over temperature. The engine is overheated.
Engine Run Time	Engine run time not elapsed	The engine has not been running long enough, typically five seconds.
Engine Speed	Engine speed too low or too high	The engine RPM is too low (near stall) or too high (near engine RPM fuel shutoff).
Excessive Accelerator Position Override	Pedal greater than cruise (override)	The driver has overridden cruise control set speed with accelerator pedal for greater than an allowable time.
1st Gear	First Gear	Transmission is engaged in 1st gear.

Scan Tool Name	Description	Long Description
Gear Change without Applied Clutch Pedal	Manual transmission out of gear with no clutch pedal apply	Manual transmission shifted to Neutral without clutch pedal being applied.
Hill Descent Control Active	Hill Descent Control System Active	The hill descent control system has gone active.
Hill Descent Control Serial Communication Malfunction	Hill Descent Control Serial Communication Malfunction	An electronic brake control module serial data fault is active or communication has been lost between the EBCM and ECM.
Hybrid/EV System	Hybrid Cruise Disengage	Cruise control is inhibited on hybrid applications when “Regen on Demand” is requested by the driver via the tap-up/tap-down paddles.
Illegal Mode	Illegal cruise mode	The cruise control mode is incorrect based on switch states.
Lane Center Control Serial Data Error	Lane Center Control Serial Communication Malfunction	Adaptive cruise control is being inhibited by the ECM because a serial data error has been detected on a vehicle with Lane Center Control.
Non Driven Wheel Speed Higher Than Drive Wheel Speed	Non-driven wheel speed greater	The non driven wheel speed is greater than the driven wheel speed.
None	None	This disengagement reason may be displayed after a dead battery repair or module replacement.
Park Brake Applied	Park brake switch signal active	The parking brake is applied.
Power Take-Off Active	Power Take Off active	The Power Take Off (PTO) system is active.
Rear Axle in Low Range	Rear axle in low	The rear axle is in low range.
Set/Coast and Resume/Accelerate Switches Active Simultaneously	SET and RESUME switches simultaneously active	The Set/Coast and Resume/Accelerate switches were pressed simultaneously.
Set/Coast Switch Active With Vehicle Speed Higher Than Set Point	Over schedule tap-down	The Set/Coast switch is selected, vehicle speed is above set speed and does not decrease. May be due to traveling down hill.
Speed Limiting/Warning System On	Speed limiter/warning On/Off switch turned on	Driver has turned on the Speed Limiter/Warning on/off switch. Cruise is disabled/inhibited and cruise on/off switch will be set to Off.
Throttle Actuator Control System	Electronic throttle control prevents cruise operation	The electronic throttle control system has detected a failure in the throttle control hardware.
Traction Control Active	Traction control active	The traction control system was active.
Traction Control System Malfunction	Traction Control System Malfunction	A fault is present in the traction control system.
Traction Control System Off	Traction Control System Off	The traction control system has been turned off by the driver.
Transfer Case in 4WD Low Range	Transfer case in 4WD Low	The transfer case is in low range.
Transmission Gear Ratio Malfunction	Transmission gear fault	A transmission DTC is active or in history, that inhibits cruise control operation.
Transmission Not in Forward Gear	Transmission in neutral, reverse or park	The transmission gear selector is not in a forward gear.
Vehicle Overspeed Protection Active	MPH limited fuel (vehicle overspeed fuel cut-off active)	The vehicle overspeed protection is active with fuel cut off active.
Vehicle Speed Higher Than Set Point	Over schedule	Vehicle speed has exceeded driver selected set speed by more than an allowable amount. This may occur while driving down a significant grade or driver overriding cruise while performing a passing maneuver.
Vehicle Speed Lower Than Set Point	Under schedule	The vehicle speed is below cruise control set speed by more than an allowable amount.
Vehicle Speed Too High	Vehicle speed exceeds high speed threshold	Vehicle speed has exceeded maximum cruise operating speed.

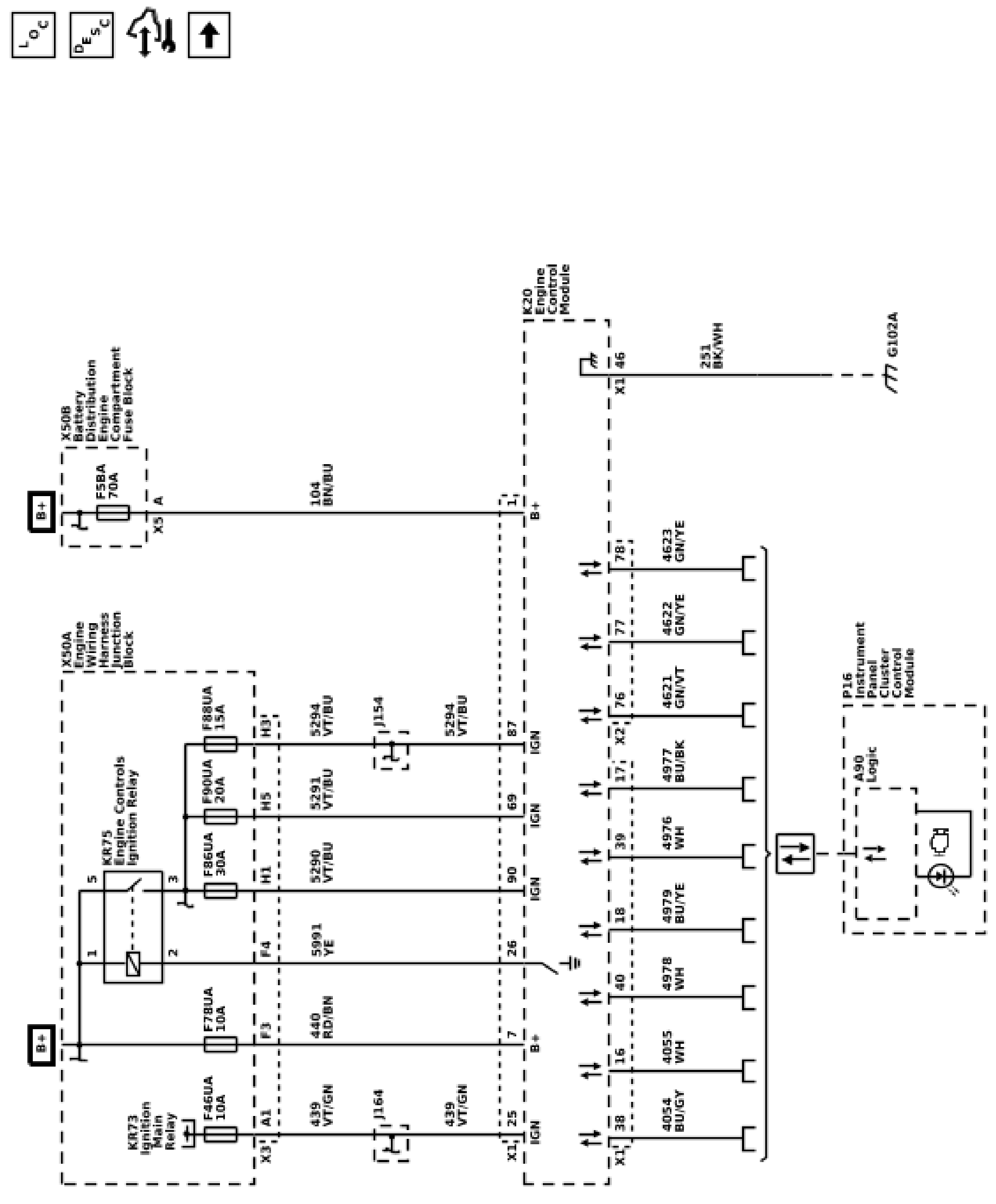
Scan Tool Name	Description	Long Description
Vehicle Speed Too Low	Vehicle speed drops below low speed threshold	Vehicle speed dropped below the cruise control minimum operating speed. May be due to hilly terrain and low vehicle speed. Manual transmission gear selection and engine torque may contribute to this disengagement reason.
Vehicle Stability System Active	Vehicle stability control active	The vehicle stability control system was active.
Vehicle Stability System Malfunction	Vehicle Stability System Malfunction	A fault has been detected in the vehicle stability control system.
Vehicle Stability System Off	Vehicle Stability System Off	The vehicle stability control system has been turned off by the driver.

Engine Controls and Fuel - 3.0L Diesel

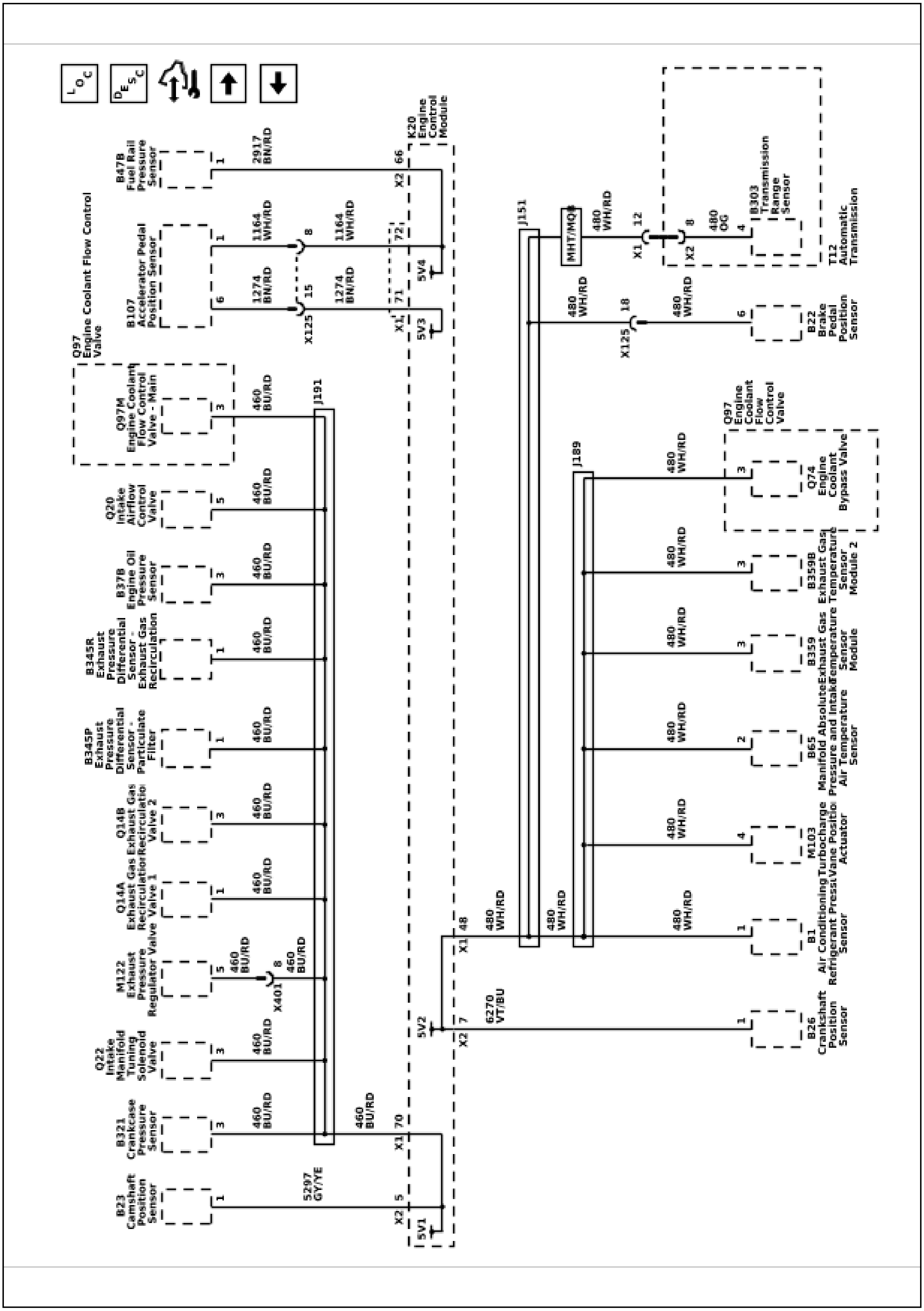
Schematic and Routing Diagrams

Engine Controls Schematics (LZ0) (Engine Control Module Power, Ground, Serial Data, and MIL)

6846945

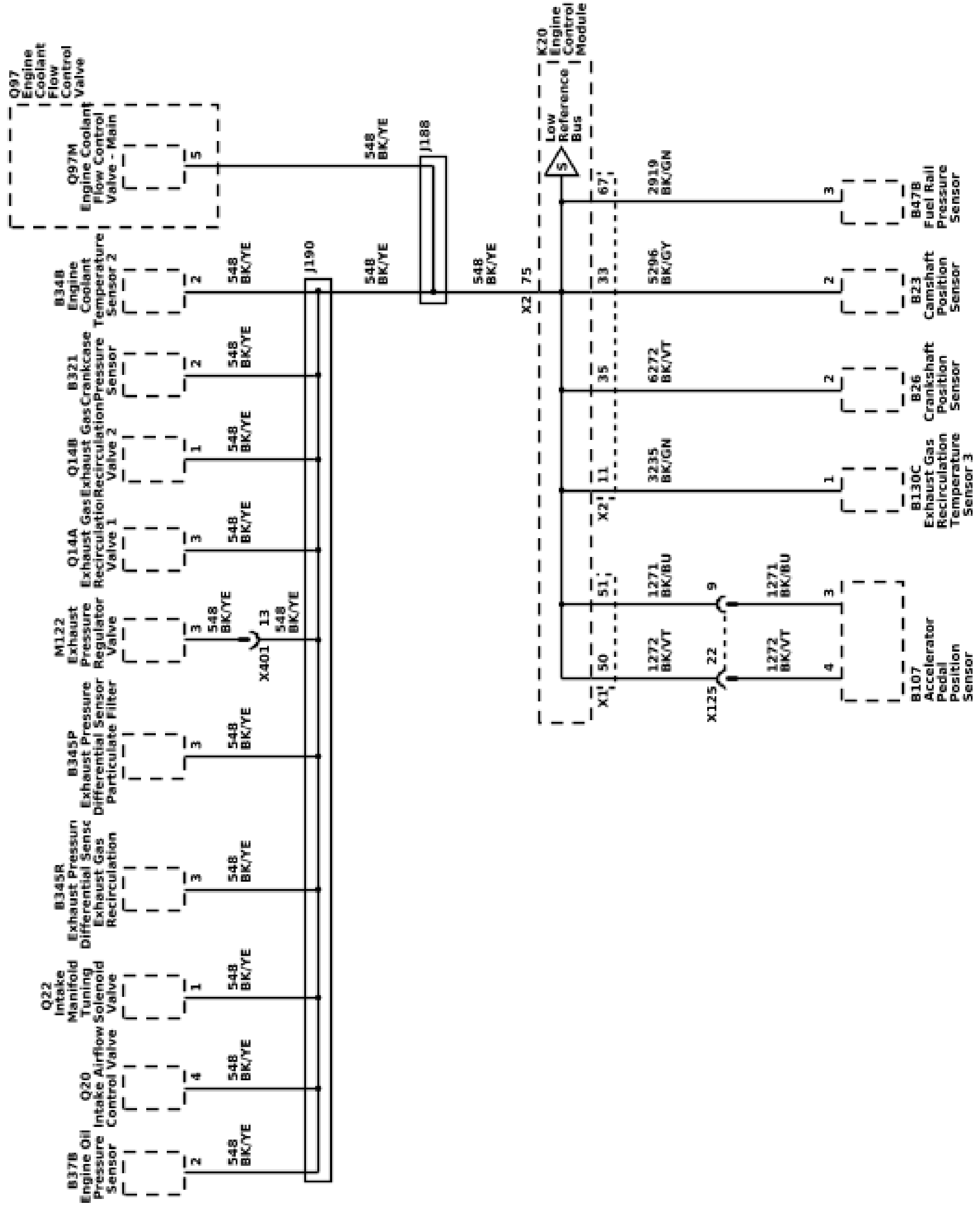

B+
F5BA 70A
X5 A
X50B Battery Distribution Engine Compartment Fuse Block
104 BN/BU
1 B+
K20 Engine Control Module
X1 46
251 BK/WH
G102A
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
5
3
1
2
F88UA 15A
F90UA 20A
F86UA 30A
F78UA 10A
F46UA 10A
KR73 Ignition Main Relay
H3
H5
H1
F4
F3
A1
X3
5294 VT/BU
5291 VT/BU
5290 VT/BU
5991 YE
440 RD/BN
439 VT/GN
J154
J164
87 IGN
69 IGN
90 IGN
26
7 B+
25 IGN
X1
78
77
76
X2
17
39
18
40
16
38
X1
4623 GN/YE
4622 GN/YE
4621 GN/VT
4977 BU/BK
4976 WH
4979 BU/YE
4978 WH
4055 WH
4054 BU/GY
P16 Instrument Panel Cluster Control Module
A90 Logic

Engine Controls Schematics (LZ0) (5V Reference Bus)

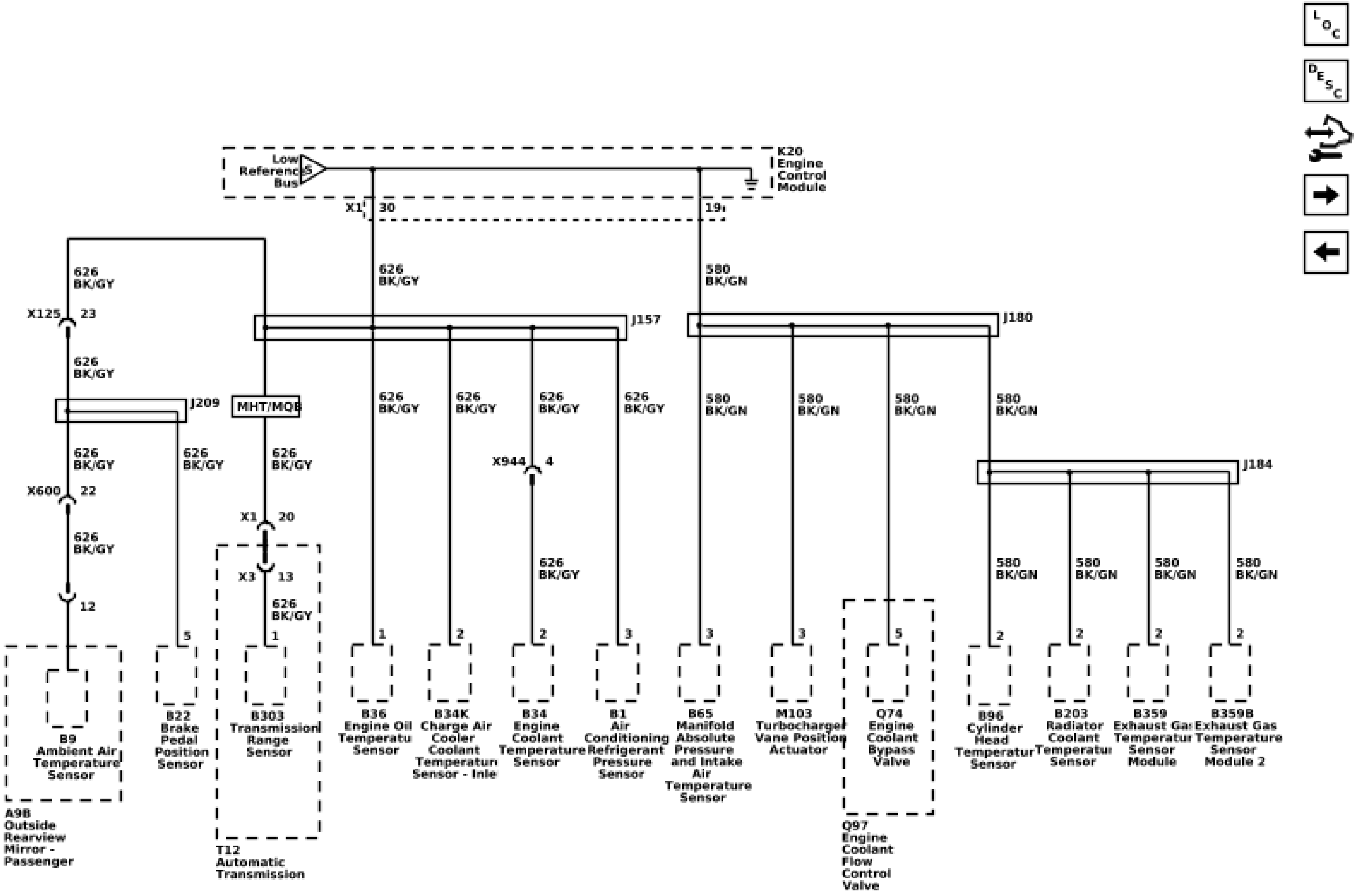

6846946
K20 Engine Control Module
5V1
5V2
5V3
5V4
B23 Camshaft Position Sensor
5297 GY/YE
B321 Crankcase Pressure Sensor
Q22 Intake Manifold Tuning Solenoid Valve
M122 Exhaust Pressure Regulator Valve
X401
Q14A Exhaust Gas Recirculation Valve 1
Q14B Exhaust Gas Recirculation Valve 2
B345P Exhaust Pressure Differential Sensor - Particulate Filter
B345R Exhaust Pressure Differential Sensor - Exhaust Gas Recirculation
B37B Engine Oil Pressure Sensor
Q20 Intake Airflow Control Valve
Q97 Engine Coolant Flow Control Valve
Q97M Engine Coolant Flow Control Valve - Main
460 BU/RD
J191
B107 Accelerator Pedal Position Sensor
1274 BN/RD
1164 WH/RD
X125
B47B Fuel Rail Pressure Sensor
2917 BN/RD
X1
X2
J151
MHT/MQB
480 WH/RD
480 OG
B303 Transmission Range Sensor
T12 Automatic Transmission
B22 Brake Pedal Position Sensor
J189
Q74 Engine Coolant Bypass Valve
B359B Exhaust Gas Temperature Sensor Module 2
B359 Exhaust Gas Temperature Sensor Module
B65 Manifold Absolute Pressure and Intake Air Temperature Sensor
M103 Turbocharger Vane Position Actuator
B1 Air Conditioning Refrigerant Pressure Sensor
B26 Crankshaft Position Sensor
6270 VT/BU

Engine Controls Schematics (LZ0) (Low Reference Bus - 1 of 2)

6846947


Q97 Engine Coolant Flow Control Valve
Q97M Engine Coolant Flow Control Valve - Main
5
548 BK/YE
J188
B348 Engine Coolant Temperature Sensor 2
2
548 BK/YE
J190
548 BK/YE
548 BK/YE
X2 75
K20 Engine Control Module
Low Reference Bus
5
67
33
35
11
X2
51
50
X1
B321 Crankcase Pressure Sensor
2
548 BK/YE
Q14B Exhaust Gas Recirculation Valve 2
1
548 BK/YE
Q14A Exhaust Gas Recirculation Valve 1
3
548 BK/YE
M122 Exhaust Pressure Regulator Valve
3
548 BK/YE
X401
13
548 BK/YE
B345P Exhaust Pressure Differential Sensor Particulate Filter
3
548 BK/YE
B345R Exhaust Pressure Differential Sensor Exhaust Gas Recirculation
3
548 BK/YE
Q22 Intake Manifold Tuning Solenoid Valve
1
548 BK/YE
Q20 Intake Airflow Control Valve
4
548 BK/YE
B378 Engine Oil Pressure Sensor
2
548 BK/YE
2919 BK/GN
3
B47B Fuel Rail Pressure Sensor
5296 BK/GY
2
B23 Camshaft Position Sensor
6272 BK/VT
2
B26 Crankshaft Position Sensor
3235 BK/GN
1
B130C Exhaust Gas Recirculation Temperature Sensor 3
1271 BK/BU
9
1271 BK/BU
3
1272 BK/VT
22
X125
1272 BK/VT
4
B107 Accelerator Pedal Position Sensor

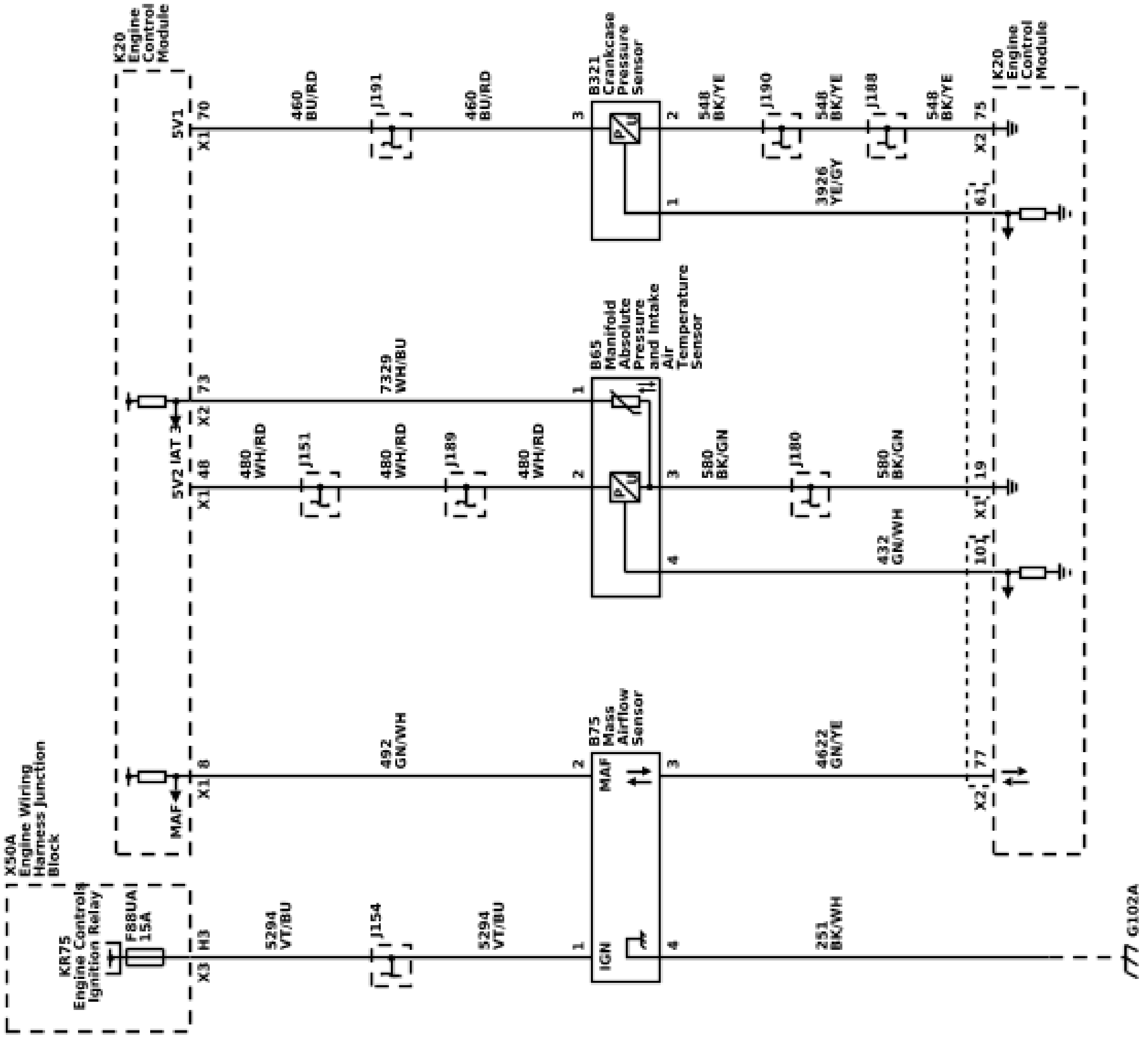
Engine Controls Schematics (LZ0) (Low Reference Bus - 2 of 2)


K20
Engine
Control
Module
Low
Reference
Bus
5
X1
30
19
626
BK/GY
580
BK/GN
J157
J180
J184
J209
MHT/MQB
X125
23
X600
22
12
X1
20
X3
13
X944
4
1
2
3
5
B9
Ambient Air
Temperature
Sensor
A98
Outside
Rearview
Mirror -
Passenger
B22
Brake
Pedal
Position
Sensor
B303
Transmission
Range
Sensor
T12
Automatic
Transmission
B36
Engine Oil
Temperatu
Sensor
B34K
Charge Air
Cooler
Coolant
Temperatur
Sensor - Inle
B34
Engine
Coolant
Temperature
Sensor
B1
Air
Conditioning
Refrigerant
Pressure
Sensor
B65
Manifold
Absolute
Pressure
and Intake
Air
Temperature
Sensor
M103
Turbocharger
Vane Position
Actuator
Q74
Engine
Coolant
Bypass
Valve
Q97
Engine
Coolant
Flow
Control
Valve
B96
Cylinder
Head
Temperatur
Sensor
B203
Radiator
Coolant
Temperatu
Sensor
B359
Exhaust Ga
Temperatu
Sensor
Module
B359B
Exhaust Gas
Temperature
Sensor
Module 2
LOC
DESC

6846948

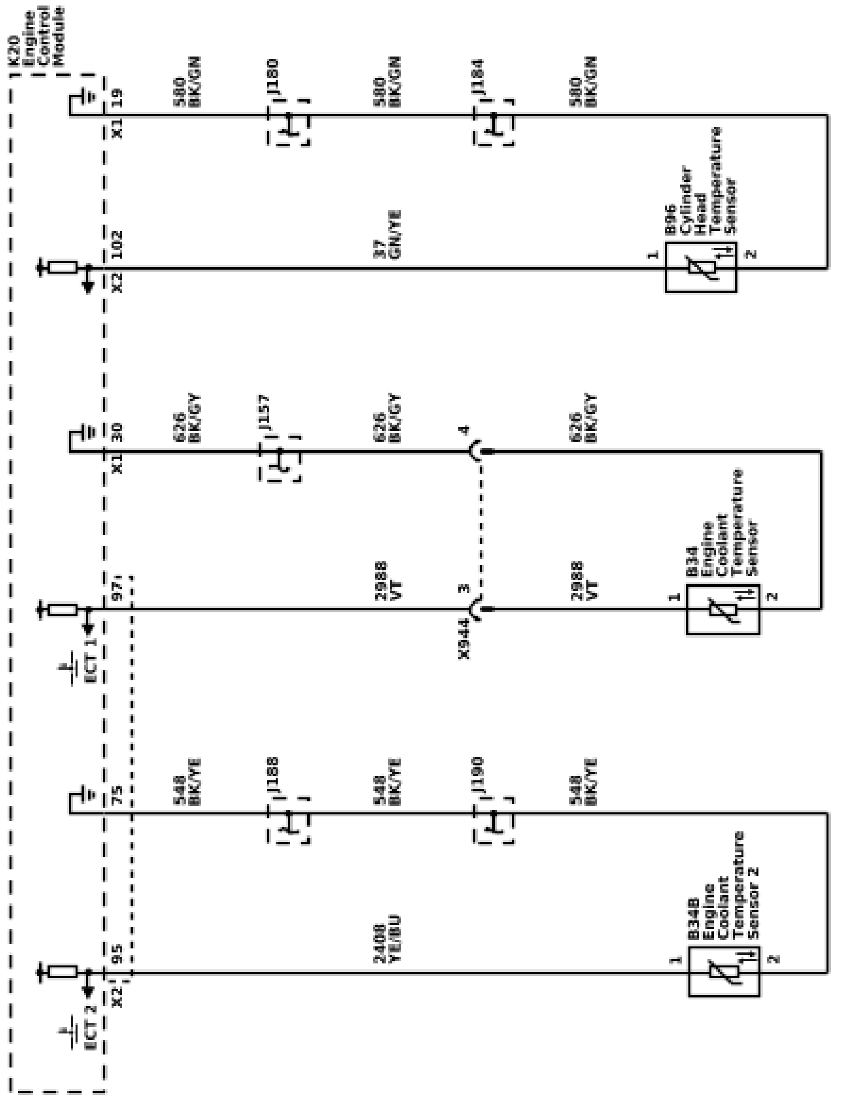
Engine Controls Schematics (LZ0) (Engine Data Sensors - Intake Air and Crankcase Pressure Sensors)

6846953

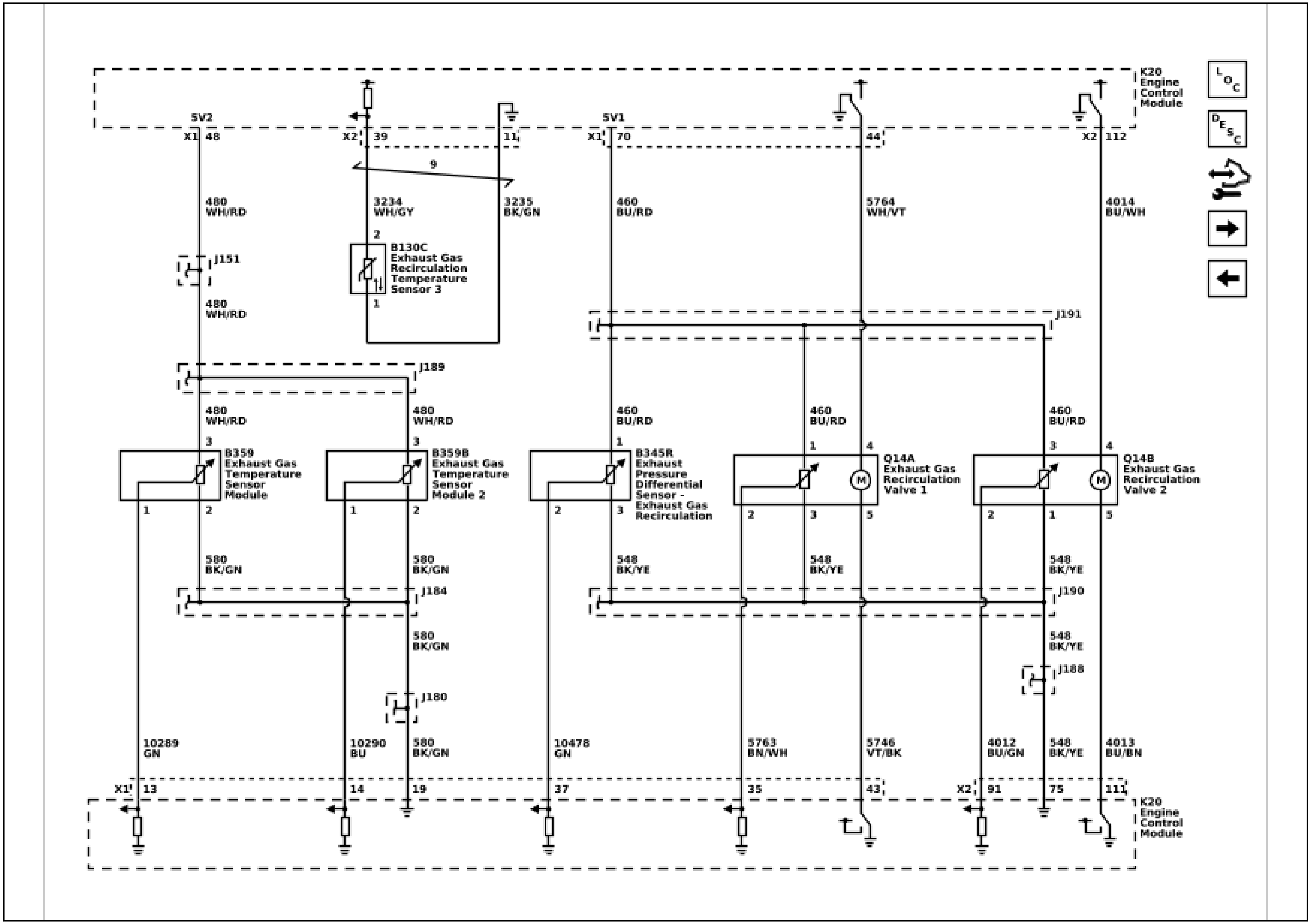

K20 Engine Control Module
5V1
X1 70
460 BU/RD
J191
460 BU/RD
3
B321 Crankcase Pressure Sensor
2
548 BK/YE
J190
548 BK/YE
J188
548 BK/YE
X2 75
1
3926 YE/GY
61
K20 Engine Control Module
X2 73
IAT 3
7329 WH/BU
1
B65 Manifold Absolute Pressure and Intake Air Temperature Sensor
5V2
X1 48
480 WH/RD
J151
480 WH/RD
J189
480 WH/RD
2
3
580 BK/GN
J180
580 BK/GN
X1 19
4
432 GN/WH
101
MAF
X1 8
492 GN/WH
2
B75 Mass Airflow Sensor
MAF
3
4622 GN/YE
X2 77
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F8BUA 15A
X3 H3
5294 VT/BU
J154
5294 VT/BU
1
IGN
4
251 BK/WH
G102A

6846949

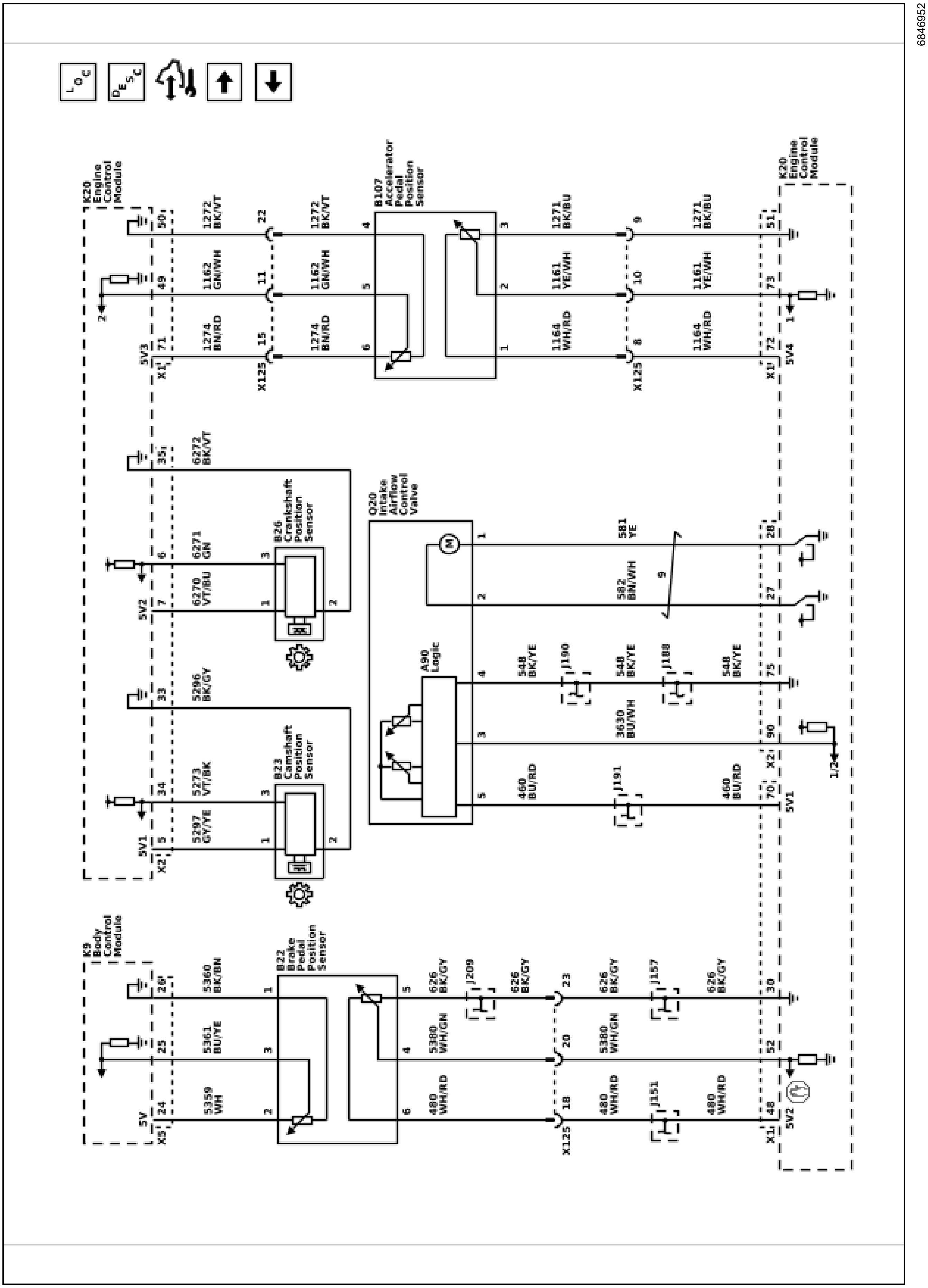
Engine Controls Schematics (LZ0) (Engine Data Sensors - Coolant and Engine Metal Temperature)


K20 Engine Control Module
X1 19
580 BK/GN
J180
580 BK/GN
J184
580 BK/GN
X2 102
37 GN/YE
B96 Cylinder Head Temperature Sensor
1
2
X1 30
626 BK/GY
J157
626 BK/GY
4
626 BK/GY
97
ECT 1
2988 VT
3
X944
2988 VT
B34 Engine Coolant Temperature Sensor
1
2
75
548 BK/YE
J188
548 BK/YE
J190
548 BK/YE
X2 95
ECT 2
2408 YE/BU
B34B Engine Coolant Temperature Sensor 2
1
2

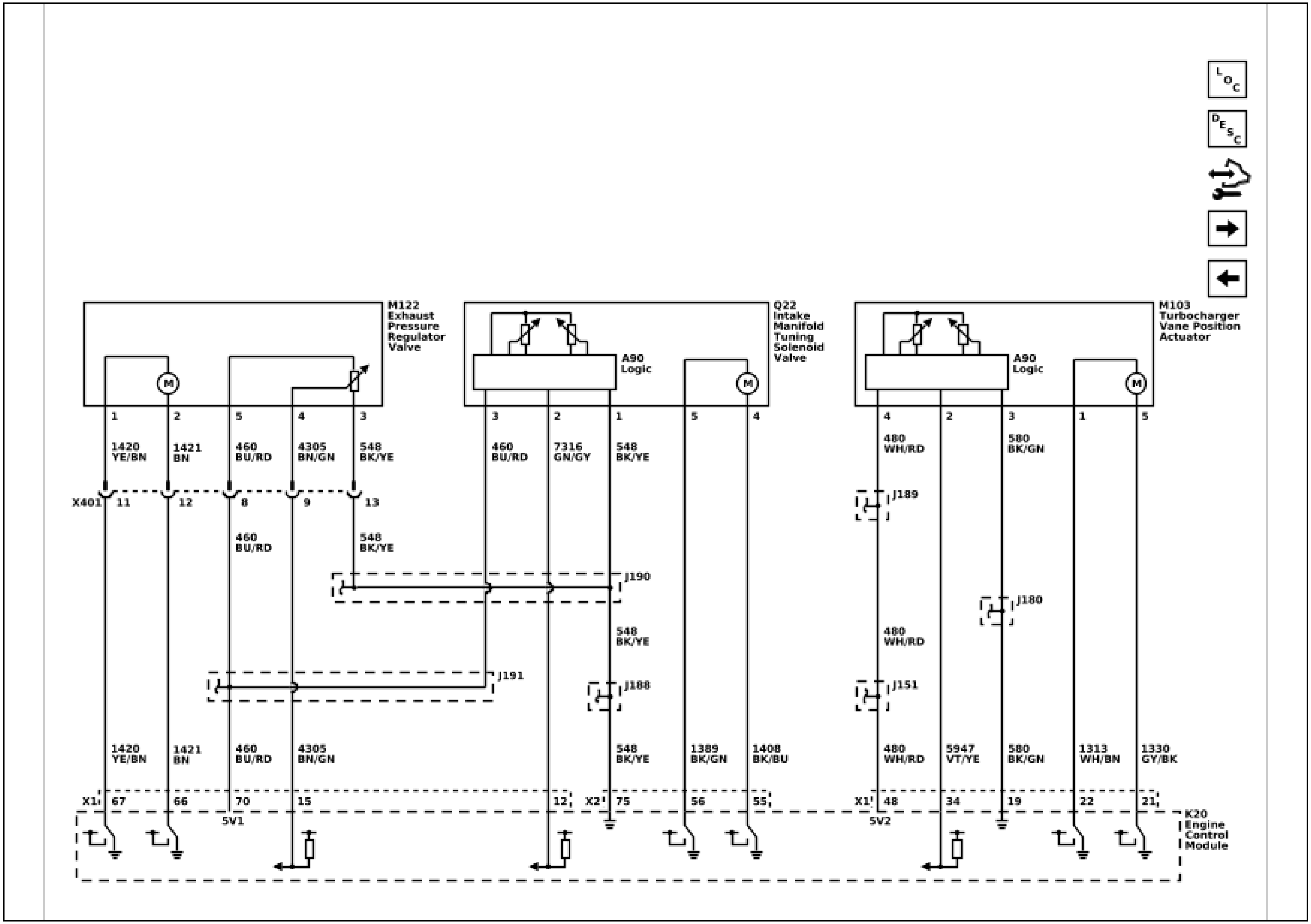
Engine Controls Schematics (LZ0) (Engine Data Sensors - EGR and Exhaust Gas Temperature)


K20 Engine Control Module
5V2
X1 48
X2 39
11
5V1
X1 70
44
X2 112
9
480 WH/RD
3234 WH/GY
3235 BK/GN
460 BU/RD
5764 WH/VT
4014 BU/WH
J151
2
B130C Exhaust Gas Recirculation Temperature Sensor 3
1
J191
J189
460 BU/RD
3
B359 Exhaust Gas Temperature Sensor Module
1
2
B359B Exhaust Gas Temperature Sensor Module 2
B345R Exhaust Pressure Differential Sensor - Exhaust Gas Recirculation
Q14A Exhaust Gas Recirculation Valve 1
Q14B Exhaust Gas Recirculation Valve 2
4
5
M
580 BK/GN
548 BK/YE
J184
J190
J188
J180
10289 GN
10290 BU
10478 GN
5763 BN/WH
5746 VT/BK
4012 BU/GN
4013 BU/BN
X1 13
14
19
37
35
43
X2 91
75
111
6846950

Engine Controls Schematics (LZ0) (Engine Data Sensors - Injector Timing Controls and Override)

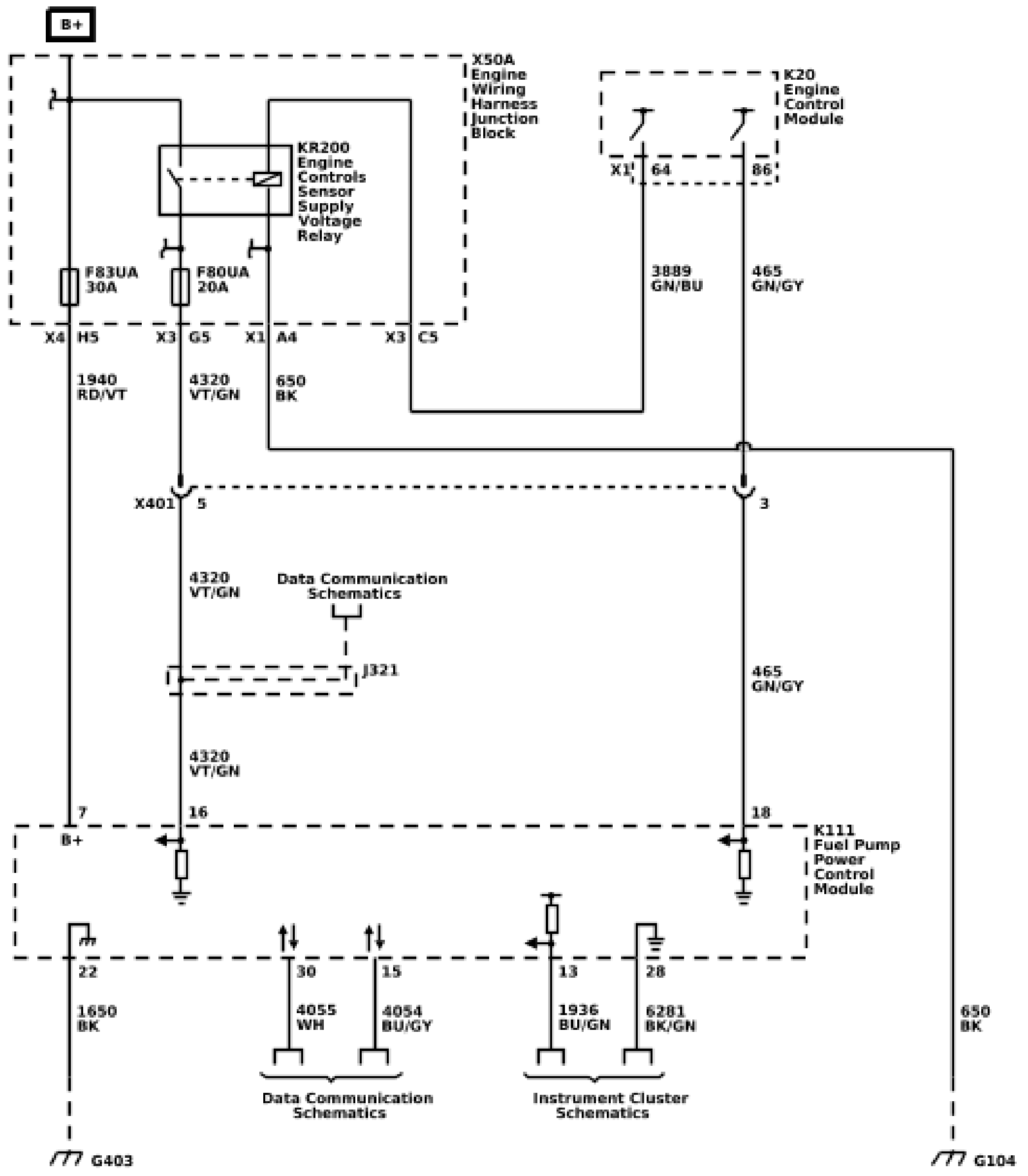

6846952
K20 Engine Control Module
B107 Accelerator Pedal Position Sensor
K20 Engine Control Module
X1 5V3 71
49
50
1274 BN/RD
1162 GN/WH
1272 BK/VT
X125 15
11
22
6
5
4
1
2
3
1164 WH/RD
1161 YE/WH
1271 BK/BU
X125 8
10
9
X1 72 5V4
73
51
2
1
35
6272 BK/VT
B26 Crankshaft Position Sensor
5V2 7
6
6270 VT/BU
6271 GN
Q20 Intake Airflow Control Valve
M
581 YE
582 BN/WH
28
27
A90 Logic
548 BK/YE
J190
J188
75
3630 BU/WH
90
X2
1/2
460 BU/RD
J191
70 5V1
33
5296 BK/GY
B23 Camshaft Position Sensor
X2 5V1 5
34
5297 GY/YE
5273 VT/BK
K9 Body Control Module
B22 Brake Pedal Position Sensor
X5 5V 24
25
26
5359 WH
5361 BU/YE
5360 BK/BN
626 BK/GY
J209
5380 WH/GN
480 WH/RD
X125 18
20
23
J157
J151
X1 48 5V2
52
30

Engine Controls Schematics (LZ0) (Engine Data Sensors - Exhaust, Turbo, and Intake Manifold Actuators)


M122 Exhaust Pressure Regulator Valve
Q22 Intake Manifold Tuning Solenoid Valve
M103 Turbocharger Vane Position Actuator
A90 Logic
A90 Logic
M
1420 YE/BN
1421 BN
460 BU/RD
4305 BN/GN
548 BK/YE
7316 GN/GY
1389 BK/GN
1408 BK/BU
480 WH/RD
5947 VT/YE
580 BK/GN
1313 WH/BN
1330 GY/BK
X401
X1
X2
J189
J190
J191
J188
J180
J151
5V1
5V2
K20 Engine Control Module

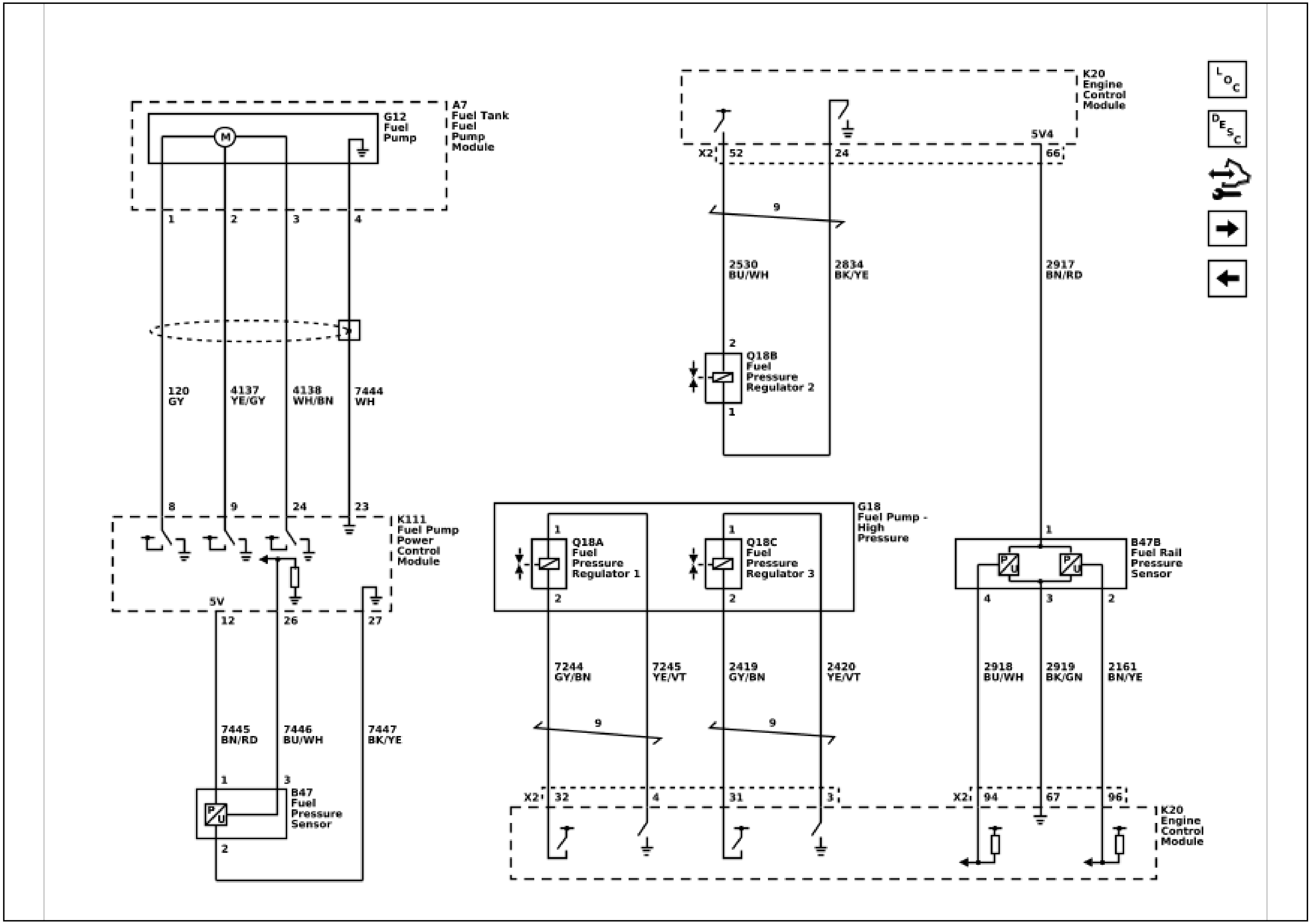
6846951

Engine Controls Schematics (LZ0) (Fuel Pump Power Control Module Power, Ground, and Subsystem References)


B+
X50A Engine Wiring Harness Junction Block
KR200 Engine Controls Sensor Supply Voltage Relay
F83UA 30A
F80UA 20A
X4 H5
X3 G5
X1 A4
X3 C5
K20 Engine Control Module
X1 64
86
3889 GN/BU
465 GN/GY
1940 RD/VT
4320 VT/GN
650 BK
X401 5
3
4320 VT/GN
Data Communication Schematics
J321
465 GN/GY
4320 VT/GN
7
16
18
B+
K111 Fuel Pump Power Control Module
22
30
15
13
28
1650 BK
4055 WH
4054 BU/GY
1936 BU/GN
6281 BK/GN
650 BK
Data Communication Schematics
Instrument Cluster Schematics
G403
G104

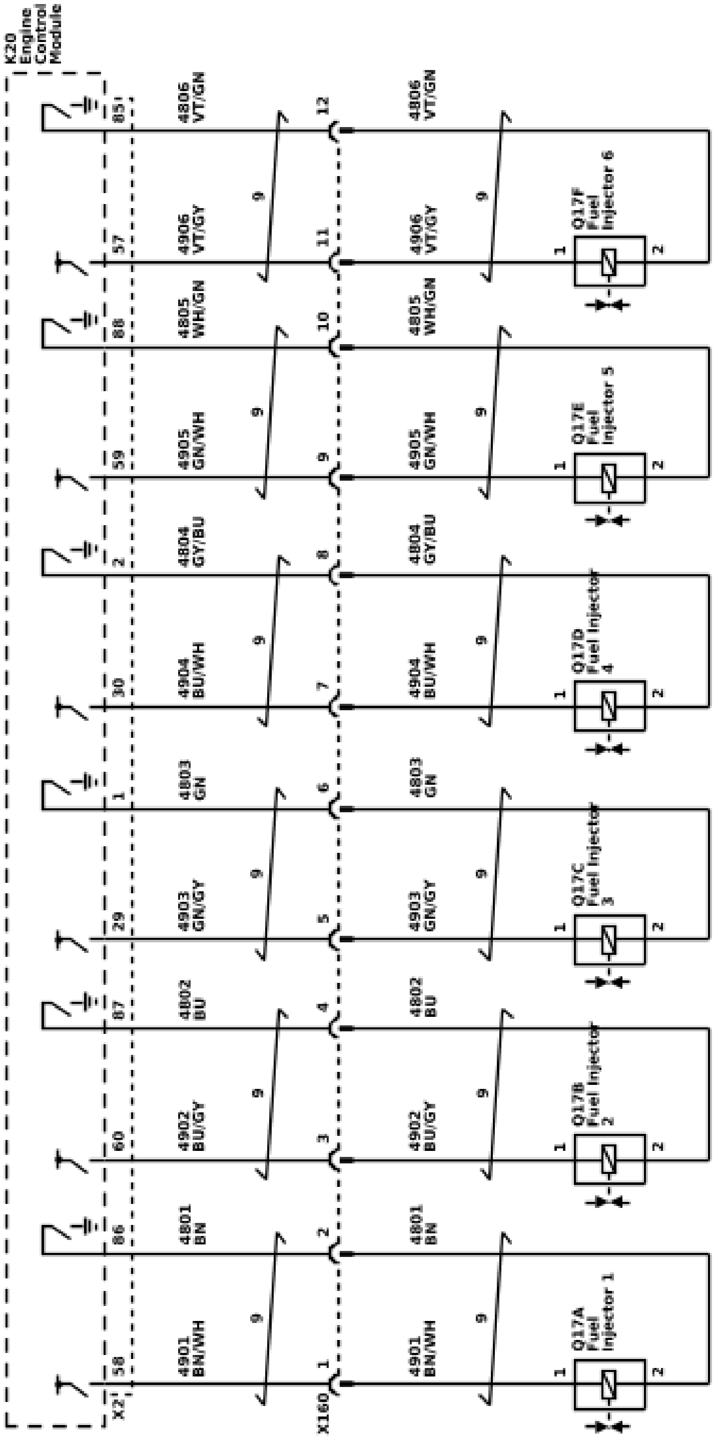
6846957

Engine Controls Schematics (LZ0) (Fuel Controls - Low Pressure and High Pressure)


A7
Fuel Tank
Fuel
Pump
Module
G12
Fuel
Pump
M
1
2
3
4
120
GY
4137
YE/GY
4138
WH/BN
7444
WH
8
9
24
23
K111
Fuel Pump
Power
Control
Module
5V
12
26
27
7445
BN/RD
7446
BU/WH
7447
BK/YE
1
3
2
B47
Fuel
Pressure
Sensor
P
U
K20
Engine
Control
Module
X2
52
24
5V4
66
9
2530
BU/WH
2834
BK/YE
2917
BN/RD
2
1
Q18B
Fuel
Pressure
Regulator 2
G18
Fuel Pump -
High
Pressure
Q18A
Fuel
Pressure
Regulator 1
Q18C
Fuel
Pressure
Regulator 3
B47B
Fuel Rail
Pressure
Sensor
7244
GY/BN
7245
YE/VT
2419
GY/BN
2420
YE/VT
2918
BU/WH
2919
BK/GN
2161
BN/YE
X2
32
4
31
3
94
67
96
K20
Engine
Control
Module

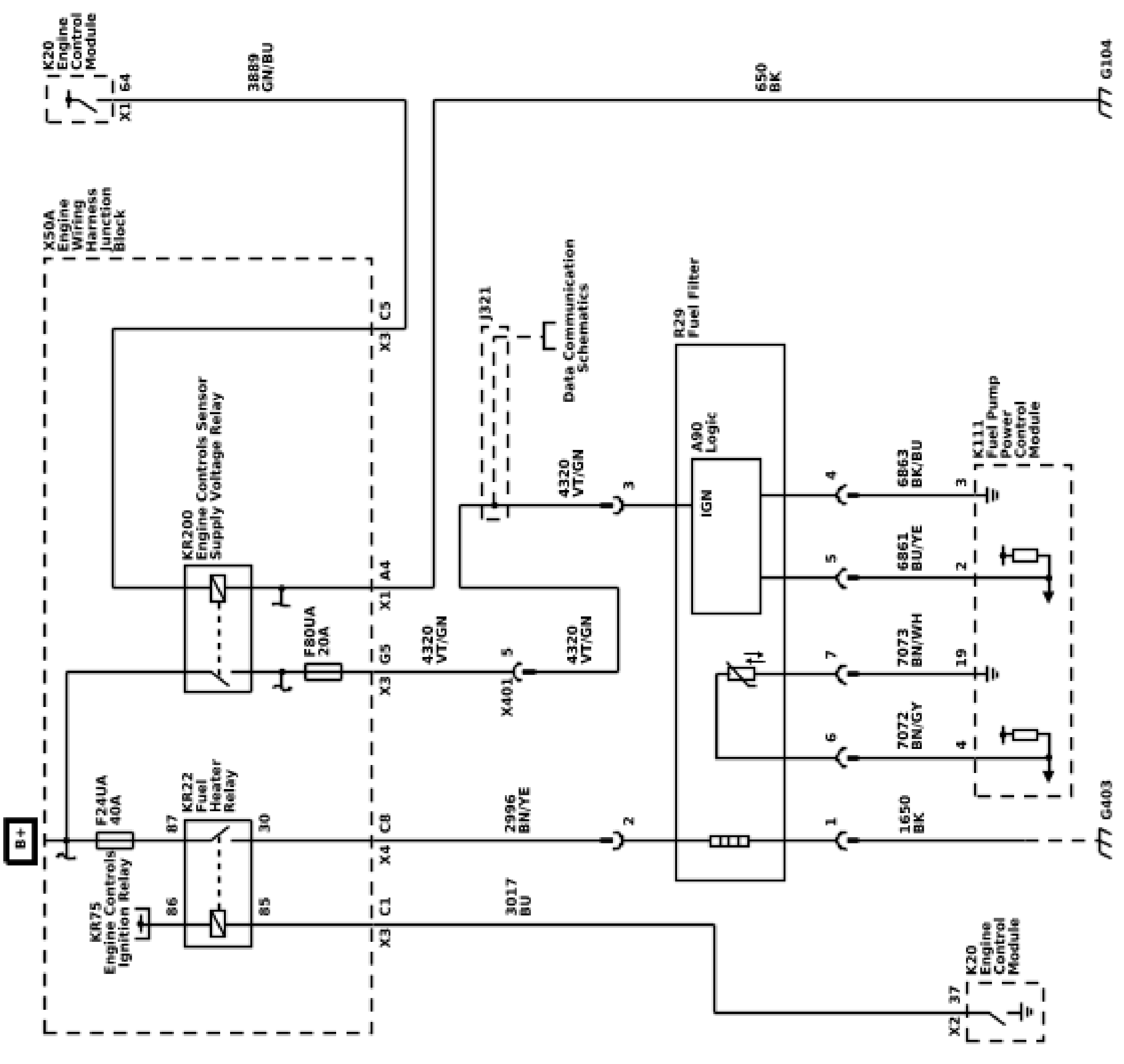
6846956

Engine Controls Schematics (LZ0) (Fuel Controls - Fuel Injectors)

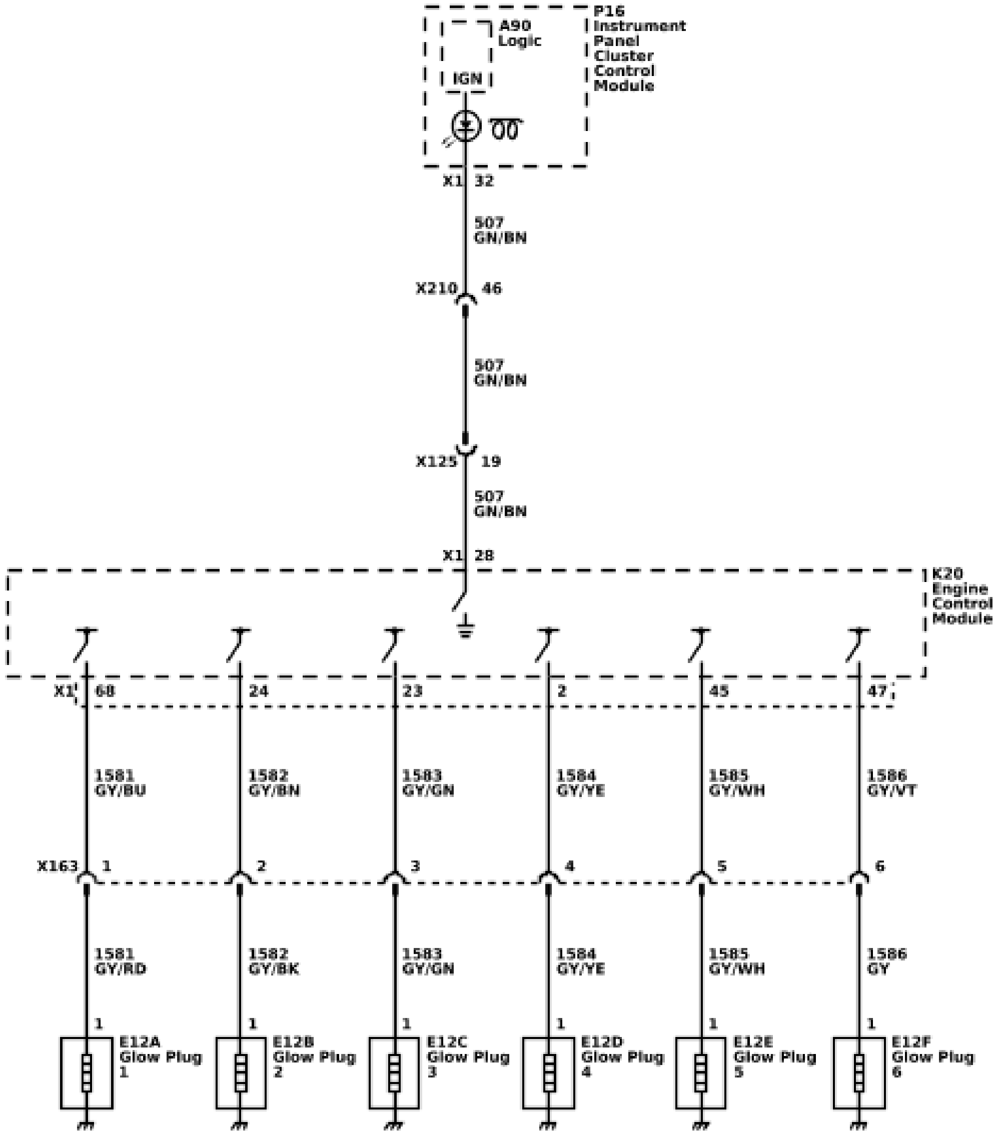

6846955
K20 Engine Control Module
X2
58
86
60
87
29
1
30
2
59
88
57
85
4901 BN/WH
4801 BN
4902 BU/GY
4802 BU
4903 GN/GY
4803 GN
4904 BU/WH
4804 GY/BU
4905 GN/WH
4805 WH/GN
4906 VT/GY
4806 VT/GN
9
X160
1
2
3
4
5
6
7
8
9
10
11
12
Q17A Fuel Injector 1
Q17B Fuel Injector 2
Q17C Fuel Injector 3
Q17D Fuel Injector 4
Q17E Fuel Injector 5
Q17F Fuel Injector 6
1
2

Engine Controls Schematics (LZ0) (Fuel Controls - Fuel Filter)

6846954

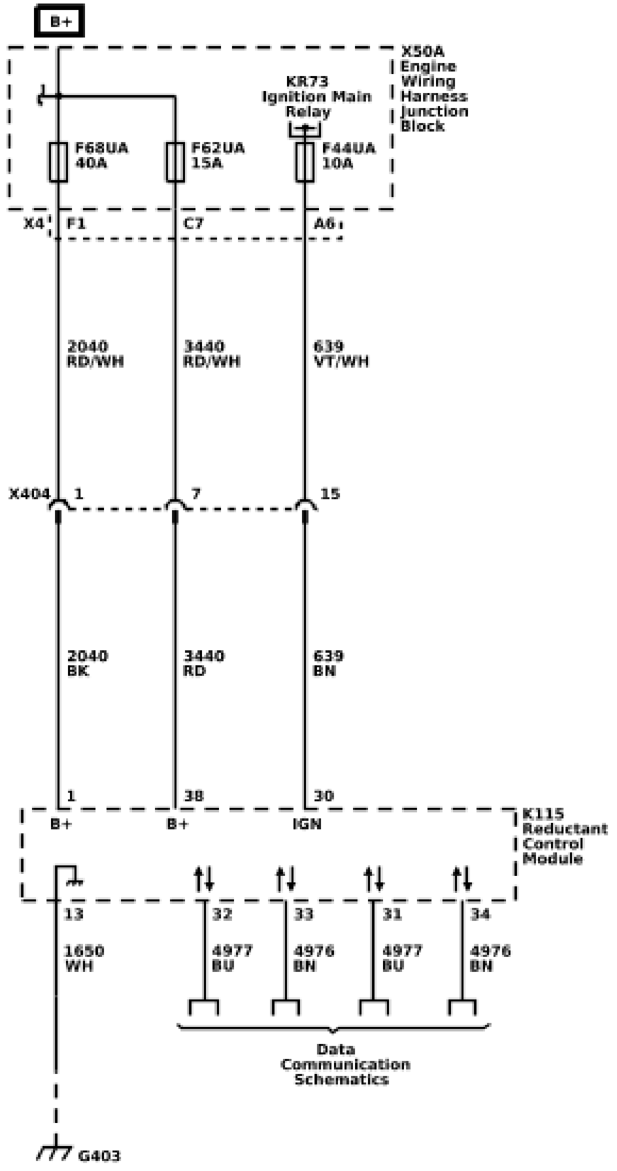

B+
F24UA 40A
KR75 Engine Controls Ignition Relay
KR22 Fuel Heater Relay
87
30
86
85
KR200 Engine Controls Sensor Supply Voltage Relay
F80UA 20A
X50A Engine Wiring Harness Junction Block
X3 C5
X1 A4
X3 G5
X4 C8
X3 C1
K20 Engine Control Module
X1 64
3889 GN/BU
650 BK
G104
J321
Data Communication Schematics
4320 VT/GN
3
5
X401
4320 VT/GN
2996 BN/YE
2
3017 BU
R29 Fuel Filter
A90 Logic
IGN
4
5
7
6
1
6863 BK/BU
6861 BU/YE
7073 BN/WH
7072 BN/GY
1650 BK
3
2
19
4
K111 Fuel Pump Power Control Module
G403
K20 Engine Control Module
X2 37

Engine Controls Schematics (LZ0) (Glow Plugs)


P16 Instrument Panel Cluster Control Module
A90 Logic
IGN
X1 32
507 GN/BN
X210 46
507 GN/BN
X125 19
507 GN/BN
X1 28
K20 Engine Control Module
X1 68
24
23
2
45
47
1581 GY/BU
1582 GY/BN
1583 GY/GN
1584 GY/YE
1585 GY/WH
1586 GY/VT
X163 1
2
3
4
5
6
1581 GY/RD
1582 GY/BK
1583 GY/GN
1584 GY/YE
1585 GY/WH
1586 GY
1
E12A Glow Plug 1
E12B Glow Plug 2
E12C Glow Plug 3
E12D Glow Plug 4
E12E Glow Plug 5
E12F Glow Plug 6

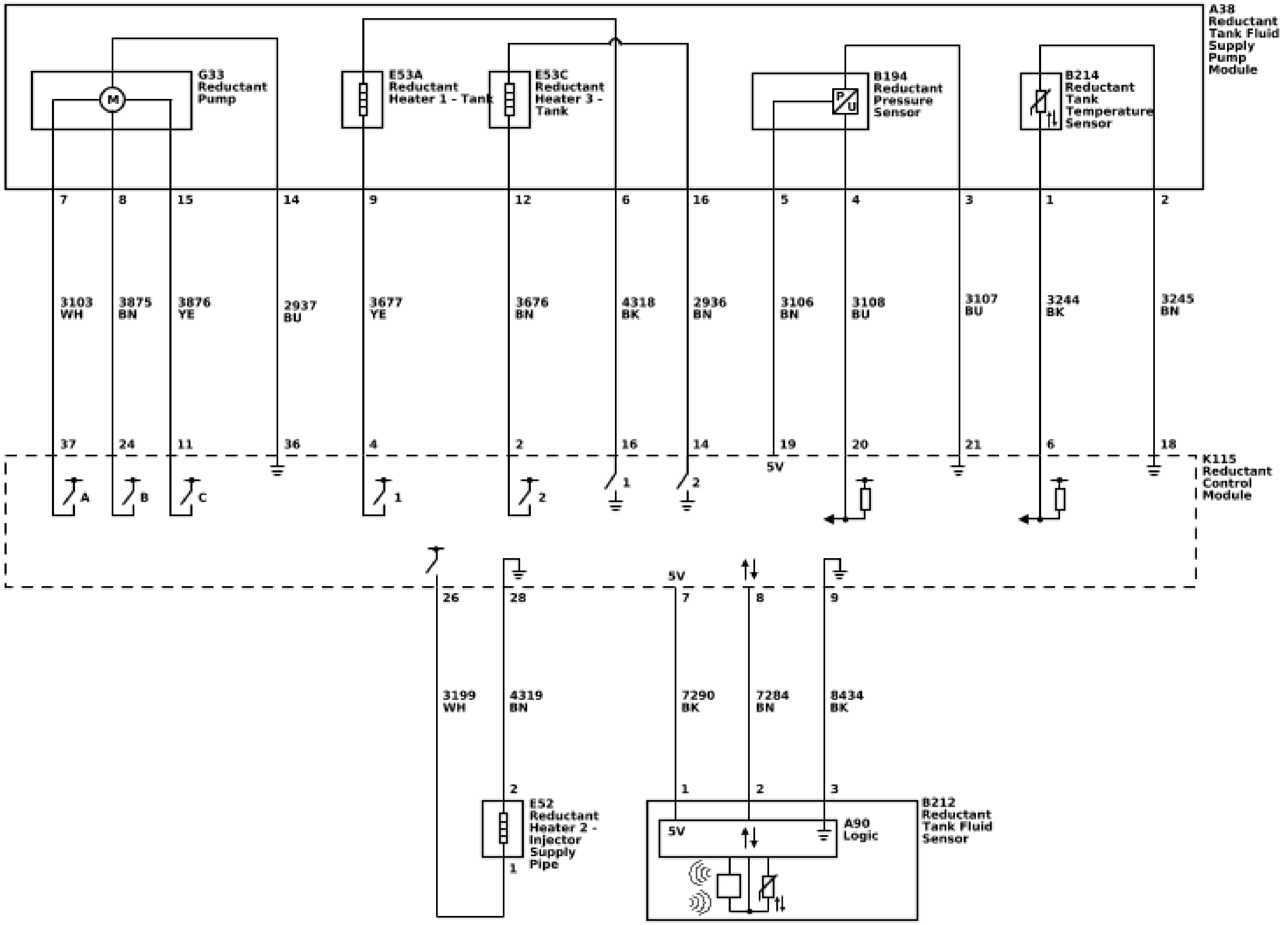
6846958

Engine Controls Schematics (LZ0) (Reductant Controls - Module Power, Ground, and Serial Data)


B+
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F68UA 40A
F62UA 15A
F44UA 10A
X4
F1
C7
A6
2040 RD/WH
3440 RD/WH
639 VT/WH
X404
1
7
15
2040 BK
3440 RD
639 BN
1
38
30
B+
B+
IGN
K115 Reductant Control Module
13
32
33
31
34
1650 WH
4977 BU
4976 BN
4977 BU
4976 BN
Data Communication Schematics
G403

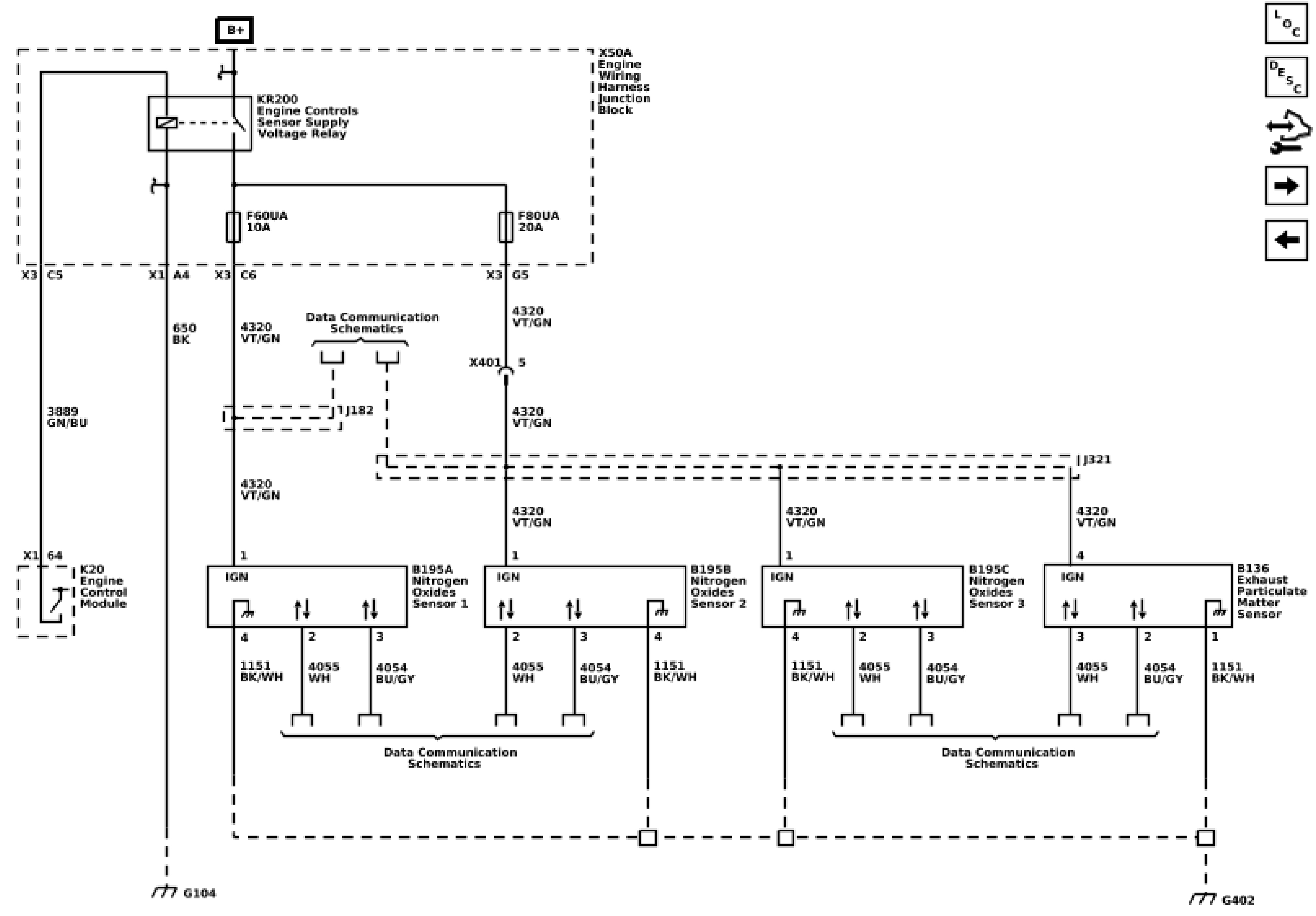
6846959

Engine Controls Schematics (LZ0) (Reductant Controls - Reductant Tank Fluid Supply Pump Module, Line Heater, and Reductant Tank Fluid Sensor)


A38 Reductant Tank Fluid Supply Pump Module
G33 Reductant Pump
M
E53A Reductant Heater 1 - Tank
E53C Reductant Heater 3 - Tank
B194 Reductant Pressure Sensor
P U
B214 Reductant Tank Temperature Sensor
7
8
15
14
9
12
6
16
5
4
3
1
2
3103 WH
3875 BN
3876 YE
2937 BU
3677 YE
3676 BN
4318 BK
2936 BN
3106 BN
3108 BU
3107 BU
3244 BK
3245 BN
37
24
11
36
4
2
16
14
19
20
21
6
18
A
B
C
1
2
1
2
5V
K115 Reductant Control Module
5V
26
28
7
8
9
3199 WH
4319 BN
7290 BK
7284 BN
8434 BK
2
1
E52 Reductant Heater 2 - Injector Supply Pipe
1
2
3
5V
A90 Logic
B212 Reductant Tank Fluid Sensor

6846962

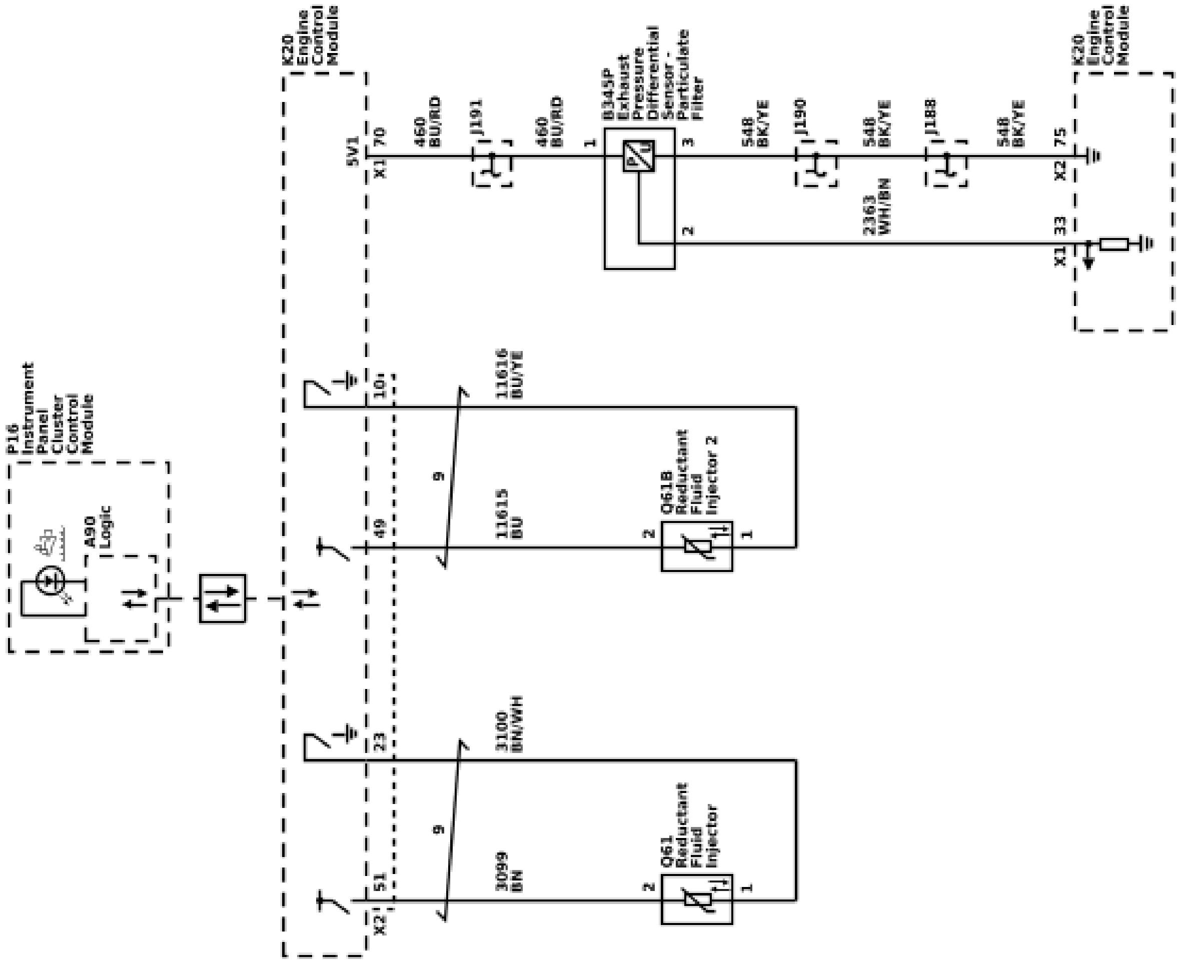
Engine Controls Schematics (LZ0) (Reductant Controls - Nitrogen Oxide Sensors and Exhaust Particulate Matter Sensor)


B+
X50A Engine Wiring Harness Junction Block
KR200 Engine Controls Sensor Supply Voltage Relay
F60UA 10A
F80UA 20A
X3 C5
X1 A4
X3 C6
X3 G5
650 BK
3889 GN/BU
4320 VT/GN
Data Communication Schematics
X401 5
J182
J321
X1 64
K20 Engine Control Module
1
IGN
B195A Nitrogen Oxides Sensor 1
B195B Nitrogen Oxides Sensor 2
B195C Nitrogen Oxides Sensor 3
B136 Exhaust Particulate Matter Sensor
4
2
3
1151 BK/WH
4055 WH
4054 BU/GY
G104
G402
LOC
DESC

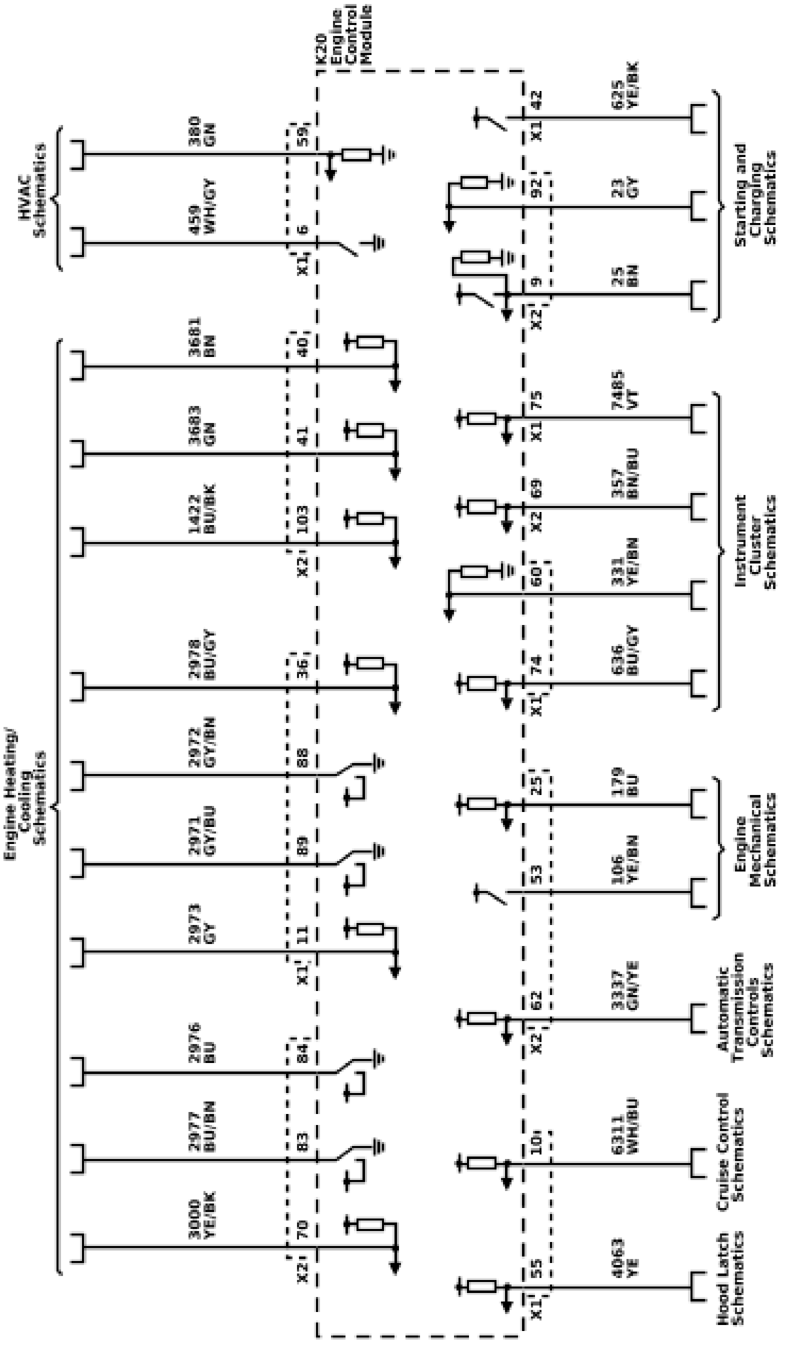
6846960

Engine Controls Schematics (LZ0) (Reductant Controls - Reductant Fluid Injectors and Particulate Filter Pressure Sensor)

6846961


K20 Engine Control Module
5V1
X1 70
460 BU/RD
J191
460 BU/RD
1
B345P Exhaust Pressure Differential Sensor - Particulate Filter
3
2
548 BK/YE
J190
548 BK/YE
J188
548 BK/YE
X2 75
2363 WH/BN
X1 33
K20 Engine Control Module
P16 Instrument Panel Cluster Control Module
A90 Logic
10
11616 BU/YE
9
49
11615 BU
Q61B Reductant Fluid Injector 2
2
1
23
3100 BN/WH
9
X2 51
3099 BN
Q61 Reductant Fluid Injector
2
1

Engine Controls Schematics (LZ0) (Controlled/Monitored Subsystem References)


K20 Engine Control Module
HVAC Schematics
380 GN
X1 59
459 WH/GY
6
Engine Heating/ Cooling Schematics
3681 BN
40
3683 GN
41
1422 BU/BK
X2 103
2978 BU/GY
36
2972 GY/BN
88
2971 GY/BU
89
2973 GY
X1 11
2976 BU
84
2977 BU/BN
83
3000 YE/BK
X2 70
X1 42
625 YE/BK
92
23 GY
X2 9
25 BN
Starting and Charging Schematics
X1 75
7485 VT
X2 69
357 BN/BU
60
331 YE/BN
X1 74
636 BU/GY
Instrument Cluster Schematics
25
179 BU
53
106 YE/BN
Engine Mechanical Schematics
X2 62
3337 GN/YE
Automatic Transmission Controls Schematics
10
6311 WH/BU
Cruise Control Schematics
X1 55
4063 YE
Hood Latch Schematics
6846963

Description and Operation

Inspection/Maintenance Description and Operation

Some state/provincial and local governments require that a vehicle pass on-board diagnostic (OBD) system tests and the Inspection/Maintenance (I/M) emission inspection in order to renew license plates. This is accomplished by viewing the I/M System monitors on a scan tool and confirming that no Permanent DTCs are set.

The OBD II system monitors all emission control systems that are on-board. The OBD II regulations require monitoring of the following:

Monitor	Diesel	Gasoline
Boost System Monitor - Since Diagnostic Trouble Codes Cleared	X	—
Catalytic Converter Monitor - Since Diagnostic Trouble Codes Cleared	X	X
Evaporative Emission Monitor - Since Diagnostic Trouble Codes Cleared	—	X
Exhaust Aftertreatment Monitor - Since Diagnostic Trouble Codes Cleared	X	—
Exhaust Gas Recirculation Valve/Camshaft Position Monitor - Since Diagnostic Trouble Codes Cleared	X	X
Exhaust Gas Sensor Monitor - Since Diagnostic Trouble Codes Cleared	X	—
Fuel System Monitor - Since Diagnostic Trouble Codes Cleared	X	X
Heated Catalytic Converter Monitor - Since Diagnostic Trouble Codes Cleared	—	X
Misfire Monitor - Since Diagnostic Trouble Codes Cleared	X	X
Oxygen Sensor Heater Monitor - Since Diagnostic Trouble Codes Cleared	—	X
Oxygen Sensor/Heated Oxygen Sensor Monitor - Since Diagnostic Trouble Codes Cleared	—	X
Particulate Filter Monitor - Since Diagnostic Trouble Codes Cleared	X	X

I/M System Status

Each system monitor requires at least one, and sometimes several diagnostic tests. The result of each test is reported by a DTC. A system monitor is Complete when either all of the DTCs comprising the monitor have run and passed, or when any one of the DTCs comprising the monitor has illuminated the malfunction indicator lamp (MIL). For example, when the Oxygen Sensor Heater Monitor indicates Complete, all of the oxygen sensor heaters have been diagnosed. If the vehicle has 4 heated oxygen sensors, all 4 heaters have been diagnosed.

Once the system monitor is complete, the I/M System Status parameter will display Complete in the value column of the scan tool. Any monitor that is not applicable to a vehicle will display Not Supported in the scan tool value column. The I/M System Status parameter will display Incomplete in the value column when any of the required tests for that system have not run. The following is a list of conditions that would set the I/M System Status monitor to Incomplete:

- The vehicle is new from the factory and has not yet been driven through the necessary drive conditions to complete the tests.
- The battery has been disconnected or discharged below operating voltage.
- The control module power or ground has been interrupted.
- The control module has been programmed.
- The control module DTCs have been cleared.

Permanent DTCs

Permanent DTCs are defined as confirmed fault codes that are currently commanding the MIL on and stored in non-volatile memory. Permanent DTCs cannot be erased by any scan tool command or by disconnecting power to the controller.

The intended use of this data is to prevent vehicles from passing an I/M inspection by disconnecting the battery or clearing codes with a scan tool prior to the inspection. The presence of Permanent DTCs at an inspection without the MIL illuminated is an indication that a proper repair was not verified by the OBD II system.

Only the OBD II system can clear Permanent DTCs. The OBD II system must determine that the malfunction that caused the Permanent DTC to be stored no longer exists and is not commanding the MIL.

- If the MIL goes out naturally due to 3 passing drive cycles (scan tool code clear is not used), then the Permanent DTC is cleared at power down of the last drive cycle.
- If a scan tool code clear is used to turn off the MIL then the Permanent DTC is not cleared, the DTC must PASS and not FAIL. The Permanent DTC is cleared at power down of the drive cycle.

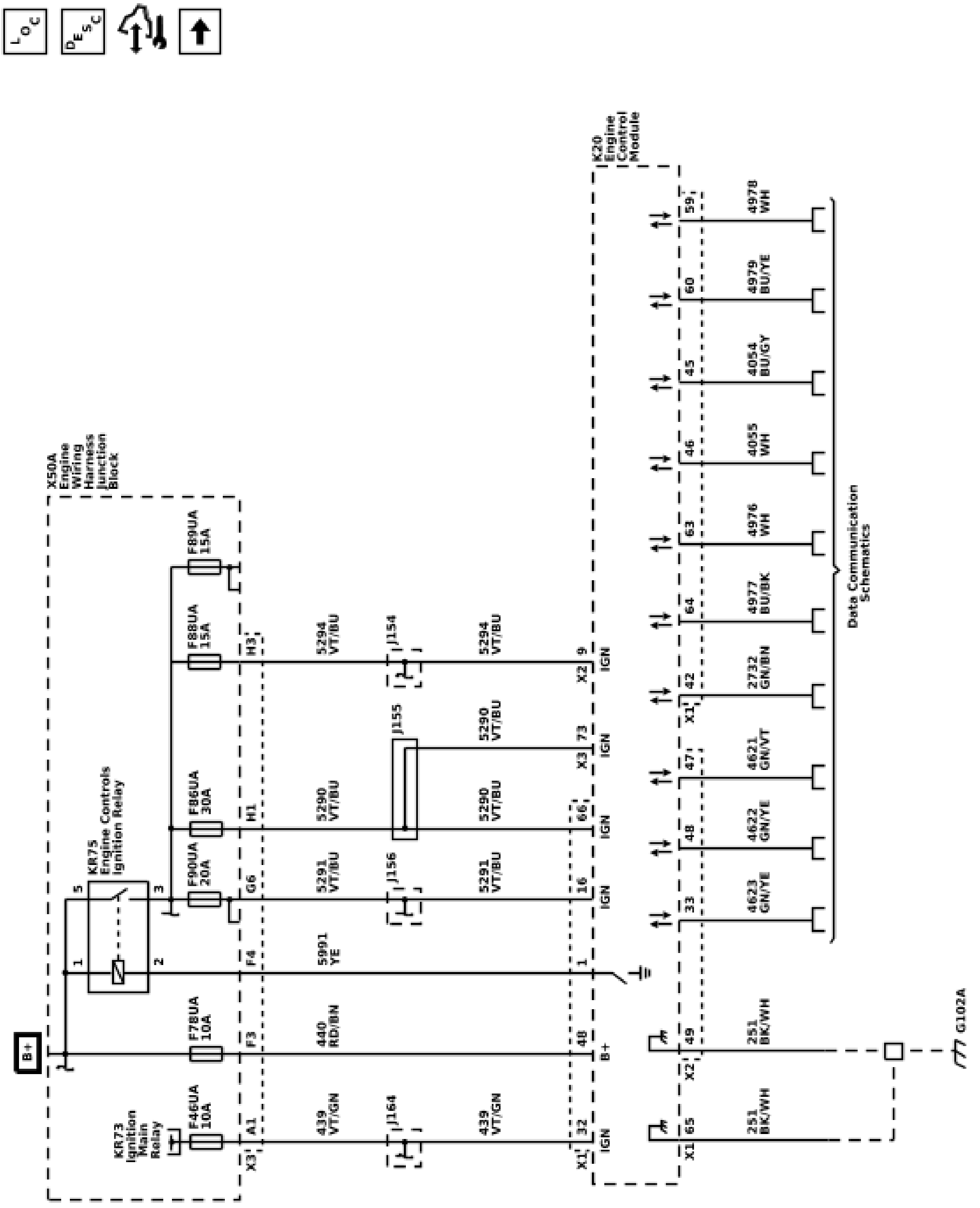
- If the controller is programmed, all Permanent DTCs are cleared.

Engine Controls and Fuel - 2.7L

Schematic and Routing Diagrams

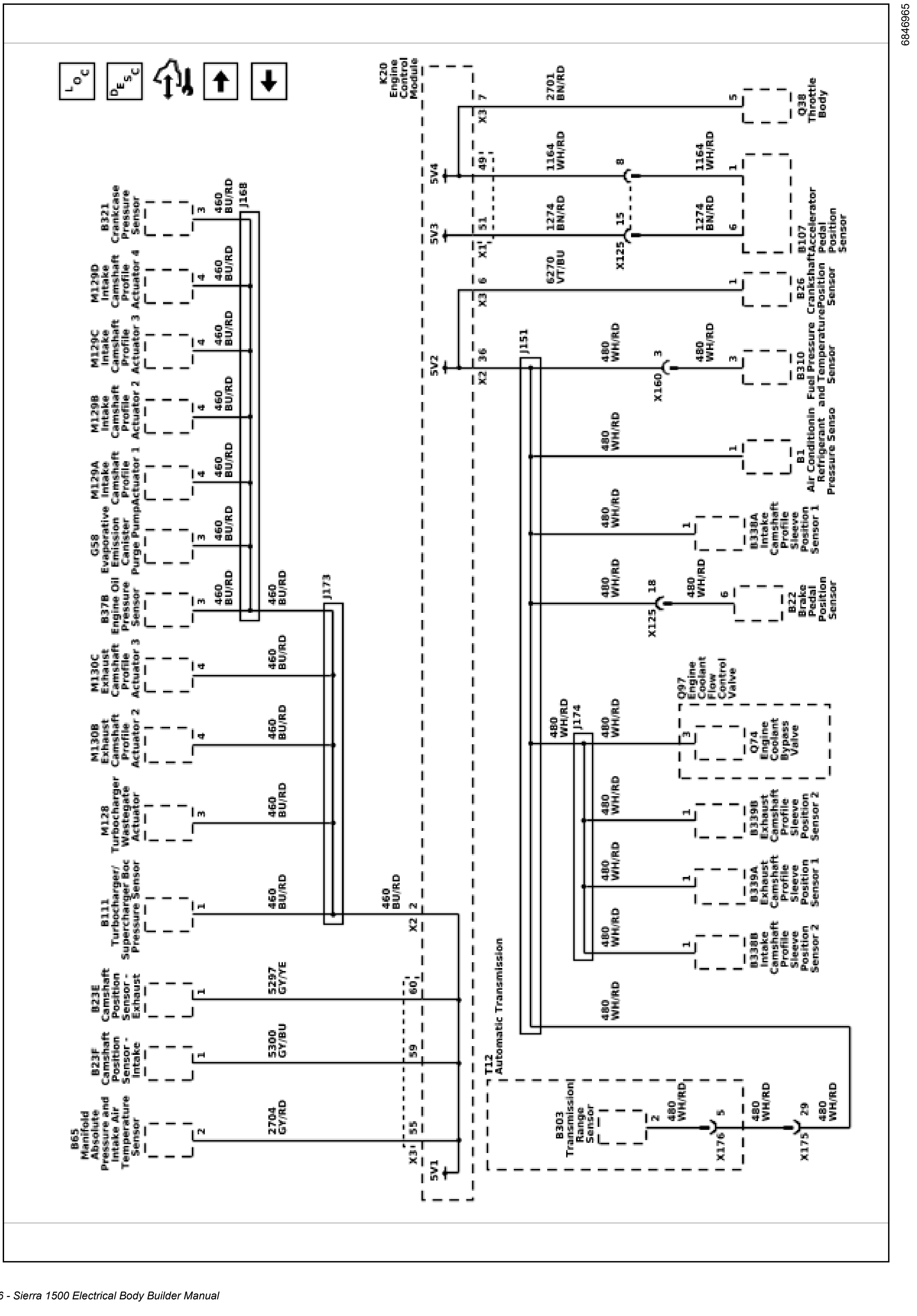
Engine Controls Schematics (L3B) (Power, Ground, Serial Data and MIL)

6846964

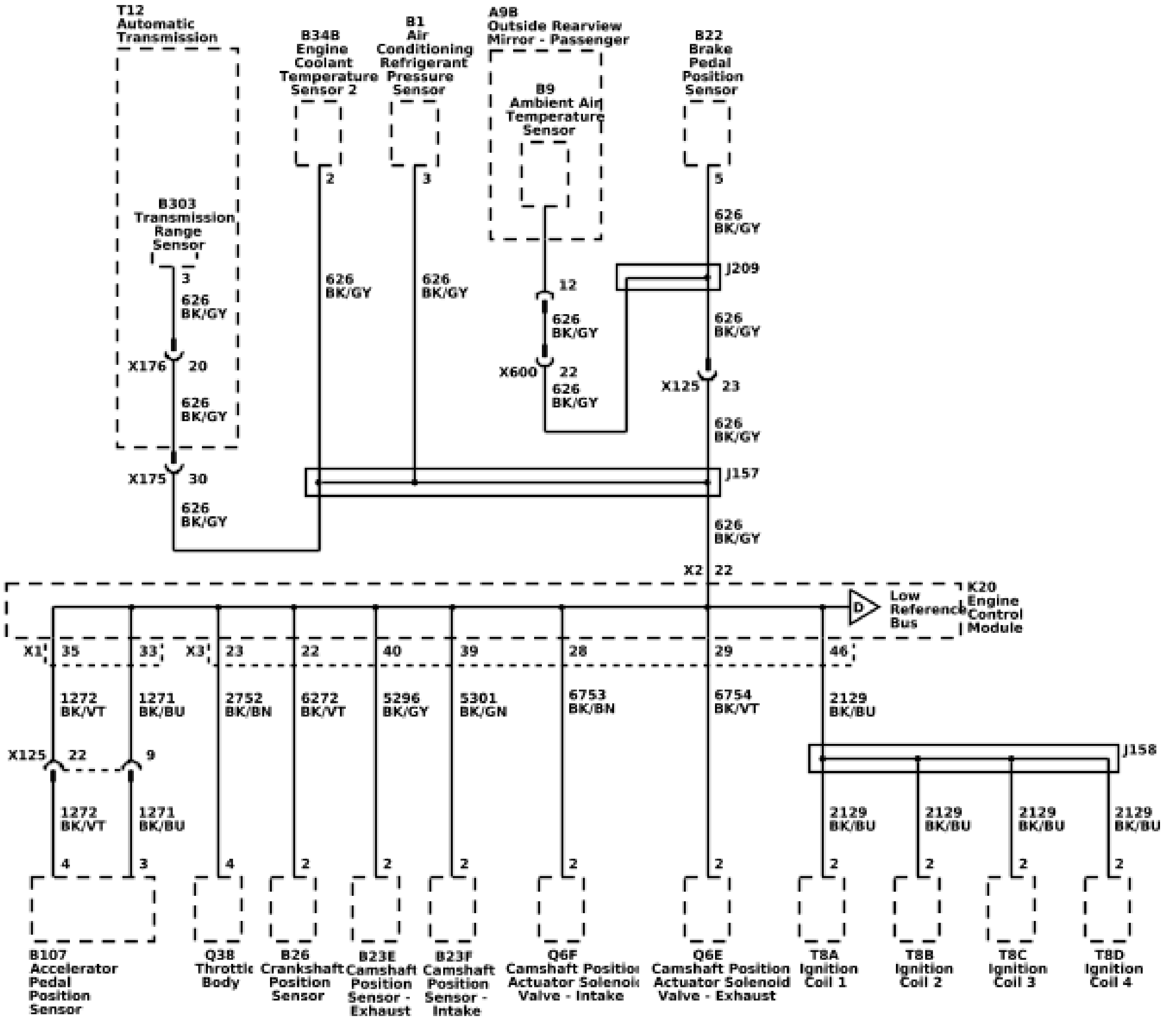


B+
KR73 Ignition Main Relay
F46UA 10A
F78UA 10A
KR75 Engine Controls Ignition Relay
F90UA 20A
F86UA 30A
F88UA 15A
F89UA 15A
X50A Engine Wiring Harness Junction Block
X3 A1
F3
F4
G6
H1
H3
439 VT/GN
440 RD/BN
5991 YE
5291 VT/BU
5290 VT/BU
5294 VT/BU
J164
J156
J155
J154
K20 Engine Control Module
X1 32 IGN
48 B+
1
16 IGN
66 IGN
X3 73 IGN
X2 9 IGN
X1 65
X2 49
33
48
47
X1 42
64
63
46
45
60
59
251 BK/WH
4623 GN/YE
4622 GN/YE
4621 GN/VT
2732 GN/BN
4977 BU/BK
4976 WH
4055 WH
4054 BU/GY
4979 BU/YE
4978 WH
Data Communication Schematics
G102A

Engine Controls Schematics (L3B) (5V Reference Bus)

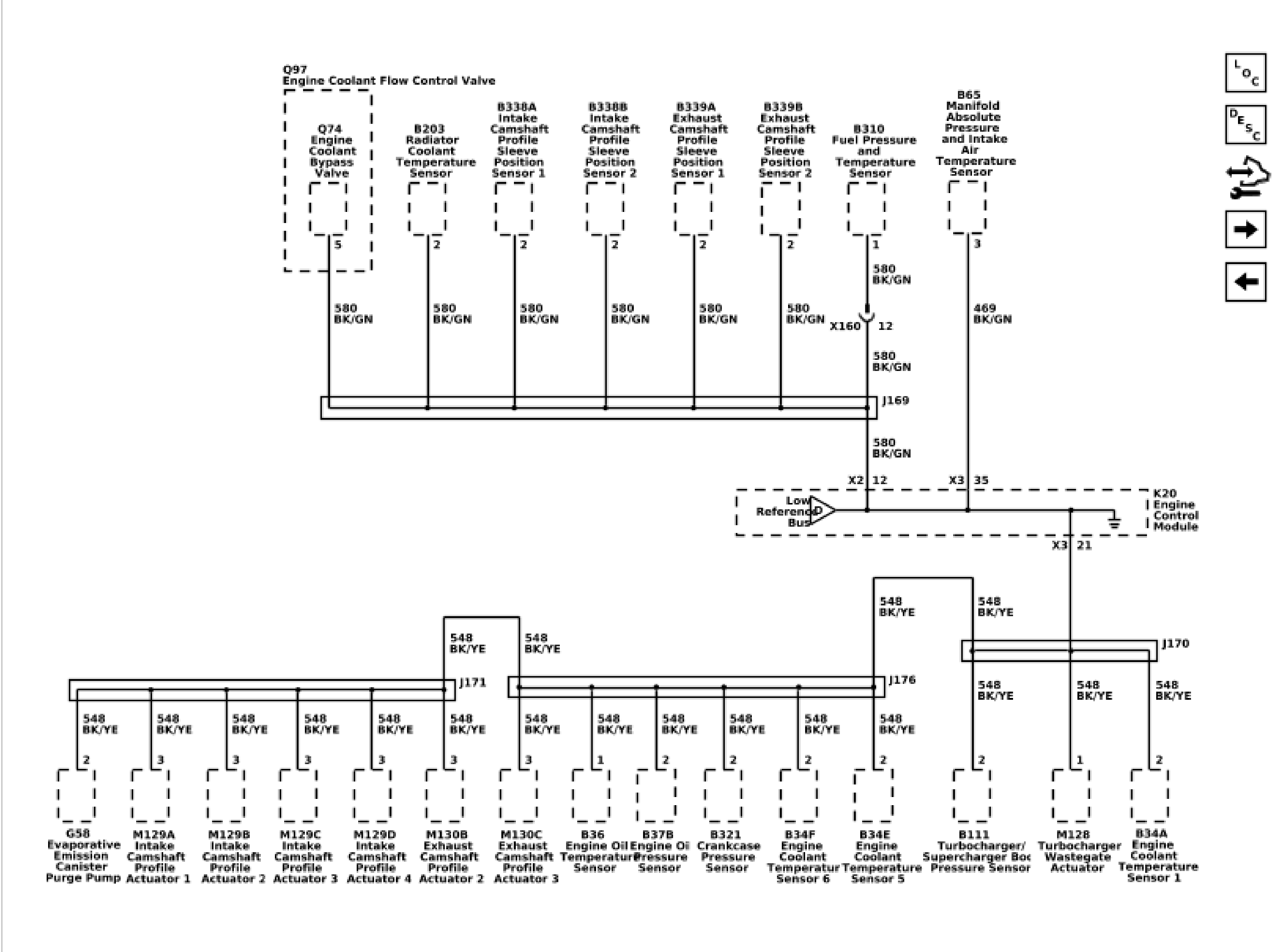

6846965
K20 Engine Control Module
5V1
5V2
5V3
5V4
X3 55
X3 59
X3 60
X2 2
X2 36
X3 6
X1 51
X1 49
X3 7
2701 BN/RD
Q38 Throttle Body
5
1164 WH/RD
1274 BN/RD
X125 8
X125 15
B107 Accelerator Pedal Position Sensor
1
6
6270 VT/BU
B26 Crankshaft Position Sensor
J151
480 WH/RD
X160 3
B310 Fuel Pressure and Temperature Sensor
B1 Air Conditioning Refrigerant Pressure Sensor
B338A Intake Camshaft Profile Sleeve Position Sensor 1
X125 18
B22 Brake Pedal Position Sensor
Q97 Engine Coolant Flow Control Valve
Q74 Engine Coolant Bypass Valve
J174
B339B Exhaust Camshaft Profile Sleeve Position Sensor 2
B339A Exhaust Camshaft Profile Sleeve Position Sensor 1
B338B Intake Camshaft Profile Sleeve Position Sensor 2
T12 Automatic Transmission
B303 Transmission Range Sensor
2
X176 5
X175 29
J168
J173
460 BU/RD
B321 Crankcase Pressure Sensor
M129D Intake Camshaft Profile Actuator 4
M129C Intake Camshaft Profile Actuator 3
M129B Intake Camshaft Profile Actuator 2
M129A Intake Camshaft Profile Actuator 1
G58 Evaporative Emission Canister Purge Pump
B378 Engine Oil Pressure Sensor
M130C Exhaust Camshaft Profile Actuator 3
M130B Exhaust Camshaft Profile Actuator 2
M128 Turbocharger Wastegate Actuator
B111 Turbocharger/ Supercharger Boost Pressure Sensor
B23E Camshaft Position Sensor - Exhaust
5297 GY/YE
B23F Camshaft Position Sensor - Intake
5300 GY/BU
B65 Manifold Absolute Pressure and Intake Air Temperature Sensor
2704 GY/RD
L O C
D E S C
3
4
1
2

Engine Controls Schematics (L3B) (Low Reference Bus - 1 of 2)


T12 Automatic Transmission
B303 Transmission Range Sensor
3
626 BK/GY
X176 20
626 BK/GY
X175 30
626 BK/GY
B34B Engine Coolant Temperature Sensor 2
2
626 BK/GY
B1 Air Conditioning Refrigerant Pressure Sensor
3
626 BK/GY
A9B Outside Rearview Mirror - Passenger
B9 Ambient Air Temperature Sensor
12
626 BK/GY
X600 22
626 BK/GY
B22 Brake Pedal Position Sensor
5
626 BK/GY
J209
626 BK/GY
X125 23
626 BK/GY
J157
626 BK/GY
X2 22
Low Reference Bus
K20 Engine Control Module
X1 35
33
X3 23
22
40
39
28
29
46
1272 BK/VT
1271 BK/BU
2752 BK/BN
6272 BK/VT
5296 BK/GY
5301 BK/GN
6753 BK/BN
6754 BK/VT
2129 BK/BU
X125 22
9
1272 BK/VT
1271 BK/BU
J158
2129 BK/BU
2129 BK/BU
2129 BK/BU
2129 BK/BU
4
3
4
2
2
2
2
2
2
2
2
2
B107 Accelerator Pedal Position Sensor
Q38 Throttle Body
B26 Crankshaft Position Sensor
B23E Camshaft Position Sensor - Exhaust
B23F Camshaft Position Sensor - Intake
Q6F Camshaft Position Actuator Solenoid Valve - Intake
Q6E Camshaft Position Actuator Solenoid Valve - Exhaust
T8A Ignition Coil 1
T8B Ignition Coil 2
T8C Ignition Coil 3
T8D Ignition Coil 4

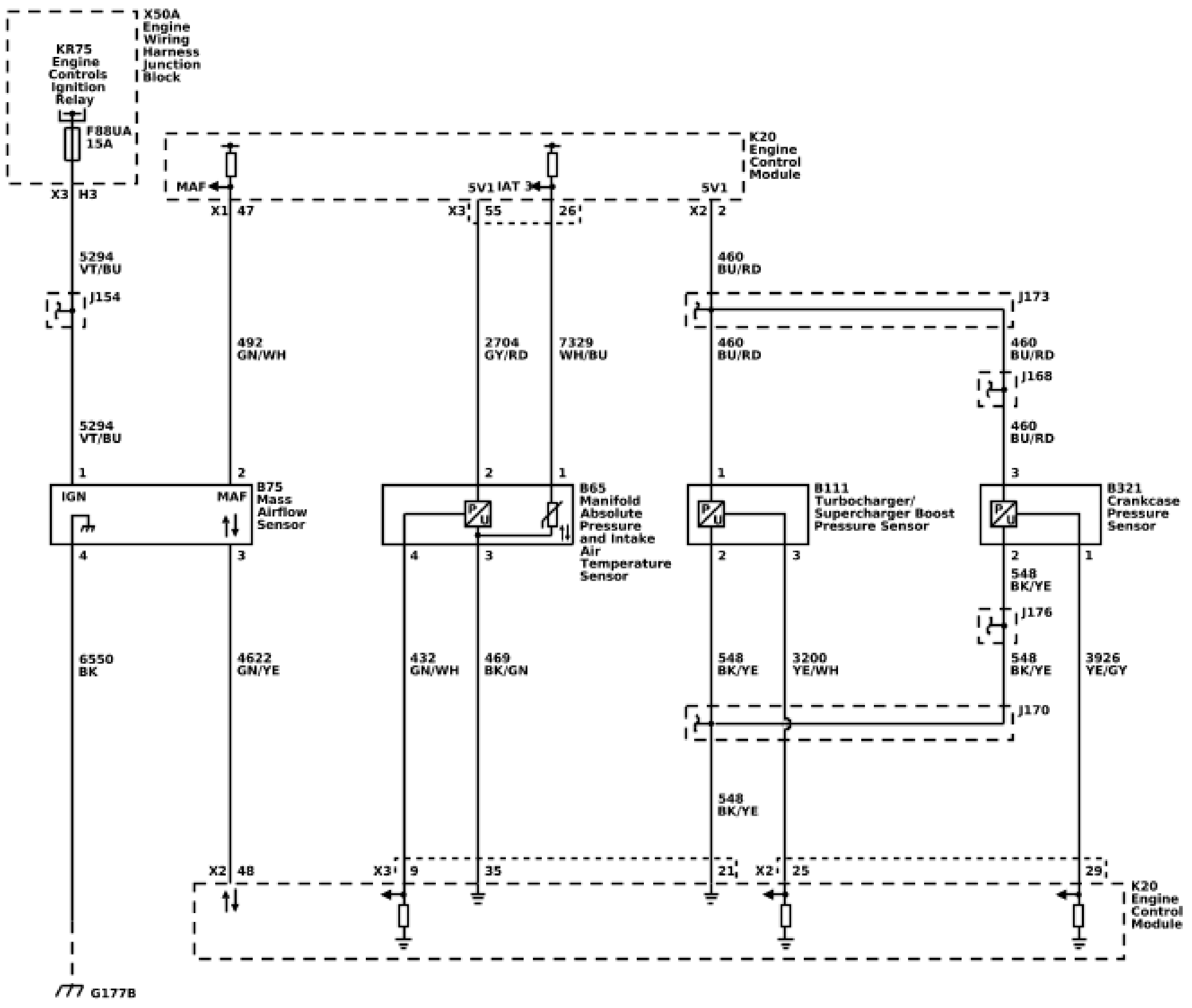
6846966

Engine Controls Schematics (L3B) (Low Reference Bus - 2 of 2)


Q97
Engine Coolant Flow Control Valve
Q74 Engine Coolant Bypass Valve
B203 Radiator Coolant Temperature Sensor
B338A Intake Camshaft Profile Sleeve Position Sensor 1
B338B Intake Camshaft Profile Sleeve Position Sensor 2
B339A Exhaust Camshaft Profile Sleeve Position Sensor 1
B339B Exhaust Camshaft Profile Sleeve Position Sensor 2
B310 Fuel Pressure and Temperature Sensor
B65 Manifold Absolute Pressure and Intake Air Temperature Sensor
5
2
1
3
580 BK/GN
469 BK/GN
X160 12
J169
X2 12
X3 35
Low Reference Bus
D
K20 Engine Control Module
X3 21
548 BK/YE
J170
J171
J176
G58 Evaporative Emission Canister Purge Pump
M129A Intake Camshaft Profile Actuator 1
M129B Intake Camshaft Profile Actuator 2
M129C Intake Camshaft Profile Actuator 3
M129D Intake Camshaft Profile Actuator 4
M130B Exhaust Camshaft Profile Actuator 2
M130C Exhaust Camshaft Profile Actuator 3
B36 Engine Oil Temperature Sensor
B37B Engine Oil Pressure Sensor
B321 Crankcase Pressure Sensor
B34F Engine Coolant Temperature Sensor 6
B34E Engine Coolant Temperature Sensor 5
B111 Turbocharger/ Supercharger Boost Pressure Sensor
M128 Turbocharger Wastegate Actuator
B34A Engine Coolant Temperature Sensor 1
LOC
DESC

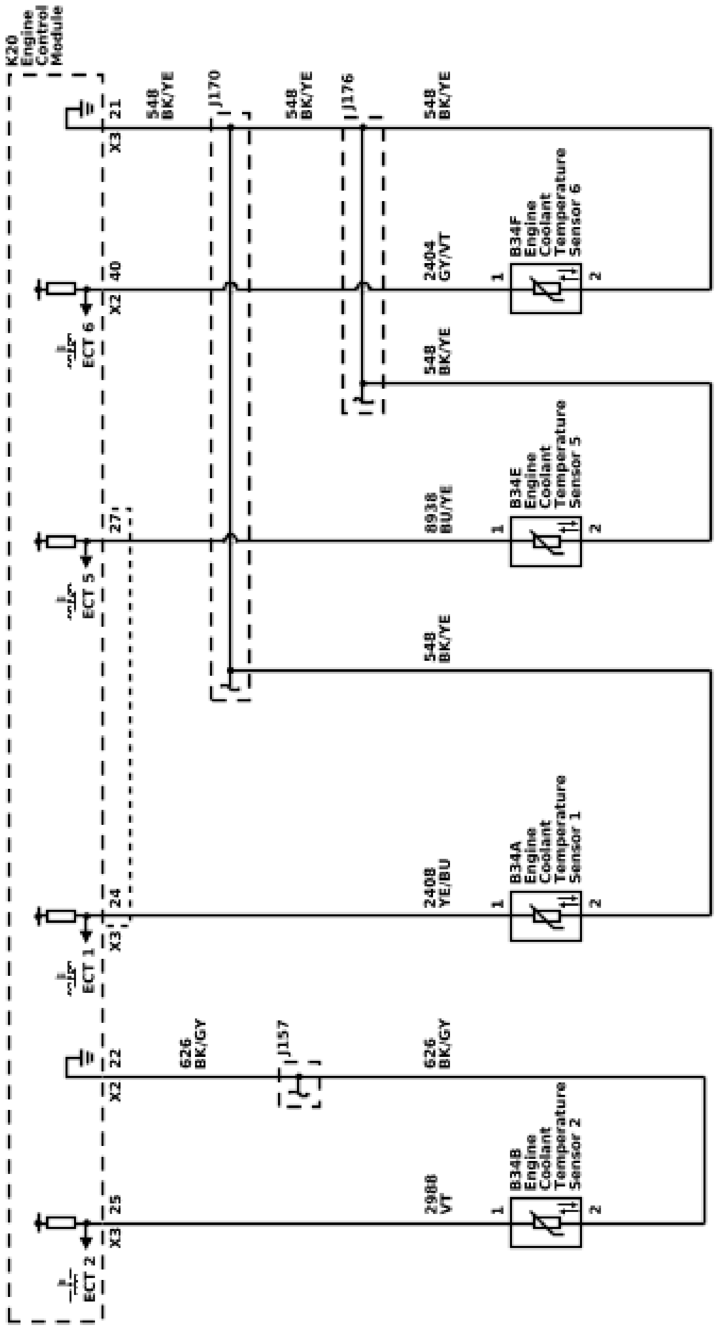
6846967

Engine Controls Schematics (L3B) (Engine Data Sensors - Air Pressure and Temperature)

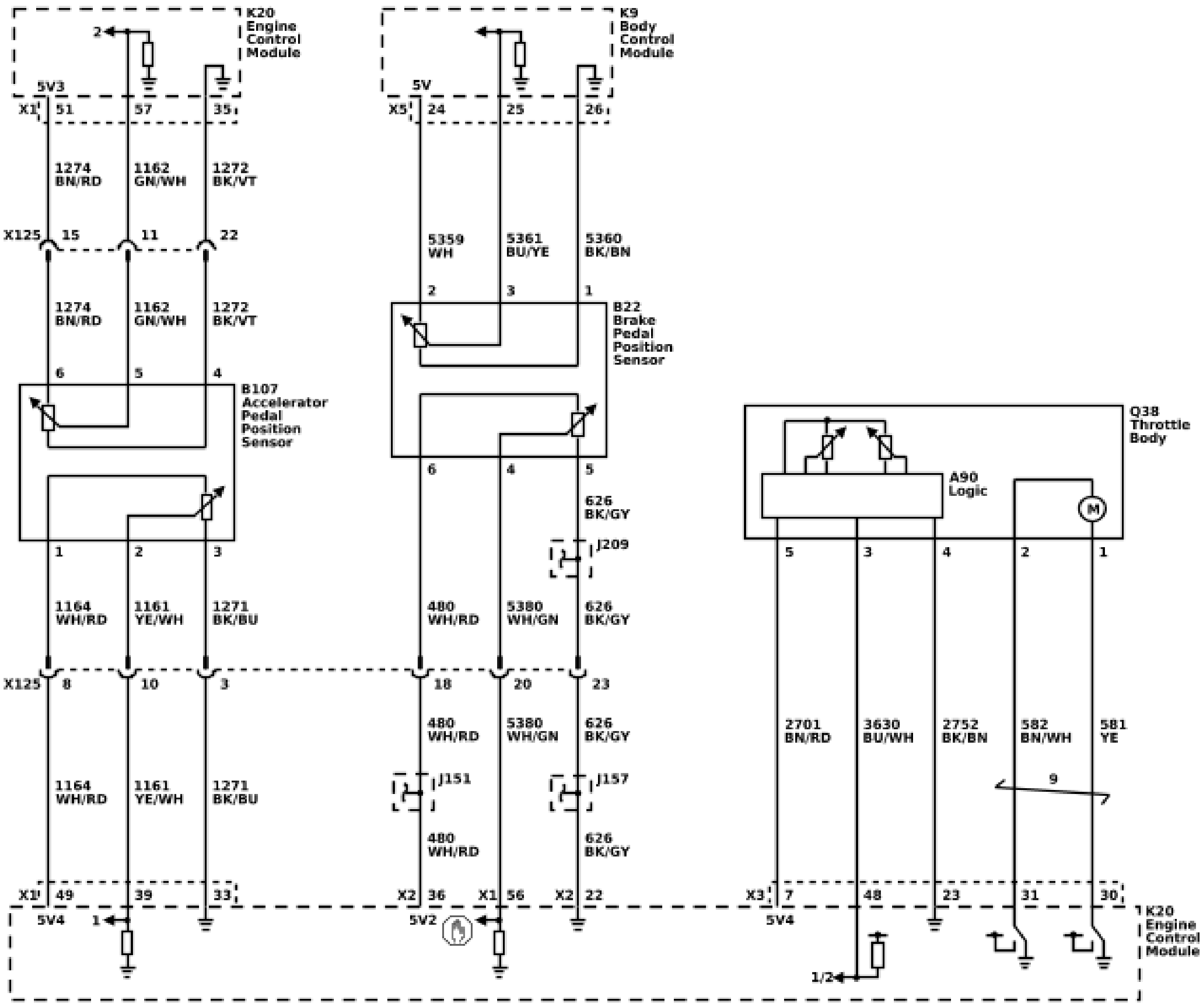

X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F88UA 15A
X3 H3
5294 VT/BU
J154
5294 VT/BU
K20 Engine Control Module
MAF
X1 47
492 GN/WH
5V1
IAT 3
X3 55
26
2704 GY/RD
7329 WH/BU
5V1
X2 2
460 BU/RD
J173
460 BU/RD
460 BU/RD
J168
460 BU/RD
1
IGN
2
MAF
B75 Mass Airflow Sensor
4
3
2
1
B65 Manifold Absolute Pressure and Intake Air Temperature Sensor
4
3
1
B111 Turbocharger/ Supercharger Boost Pressure Sensor
2
3
3
B321 Crankcase Pressure Sensor
2
1
548 BK/YE
J176
6550 BK
4622 GN/YE
432 GN/WH
469 BK/GN
548 BK/YE
3200 YE/WH
548 BK/YE
3926 YE/GY
J170
548 BK/YE
X2 48
X3 9
35
21
X2 25
29
K20 Engine Control Module
G177B

Engine Controls Schematics (L3B) (Engine Data Sensors - Coolant Temperature)

6846969

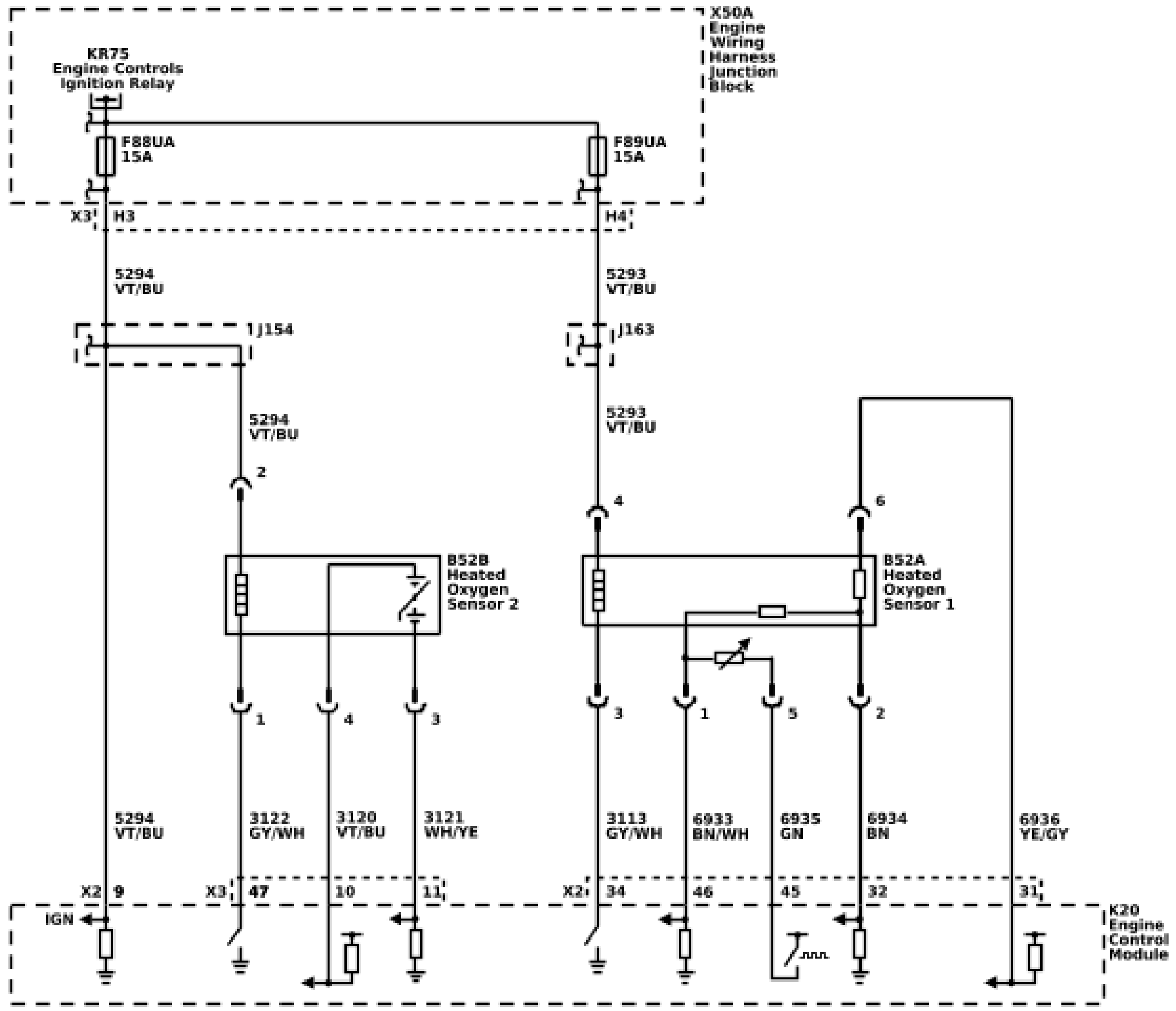

K20 Engine Control Module
X3 21
548 BK/YE
J170
548 BK/YE
J176
548 BK/YE
X2 40
ECT 6
2404 GY/VT
1
B34F Engine Coolant Temperature Sensor 6
2
548 BK/YE
27
ECT 5
8938 BU/YE
1
B34E Engine Coolant Temperature Sensor 5
2
548 BK/YE
X3 24
ECT 1
2408 YE/BU
1
B34A Engine Coolant Temperature Sensor 1
2
X2 22
626 BK/GY
J157
626 BK/GY
X3 25
ECT 2
2988 VT
1
B34B Engine Coolant Temperature Sensor 2
2

Engine Controls Schematics (L3B) (Engine Data Sensors - Throttle Controls and Override)


K20 Engine Control Module
2
5V3
X1 51 57 35
1274 BN/RD
1162 GN/WH
1272 BK/VT
X125 15 11 22
1274 BN/RD
1162 GN/WH
1272 BK/VT
6 5 4
B107 Accelerator Pedal Position Sensor
1 2 3
1164 WH/RD
1161 YE/WH
1271 BK/BU
X125 8 10 3
1164 WH/RD
1161 YE/WH
1271 BK/BU
X1 49 39 33
5V4
1
K9 Body Control Module
5V
X5 24 25 26
5359 WH
5361 BU/YE
5360 BK/BN
2 3 1
B22 Brake Pedal Position Sensor
6 4 5
626 BK/GY
J209
480 WH/RD
5380 WH/GN
626 BK/GY
18 20 23
480 WH/RD
5380 WH/GN
626 BK/GY
J151
J157
480 WH/RD
626 BK/GY
X2 36
X1 56
X2 22
5V2
Q38 Throttle Body
A90 Logic
M
5 3 4 2 1
2701 BN/RD
3630 BU/WH
2752 BK/BN
582 BN/WH
581 YE
9
X3 7 48 23 31 30
5V4
1/2
K20 Engine Control Module

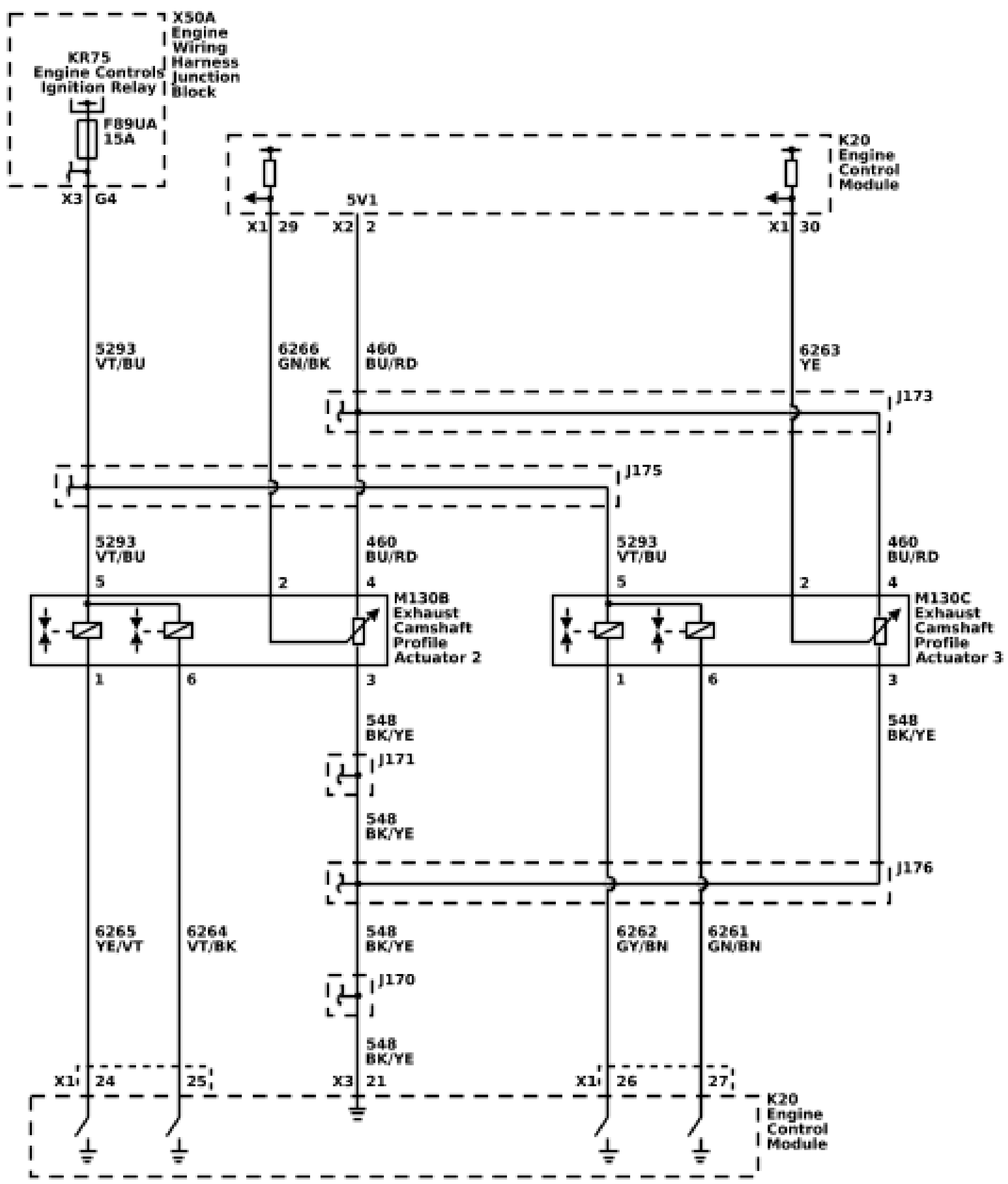
6846970

Engine Controls Schematics (L3B) (Engine Data Sensors - Oxygen Sensors)


X50A
Engine
Wiring
Harness
Junction
Block
KR75
Engine Controls
Ignition Relay
F88UA
15A
F89UA
15A
X3
H3
H4
5294
VT/BU
5293
VT/BU
J154
J163
5294
VT/BU
5293
VT/BU
2
4
6
B52B
Heated
Oxygen
Sensor 2
B52A
Heated
Oxygen
Sensor 1
1
4
3
3
1
5
2
5294
VT/BU
3122
GY/WH
3120
VT/BU
3121
WH/YE
3113
GY/WH
6933
BN/WH
6935
GN
6934
BN
6936
YE/GY
X2
9
X3
47
10
11
X2
34
46
45
32
31
IGN
K20
Engine
Control
Module

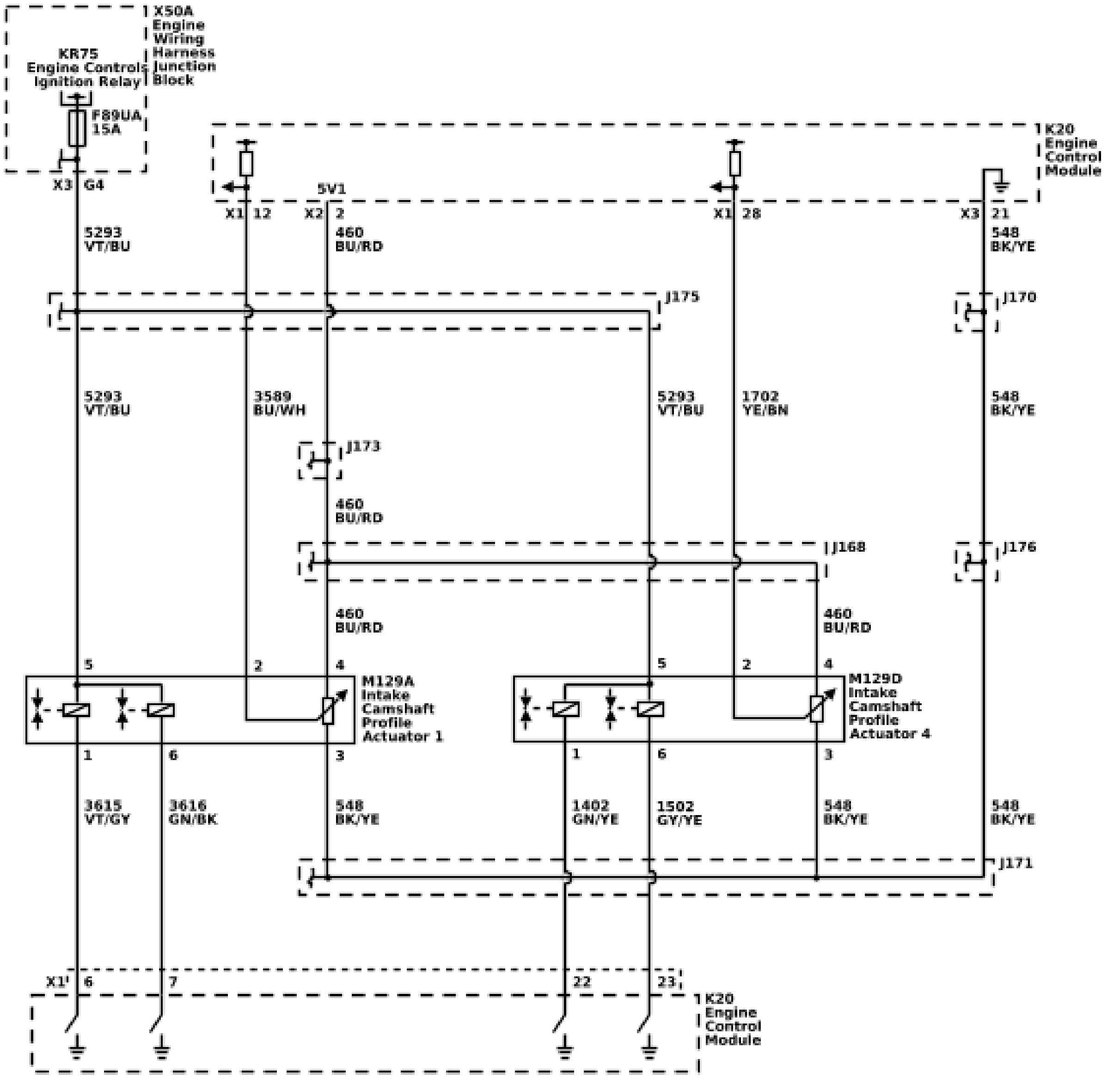
6846971

Engine Controls Schematics (L3B) (Camshaft Profile Controls - Exhaust Actuators)


X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F89UA 15A
X3 G4
K20 Engine Control Module
5V1
X1 29
X2 2
X1 30
5293 VT/BU
6266 GN/BK
460 BU/RD
6263 YE
J173
J175
5293 VT/BU
460 BU/RD
5293 VT/BU
460 BU/RD
5
2
4
M130B Exhaust Camshaft Profile Actuator 2
5
2
4
M130C Exhaust Camshaft Profile Actuator 3
1
6
3
1
6
3
548 BK/YE
J171
548 BK/YE
548 BK/YE
J176
6265 YE/VT
6264 VT/BK
548 BK/YE
6262 GY/BN
6261 GN/BN
J170
548 BK/YE
X1 24
25
X3 21
X1 26
27
K20 Engine Control Module

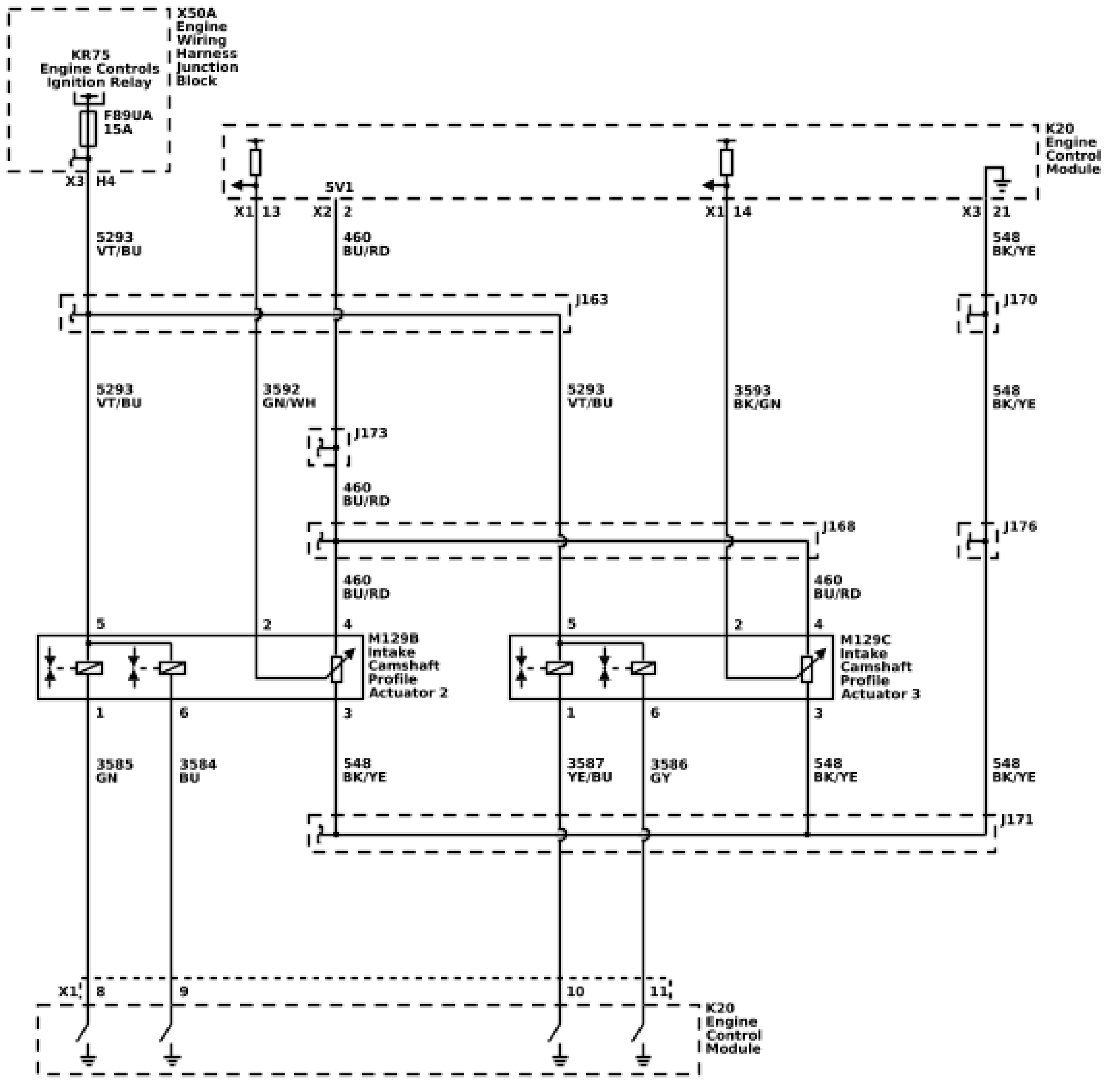
6846972

Engine Controls Schematics (L3B) (Camshaft Profile Controls - Intake Actuators - 1 of 2)


X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F89UA 15A
X3 G4
5293 VT/BU
K20 Engine Control Module
X1 12
X2 2
5V1
460 BU/RD
X1 28
X3 21
548 BK/YE
J175
J170
5293 VT/BU
3589 BU/WH
5293 VT/BU
1702 YE/BN
548 BK/YE
J173
460 BU/RD
J168
J176
460 BU/RD
460 BU/RD
5
2
4
M129A Intake Camshaft Profile Actuator 1
1
6
3
5
2
4
M129D Intake Camshaft Profile Actuator 4
1
6
3
3615 VT/GY
3616 GN/BK
548 BK/YE
1402 GN/YE
1502 GY/YE
548 BK/YE
548 BK/YE
J171
X1 6
7
22
23
K20 Engine Control Module

6846973

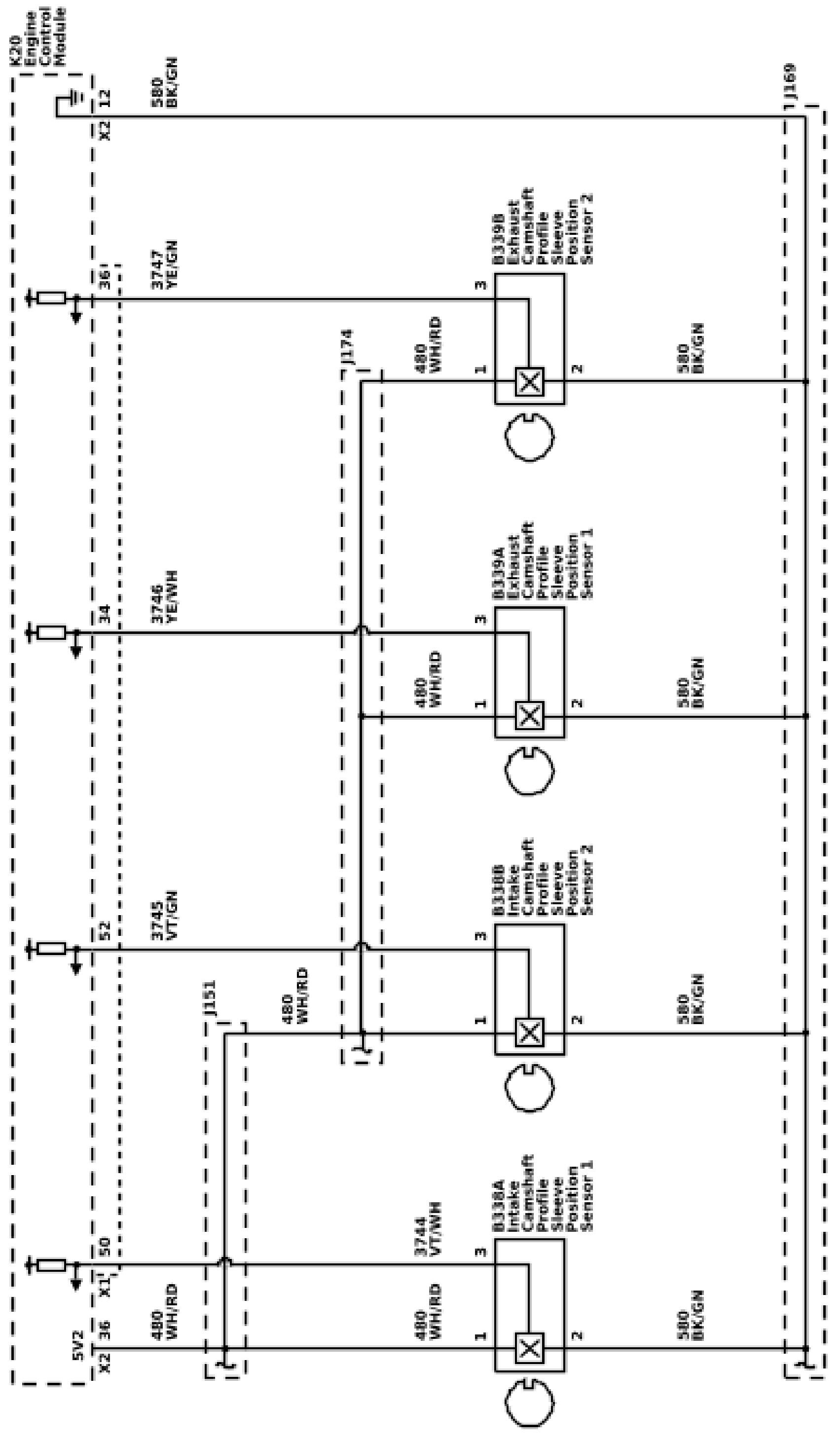
Engine Controls Schematics (L3B) (Camshaft Profile Controls - Intake Actuators - 2 of 2)


X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F89UA 15A
X3 H4
K20 Engine Control Module
5V1
X1 13
X2 2
X1 14
X3 21
5293 VT/BU
460 BU/RD
548 BK/YE
J163
J170
5293 VT/BU
3592 GN/WH
5293 VT/BU
3593 BK/GN
548 BK/YE
J173
460 BU/RD
J168
J176
460 BU/RD
460 BU/RD
5
2
4
M129B Intake Camshaft Profile Actuator 2
5
2
4
M129C Intake Camshaft Profile Actuator 3
1
6
3
1
6
3
3585 GN
3584 BU
548 BK/YE
3587 YE/BU
3586 GY
548 BK/YE
548 BK/YE
J171
X1 8
9
10
11
K20 Engine Control Module

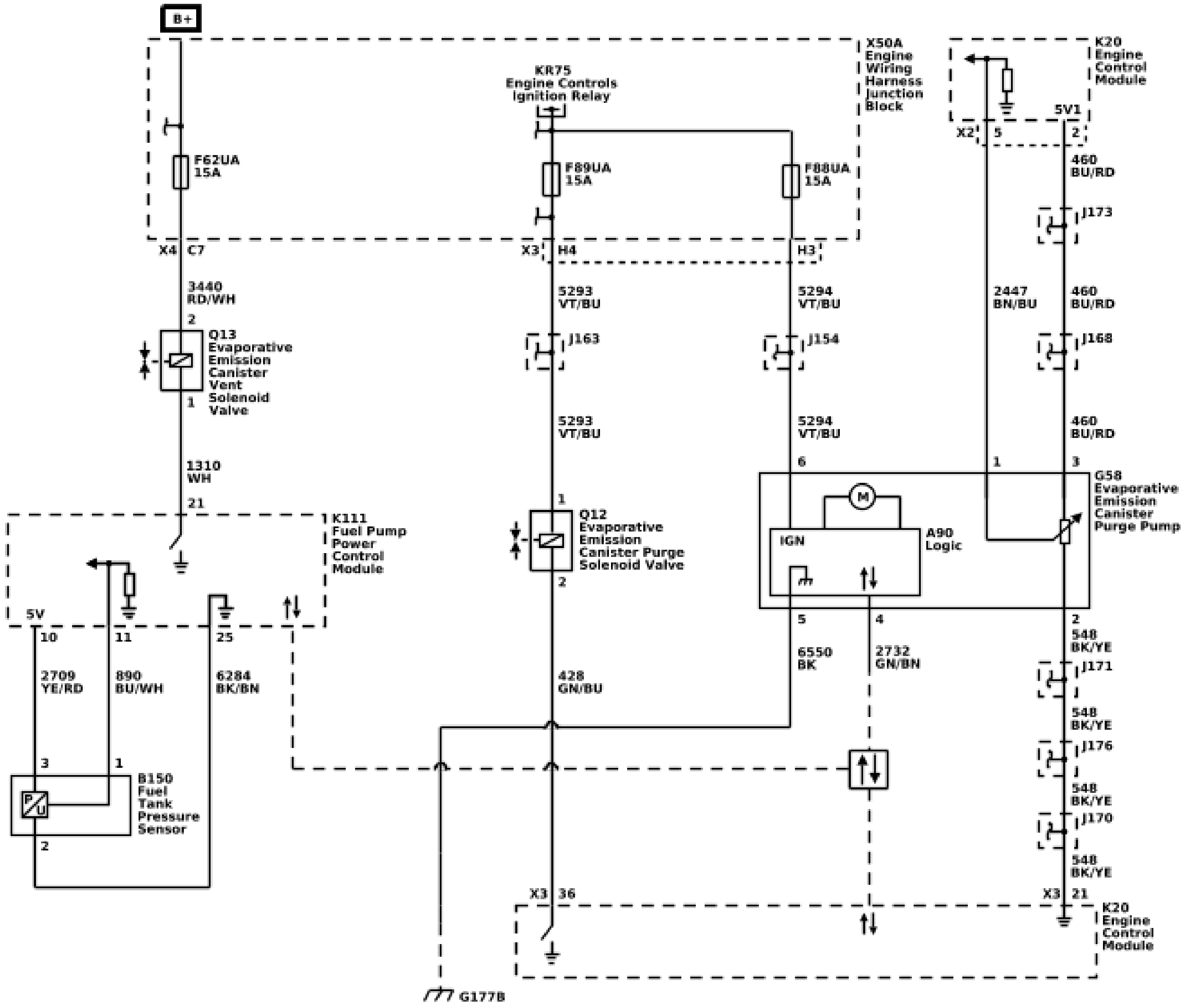
6846974

Engine Controls Schematics (L3B) (Camshaft Profile Controls - Position Sensors)

6846975


K20 Engine Control Module
X2 12
580 BK/GN
J169
36
3747 YE/GN
B339B Exhaust Camshaft Profile Sleeve Position Sensor 2
J174
480 WH/RD
1
2
3
580 BK/GN
34
3746 YE/WH
B339A Exhaust Camshaft Profile Sleeve Position Sensor 1
480 WH/RD
580 BK/GN
52
3745 VT/GN
B338B Intake Camshaft Profile Sleeve Position Sensor 2
J151
480 WH/RD
580 BK/GN
50
X1
3744 VT/WH
B338A Intake Camshaft Profile Sleeve Position Sensor 1
5V2
X2 36
480 WH/RD
480 WH/RD
580 BK/GN

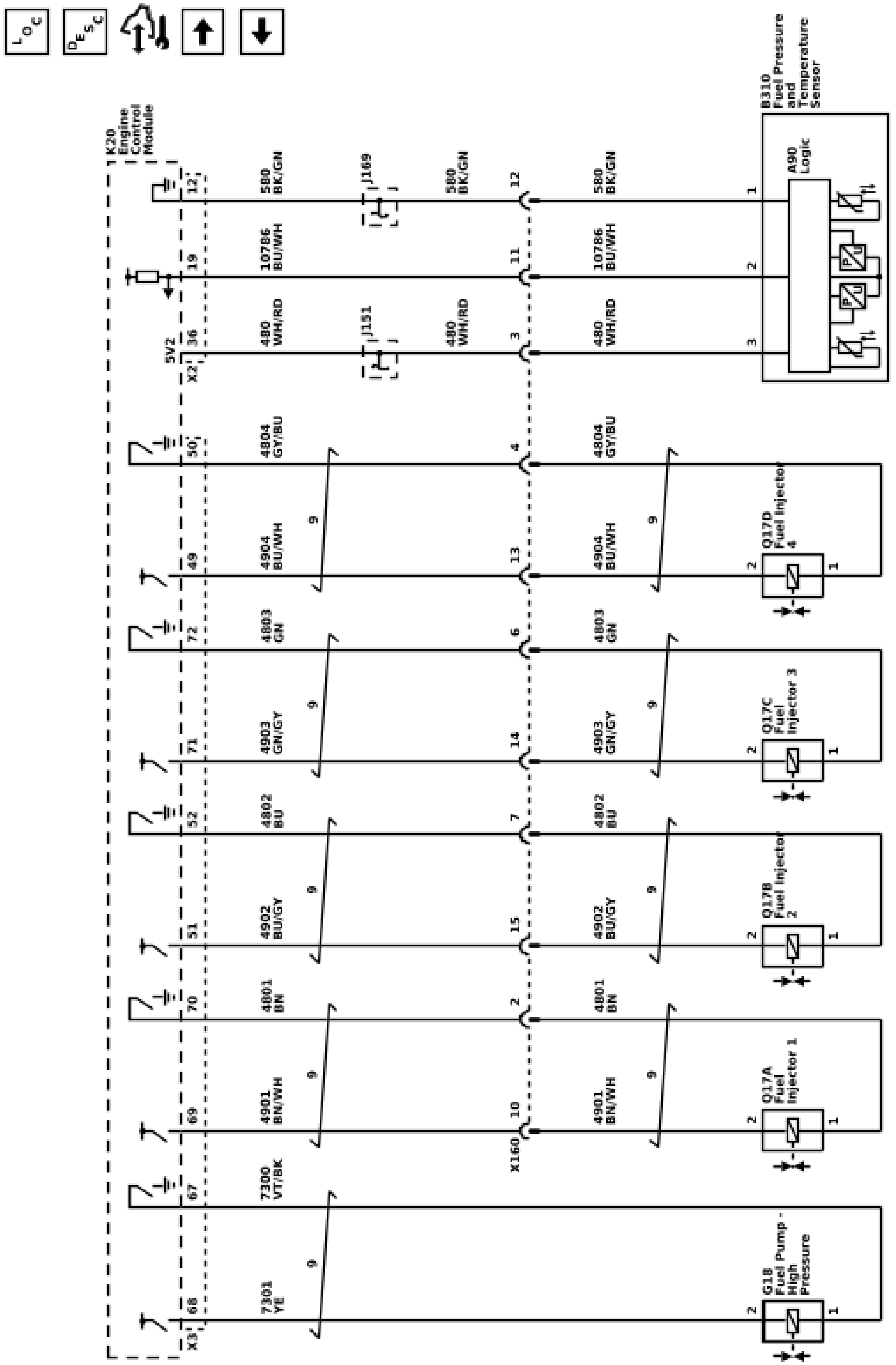
Engine Controls Schematics (L3B) (Fuel Controls - Evaporative Emissions Controls)


B+
X50A
Engine
Wiring
Harness
Junction
Block
KR75
Engine Controls
Ignition Relay
F62UA
15A
F89UA
15A
F88UA
15A
X4
C7
X3
H4
H3
3440
RD/WH
2
Q13
Evaporative
Emission
Canister
Vent
Solenoid
Valve
1
1310
WH
21
K111
Fuel Pump
Power
Control
Module
5V
10
11
25
2709
YE/RD
890
BU/WH
6284
BK/BN
3
1
B150
Fuel
Tank
Pressure
Sensor
2
5293
VT/BU
J163
5293
VT/BU
1
Q12
Evaporative
Emission
Canister Purge
Solenoid Valve
2
428
GN/BU
X3
36
G177B
5294
VT/BU
J154
5294
VT/BU
6
IGN
M
A90
Logic
5
6550
BK
4
2732
GN/BN
K20
Engine
Control
Module
5V1
X2
5
2
460
BU/RD
J173
2447
BN/BU
460
BU/RD
J168
460
BU/RD
1
3
G58
Evaporative
Emission
Canister
Purge Pump
2
548
BK/YE
J171
548
BK/YE
J176
548
BK/YE
J170
548
BK/YE
X3
21
K20
Engine
Control
Module

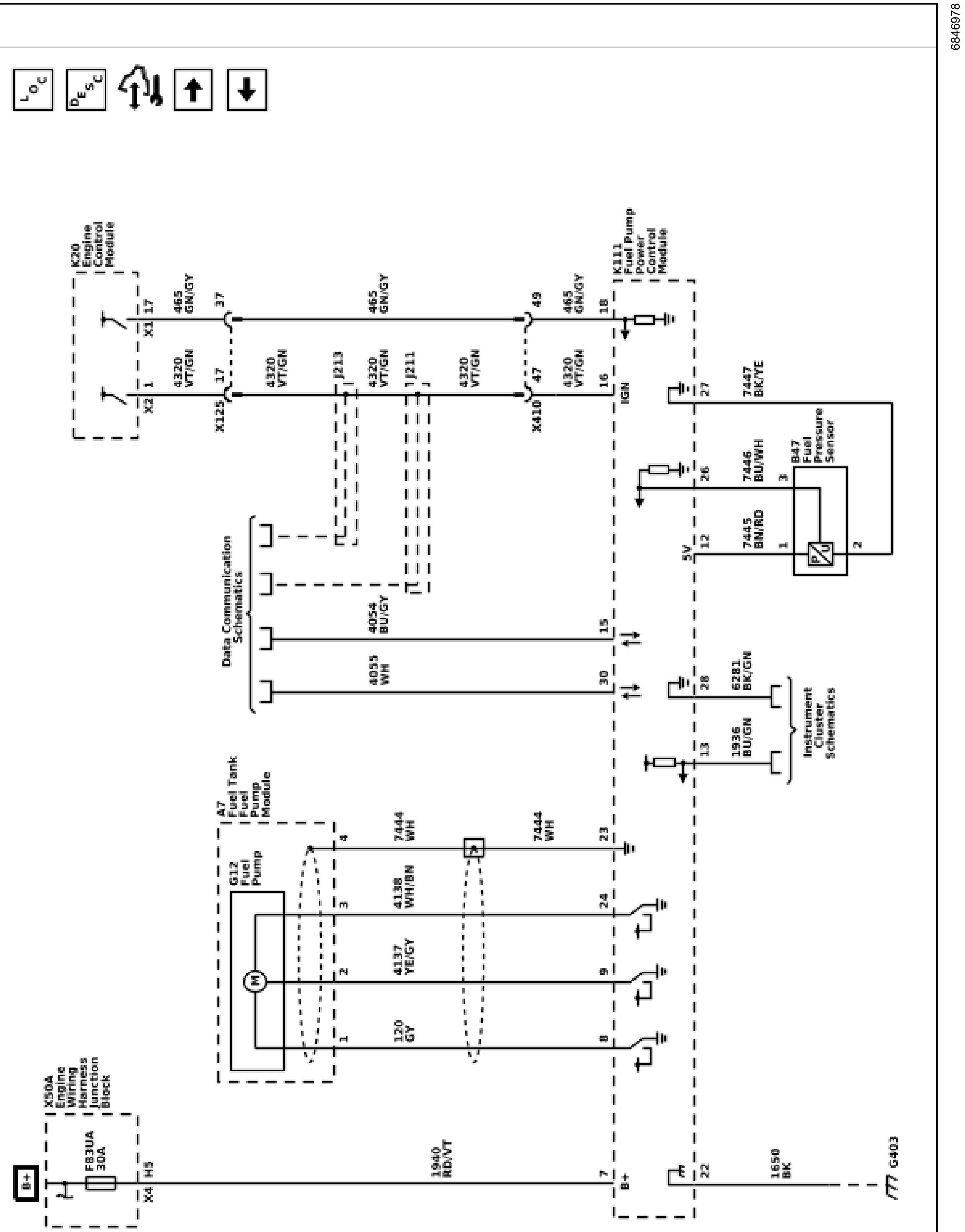
6846976

Engine Controls Schematics (L3B) (Fuel Controls - Fuel Injectors and Fuel Pressure)

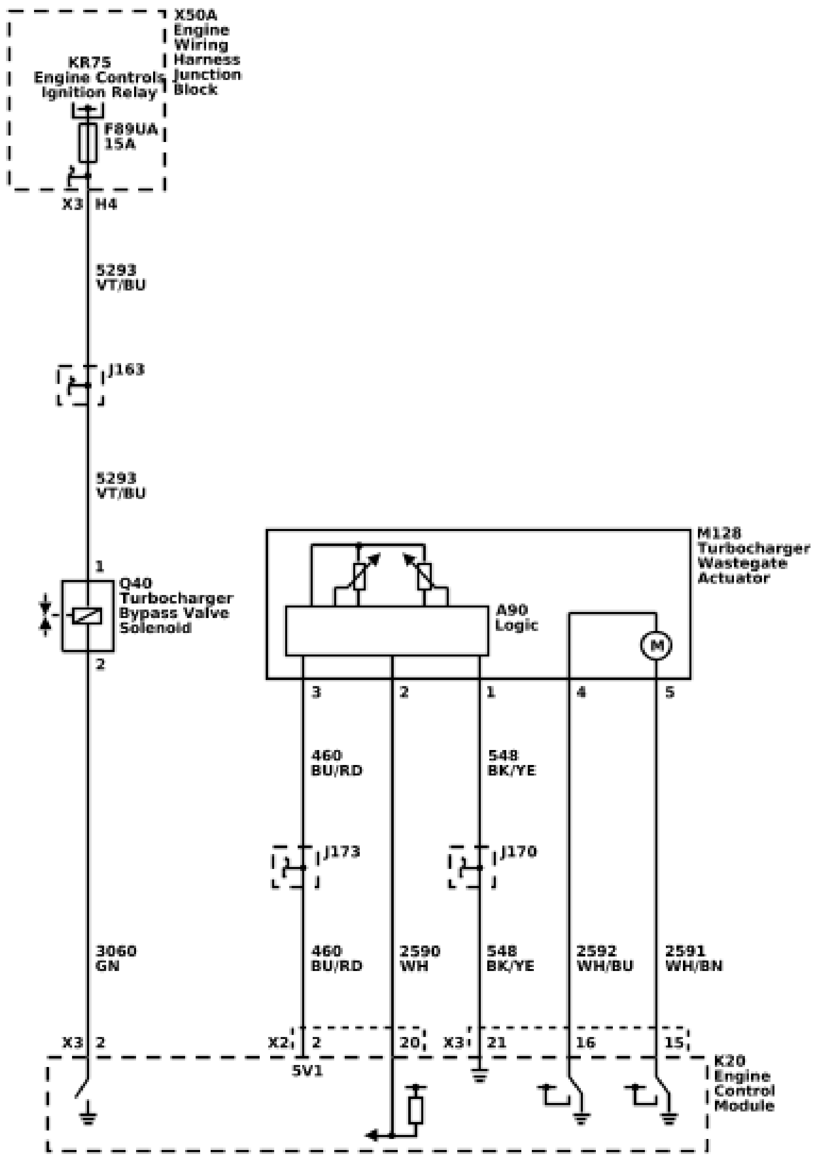
6846977


K20 Engine Control Module
X2
X3
5V2
12
19
36
50
49
72
71
52
51
70
69
67
68
580 BK/GN
10786 BU/WH
480 WH/RD
4804 GY/BU
4904 BU/WH
4803 GN
4903 GN/GY
4802 BU
4902 BU/GY
4801 BN
4901 BN/WH
7300 VT/BK
7301 YE
9
J169
J151
X160
12
11
3
4
13
6
14
7
15
2
10
B310 Fuel Pressure and Temperature Sensor
A90 Logic
1
2
3
Q17D Fuel Injector 4
Q17C Fuel Injector 3
Q17B Fuel Injector 2
Q17A Fuel Injector 1
G18 Fuel Pump - High Pressure

Engine Controls Schematics (L3B) (Fuel Controls - Fuel Pump Control)

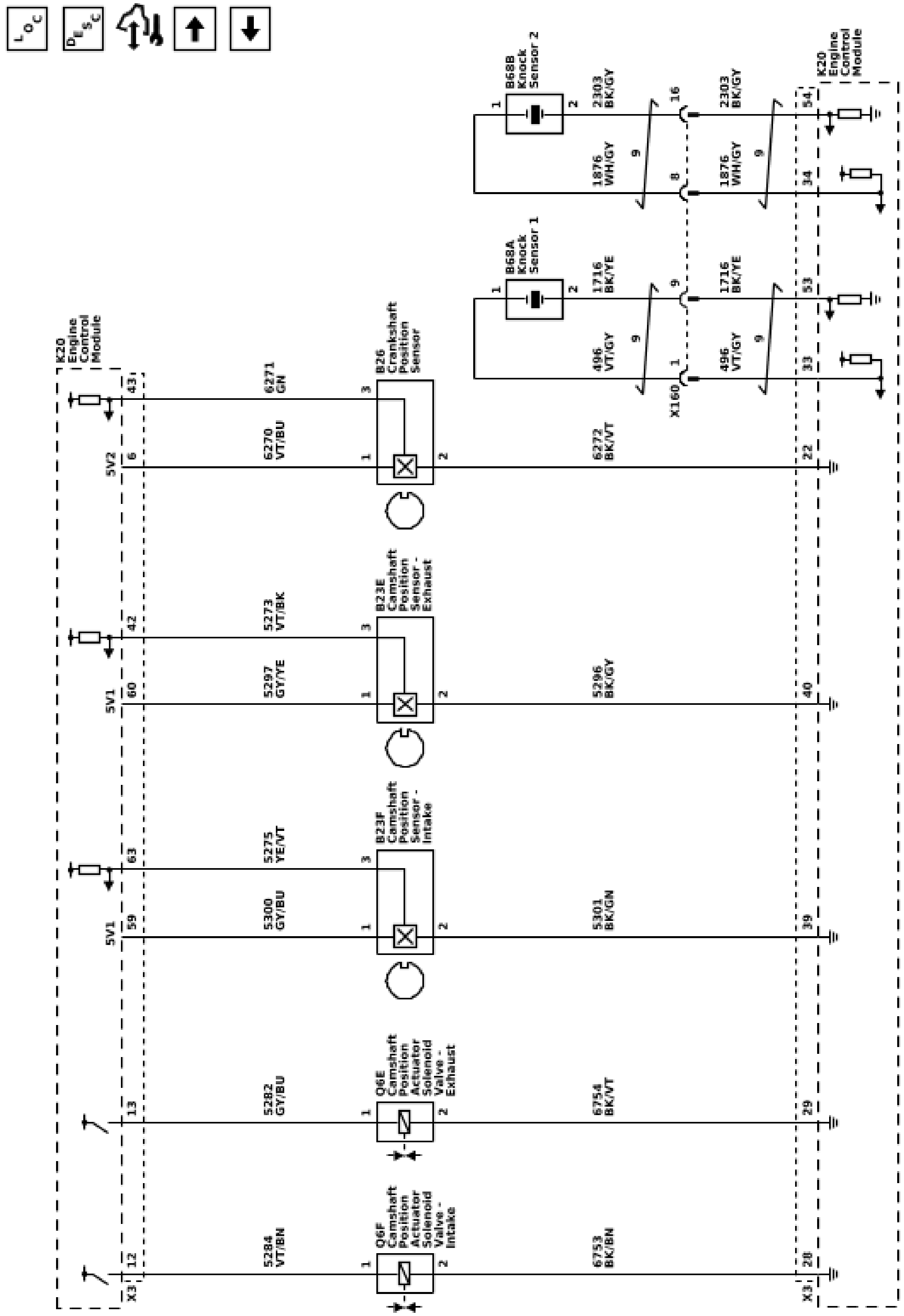

6846978
K20 Engine Control Module
X1 17
X2 1
465 GN/GY
4320 VT/GN
X125
37
17
J213
J211
49
47
X410
K111 Fuel Pump Power Control Module
18
16
IGN
27
7447 BK/YE
B47 Fuel Pressure Sensor
26
7446 BU/WH
3
12
5V
7445 BN/RD
1
2
P
U
Data Communication Schematics
4054 BU/GY
15
4055 WH
30
28
6281 BK/GN
13
1936 BU/GN
Instrument Cluster Schematics
A7 Fuel Tank Fuel Pump Module
G12 Fuel Pump
M
4
7444 WH
23
3
4138 WH/BN
24
2
4137 YE/GY
9
1
120 GY
8
X50A Engine Wiring Harness Junction Block
B+
F83UA 30A
X4 H5
1940 RD/VT
7
B+
22
1650 BK
G403

Engine Controls Schematics (L3B) (Fuel Controls - Turbocharger Controls)

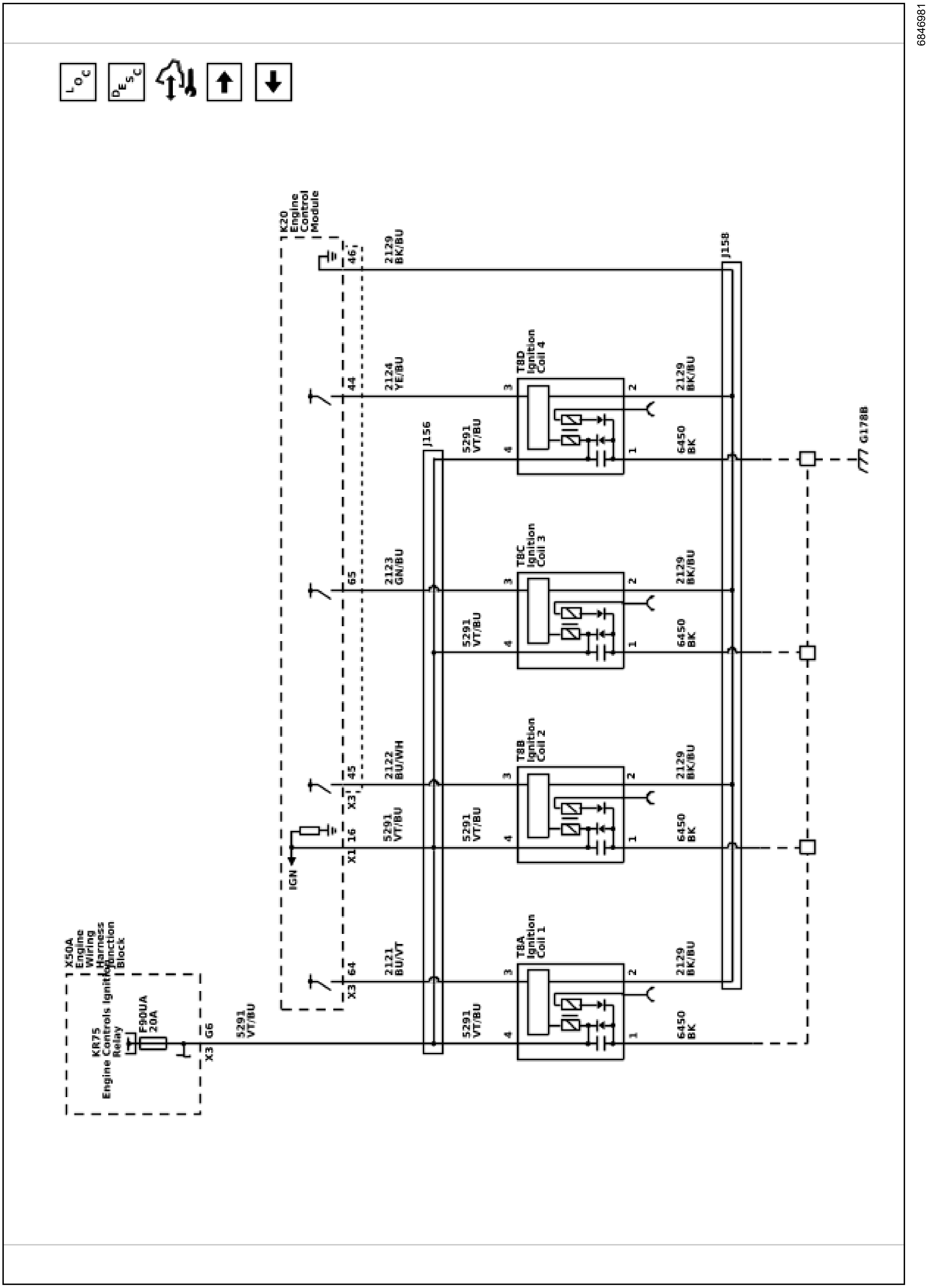

X50A
Engine
Wiring
Harness
Junction
Block
KR75
Engine Controls
Ignition Relay
F89UA
15A
X3 H4
5293
VT/BU
J163
5293
VT/BU
1
Q40
Turbocharger
Bypass Valve
Solenoid
2
3060
GN
X3 2
M128
Turbocharger
Wastegate
Actuator
A90
Logic
M
3
2
1
4
5
460
BU/RD
548
BK/YE
J173
J170
460
BU/RD
2590
WH
548
BK/YE
2592
WH/BU
2591
WH/BN
X2 2
20
X3 21
16
15
5V1
K20
Engine
Control
Module

6846979

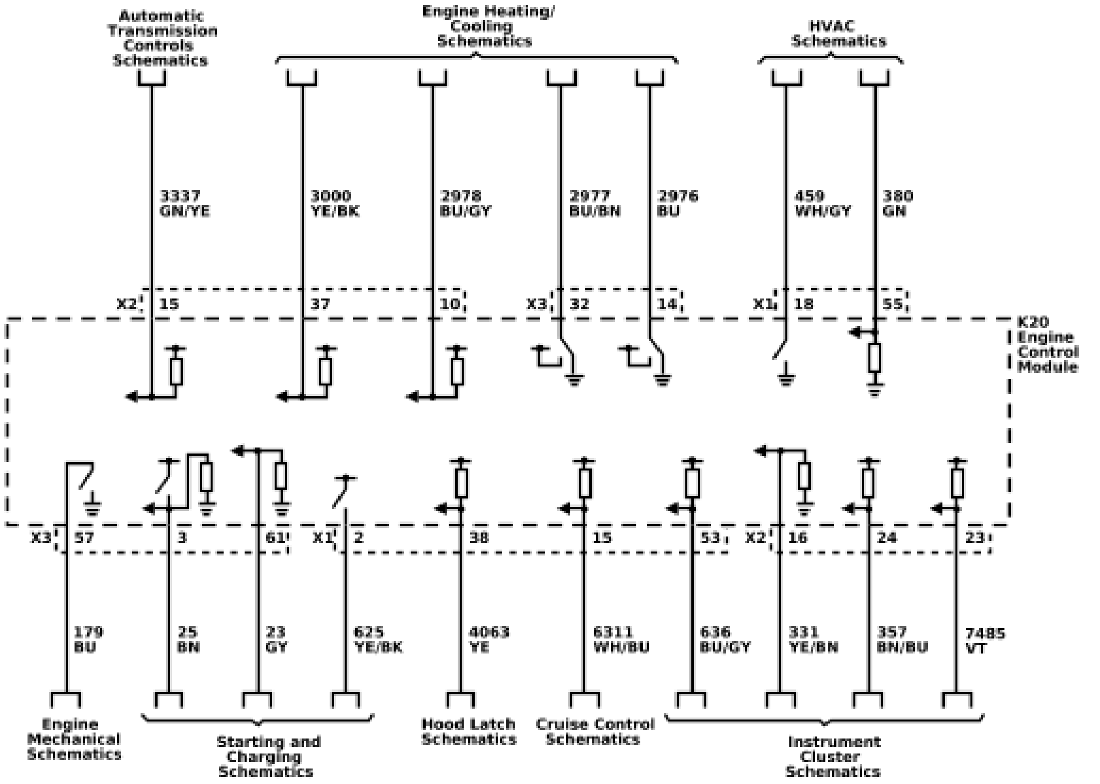
Engine Controls Schematics (L3B) (Ignition Controls - Crankshaft Position, Camshaft Position, Knock Sensors and Camshaft Position Actuator)


K20 Engine Control Module
X3
12
13
59
63
60
42
6
43
5V1
5V1
5V2
5284 VT/BN
5282 GY/BU
5300 GY/BU
5275 YE/VT
5297 GY/YE
5273 VT/BK
6270 VT/BU
6271 GN
Q6F Camshaft Position Actuator Solenoid Valve - Intake
Q6E Camshaft Position Actuator Solenoid Valve - Exhaust
B23F Camshaft Position Sensor - Intake
B23E Camshaft Position Sensor - Exhaust
B26 Crankshaft Position Sensor
1
2
3
6753 BK/BN
6754 BK/VT
5301 BK/GN
5296 BK/GY
6272 BK/VT
28
29
39
40
22
B68A Knock Sensor 1
B68B Knock Sensor 2
496 VT/GY
1716 BK/YE
1876 WH/GY
2303 BK/GY
9
X160
1
9
8
16
33
53
34
54
6846980

Engine Controls Schematics (L3B) (Ignition Controls - Ignition Coils)


6846981
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F90UA 20A
X3 G6
5291 VT/BU
K20 Engine Control Module
IGN
X1 16
X3 45
X3 64
44
65
46
2121 BU/VT
2122 BU/WH
2123 GN/BU
2124 YE/BU
2129 BK/BU
J156
J158
T8A Ignition Coil 1
T8B Ignition Coil 2
T8C Ignition Coil 3
T8D Ignition Coil 4
3
4
2
1
6450 BK
G178B

Engine Controls Schematics (L3B) (Controlled/Monitored Subsystem References)


Automatic Transmission Controls Schematics
Engine Heating/ Cooling Schematics
HVAC Schematics
3337 GN/YE
3000 YE/BK
2978 BU/GY
2977 BU/BN
2976 BU
459 WH/GY
380 GN
X2 15
37
10
X3 32
14
X1 18
55
K20 Engine Control Module
X3 57
3
61
X1 2
38
15
53
X2 16
24
23
179 BU
25 BN
23 GY
625 YE/BK
4063 YE
6311 WH/BU
636 BU/GY
331 YE/BN
357 BN/BU
7485 VT
Engine Mechanical Schematics
Starting and Charging Schematics
Hood Latch Schematics
Cruise Control Schematics
Instrument Cluster Schematics
6846982

Description and Operation

Catalytic Converter Description and Operation

Three-Way Catalytic Converter

A three-way catalyst is designed to reduce the levels of hydrocarbons, carbon monoxide and nitrogen oxide.

Catalytic Converter

Catalyst Conversion
The catalyst within the converter promotes a chemical reaction, which oxidizes the hydrocarbons and the carbon monoxide that are present in the exhaust gas. This process converts the hydrocarbons and the carbon monoxide into water vapor and carbon dioxide, and reduces the nitrogen oxide, converting the nitrogen oxide into nitrogen.

Oxygen Storage
The catalyst stores oxygen. The engine control module (ECM) monitors this process by using heated oxygen sensors that are in the exhaust stream before and after the catalyst. The heated oxygen sensors produces an output signal that the ECM uses to calculate the oxygen storage capacity of the catalyst. This indicates the ability of the catalyst to convert the exhaust emissions efficiently. The ECM monitors the efficiency of the catalyst by monitoring the heated oxygen sensors during an off-idle, deceleration fuel cut-off event. When the catalyst is functioning properly, the post catalyst heated oxygen sensors response to the fuel conditions during the deceleration fuel cut-off event is slow compared to the response of the pre catalyst heated oxygen sensors. When the post heated oxygen sensors response is near that of the pre heated oxygen sensors, the oxygen storage capability and efficiency of the catalyst may be degraded below an acceptable threshold.

Cold Start Strategy
The catalyst must be warmed to efficiently reduce the emissions. The cold start strategy is to reduce the amount of time it takes to warm the catalyst. During a cold start, the engine spark timing and fuel injection are altered to allow the catalyst to warm quickly. The ECM monitors the following to build an exhaust energy model:

- Engine airflow
- Engine coolant temperature
- Engine idle speed
- Engine run time
- Fuel Injection
- Spark advance

The actual model is then compared to the expected exhaust energy model.

Fuel Trim Bias
Fuel trim bias is used to keep the post catalyst air/fuel ratio within a predetermined range. This allows optimal catalyst efficiency under various operating conditions. The ECM constantly monitors how lean or rich the fuel trim bias is commanded, to determine if the fuel trim bias is greater than a calibrated amount.

Heated Oxygen Sensor Description and Operation

The engine control module (ECM) controls a closed loop air/fuel metering system in order to provide the best possible combination of driveability, fuel economy, and emission control. The ECM monitors the heated oxygen sensor (HO2S) signal and adjusts the fuel delivery based on the signal while in closed loop operation. The short term fuel trim values change rapidly in response to the HO2S signal. These changes fine tune the engine fueling. The long term fuel trim values change in response to trends in the short term fuel trim. The long term fuel trim makes coarse adjustments to fueling in order to re-center and restore control to short term fuel trim.

Heated Oxygen Sensor

When the engine is started, the ECM operates in an Open Loop mode, ignoring the HO2S signal voltage while calculating the air-to-fuel ratio. While the engine runs, the HO2S heats up and begins to generate a voltage within a range of 0–1,000 mV. Once sufficient HO2S voltage fluctuation is observed by the ECM, Closed Loop mode is entered. The ECM uses the HO2S voltage to determine the air-to-fuel ratio. An HO2S voltage that increases toward 1,000 mV indicates a rich fuel mixture. An HO2S voltage that decreases toward 0 mV indicates a lean fuel mixture.

Heated oxygen sensors are used for fuel control and post catalyst monitoring. Each HO2S compares the oxygen content of the surrounding air with the oxygen content in the exhaust stream. The HO2S must reach operating temperature to provide an accurate voltage signal. A heating element inside the HO2S minimizes the time required for the sensor to reach operating temperature. This allows the system to enter Closed Loop earlier and the ECM to calculate the air-to-fuel ratio sooner. Voltage is provided to the heater by an ignition voltage circuit through a fuse. With the engine running, ground is provided to the heater by the HO2S heater low control circuit through a low side driver within the ECM. The ECM uses pulse width modulation (PWM) to control the HO2S heater operation to maintain a specific HO2S operating temperature range.

Wide Band Heated Oxygen Sensor

The wide band heated oxygen sensor (HO2S) measures the amount of oxygen in the exhaust system and provides more information than the switching style HO2S. The wide band sensor consists of an oxygen sensing cell, an oxygen pumping cell, and a heater. The exhaust gas sample passes through a diffusion gap between the sensing cell and the pumping cell. An electronic circuit within the ECM controls the pump current through the oxygen pumping cell in order to maintain a constant voltage in the oxygen sensing cell. The ECM monitors the voltage variation in the sensing cell and attempts to keep the voltage constant by increasing or decreasing the amount of current flow, or oxygen ion flow, from the pumping cell. By measuring the amount of current required to maintain the voltage in the sensing cell, the ECM can determine the concentration of oxygen in the exhaust. The HO2S pumping current is displayed as a lambda value. A lambda value of 1 is equal to a stoichiometric air fuel ratio of 14.7:1. Under normal operating conditions, the lambda value will remain around 1. When the fuel system is lean, the oxygen level will be high and the lambda signal will be high or more than 1. When the fuel system is rich, the oxygen level will be low, and the lambda signal will be low or less than 1. The ECM uses this information to maintain the correct air/fuel ratio. If the ECM detects that the HO2S signal is out of range a DTC will set.

The heating element inside each HO2S heats the sensor to bring it up to operating conditions faster. This allows the system to enter Closed Loop mode earlier and the ECM to calculate the air-to-fuel ratio sooner.

Inspection/Maintenance Description and Operation

Some state/provincial and local governments require that a vehicle pass on-board diagnostic (OBD) system tests and the Inspection/Maintenance (I/M) emission inspection in order to renew license plates. This is accomplished by viewing the I/M System monitors on a scan tool and confirming that no Permanent DTCs are set.

The OBD II system monitors all emission control systems that are on-board. The OBD II regulations require monitoring of the following:

Monitor	Diesel	Gasoline
Boost System Monitor - Since Diagnostic Trouble Codes Cleared	X	—
Catalytic Converter Monitor - Since Diagnostic Trouble Codes Cleared	X	X
Evaporative Emission Monitor - Since Diagnostic Trouble Codes Cleared	—	X
Exhaust Aftertreatment Monitor - Since Diagnostic Trouble Codes Cleared	X	—
Exhaust Gas Recirculation Valve/Camshaft Position Monitor - Since Diagnostic Trouble Codes Cleared	X	X
Exhaust Gas Sensor Monitor - Since Diagnostic Trouble Codes Cleared	X	—
Fuel System Monitor - Since Diagnostic Trouble Codes Cleared	X	X
Heated Catalytic Converter Monitor - Since Diagnostic Trouble Codes Cleared	—	X
Misfire Monitor - Since Diagnostic Trouble Codes Cleared	X	X
Oxygen Sensor Heater Monitor - Since Diagnostic Trouble Codes Cleared	—	X
Oxygen Sensor/Heated Oxygen Sensor Monitor - Since Diagnostic Trouble Codes Cleared	—	X
Particulate Filter Monitor - Since Diagnostic Trouble Codes Cleared	X	X

I/M System Status

Each system monitor requires at least one, and sometimes several diagnostic tests. The result of each test is reported by a DTC. A system monitor is Complete when either all of the DTCs comprising the monitor have run and passed, or when any one of the DTCs comprising the monitor has illuminated the malfunction indicator lamp (MIL). For example, when the Oxygen Sensor Heater Monitor indicates Complete, all of the oxygen sensor heaters have been diagnosed. If the vehicle has 4 heated oxygen sensors, all 4 heaters have been diagnosed.

Once the system monitor is complete, the I/M System Status parameter will display Complete in the value column of the scan tool. Any monitor that is not applicable to a vehicle will display Not Supported in the scan tool value column. The I/M System Status parameter will display Incomplete in the value column when any of the required tests for that system have not run. The following is a list of conditions that would set the I/M System Status monitor to Incomplete:

- The vehicle is new from the factory and has not yet been driven through the necessary drive conditions to complete the tests.
- The battery has been disconnected or discharged below operating voltage.

- The control module power or ground has been interrupted.
- The control module has been programmed.
- The control module DTCs have been cleared.

Permanent DTCs

Permanent DTCs are defined as confirmed fault codes that are currently commanding the MIL on and stored in non-volatile memory. Permanent DTCs cannot be erased by any scan tool command or by disconnecting power to the controller.

The intended use of this data is to prevent vehicles from passing an I/M inspection by disconnecting the battery or clearing codes with a scan tool prior to the inspection. The presence of Permanent DTCs at an inspection without the MIL illuminated is an indication that a proper repair was not verified by the OBD II system.

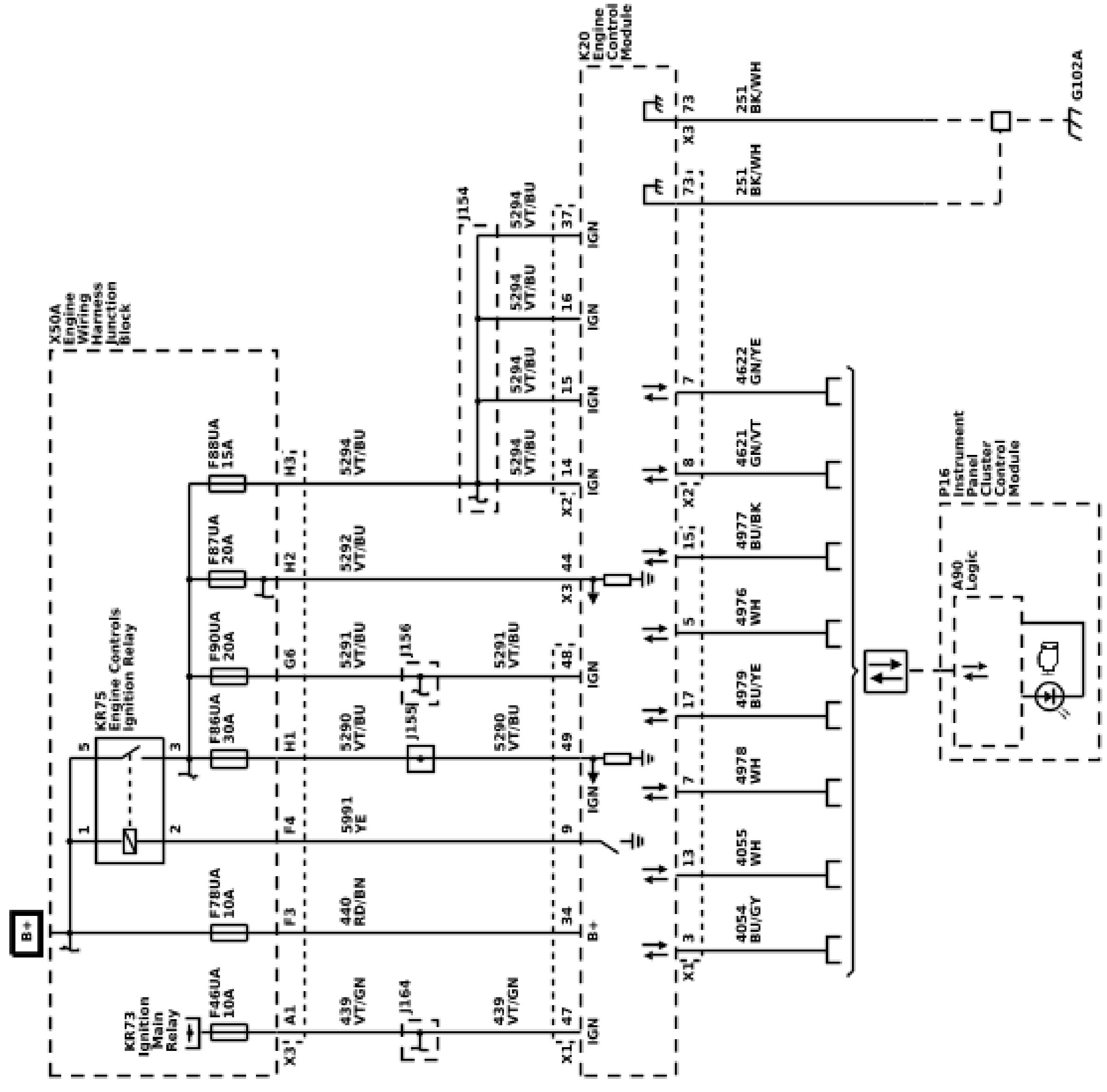
Only the OBD II system can clear Permanent DTCs. The OBD II system must determine that the malfunction that caused the Permanent DTC to be stored no longer exists and is not commanding the MIL.

- If the MIL goes out naturally due to 3 passing drive cycles (scan tool code clear is not used), then the Permanent DTC is cleared at power down of the last drive cycle.
- If a scan tool code clear is used to turn off the MIL then the Permanent DTC is not cleared, the DTC must PASS and not FAIL. The Permanent DTC is cleared at power down of the drive cycle.
- If the controller is programmed, all Permanent DTCs are cleared.

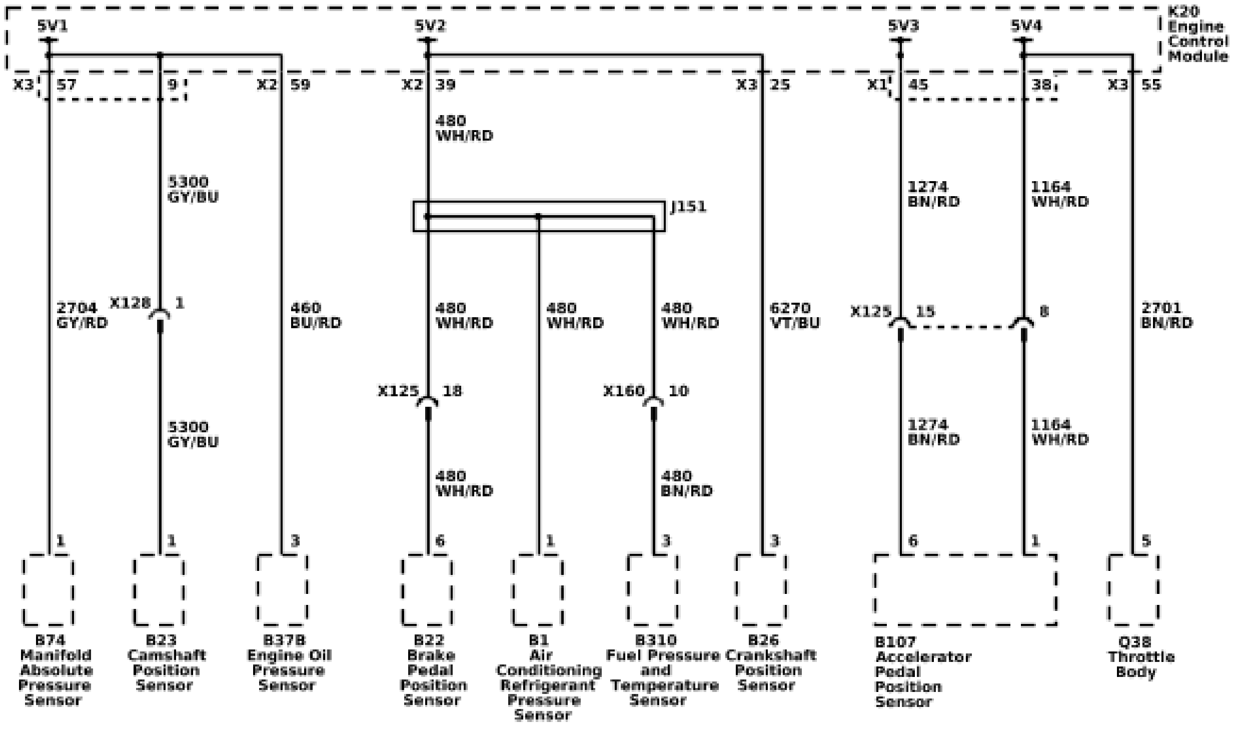
Engine Controls and Fuel - 5.3L, 6.2L

Schematic and Routing Diagrams

Engine Controls Schematics (L84 / L87) (Engine Control Module Power, Ground, Serial Data, and MIL)

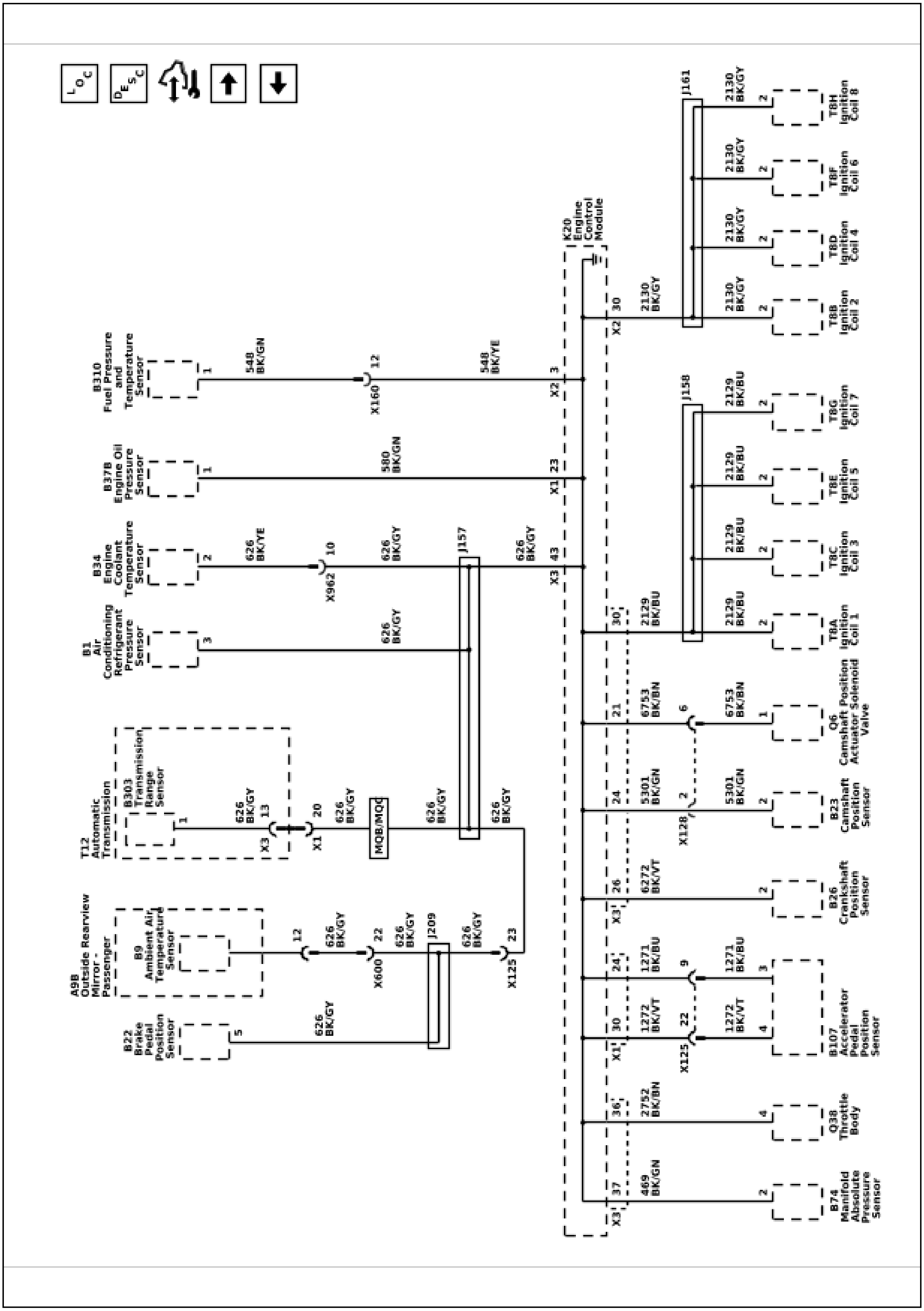

6846983
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
KR75 Engine Controls Ignition Relay
B+
F46UA 10A
F78UA 10A
F86UA 30A
F90UA 20A
F87UA 20A
F88UA 15A
X3 A1 F3 F4 H1 G6 H2 H3
439 VT/GN
440 RD/BN
5991 YE
5290 VT/BU
5291 VT/BU
5292 VT/BU
5294 VT/BU
J164
J155
J156
J154
K20 Engine Control Module
X1 47 IGN
34 B+
9
49 IGN
48 IGN
X3 44
X2 14 IGN
15 IGN
16 IGN
37 IGN
X1 3 4054 BU/GY
13 4055 WH
7 4978 WH
17 4979 BU/YE
5 4976 WH
15 4977 BU/BK
X2 8 4621 GN/VT
7 4622 GN/YE
73 251 BK/WH
X3 73 251 BK/WH
G102A
P16 Instrument Panel Cluster Control Module
A90 Logic

Engine Controls Schematics (L84 / L87) (5V Reference Bus)

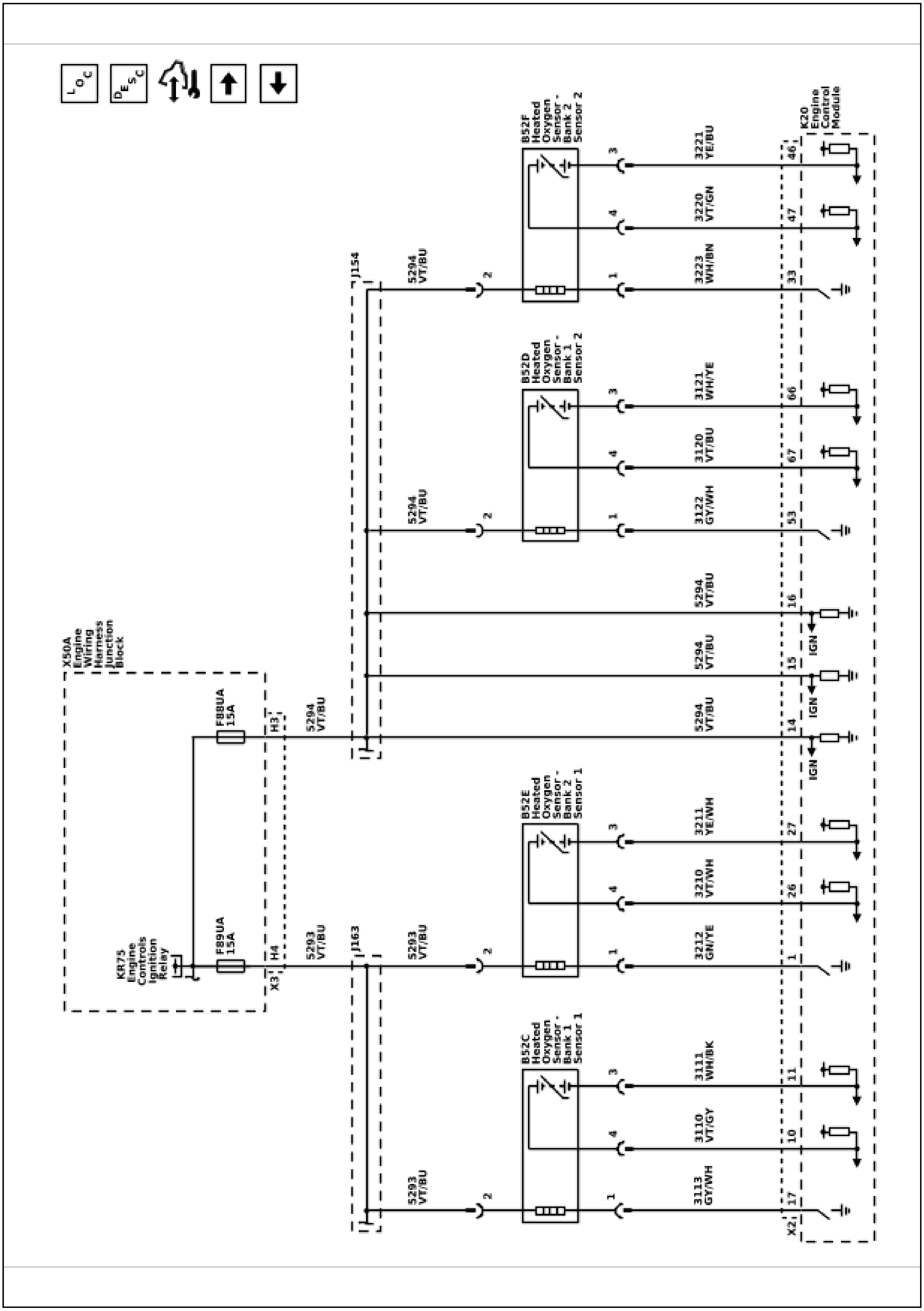

K20 Engine Control Module
5V1
5V2
5V3
5V4
X3 57
9
X2 59
X2 39
X3 25
X1 45
38
X3 55
2704 GY/RD
5300 GY/BU
X128 1
5300 GY/BU
460 BU/RD
480 WH/RD
J151
480 WH/RD
X125 18
480 WH/RD
480 WH/RD
480 WH/RD
X160 10
480 BN/RD
6270 VT/BU
1274 BN/RD
X125 15
1274 BN/RD
1164 WH/RD
8
1164 WH/RD
2701 BN/RD
1
1
3
6
1
3
3
6
1
5
B74 Manifold Absolute Pressure Sensor
B23 Camshaft Position Sensor
B37B Engine Oil Pressure Sensor
B22 Brake Pedal Position Sensor
B1 Air Conditioning Refrigerant Pressure Sensor
B310 Fuel Pressure and Temperature Sensor
B26 Crankshaft Position Sensor
B107 Accelerator Pedal Position Sensor
Q38 Throttle Body

6846984

Engine Controls Schematics (L84 / L87) (Low Reference Bus)

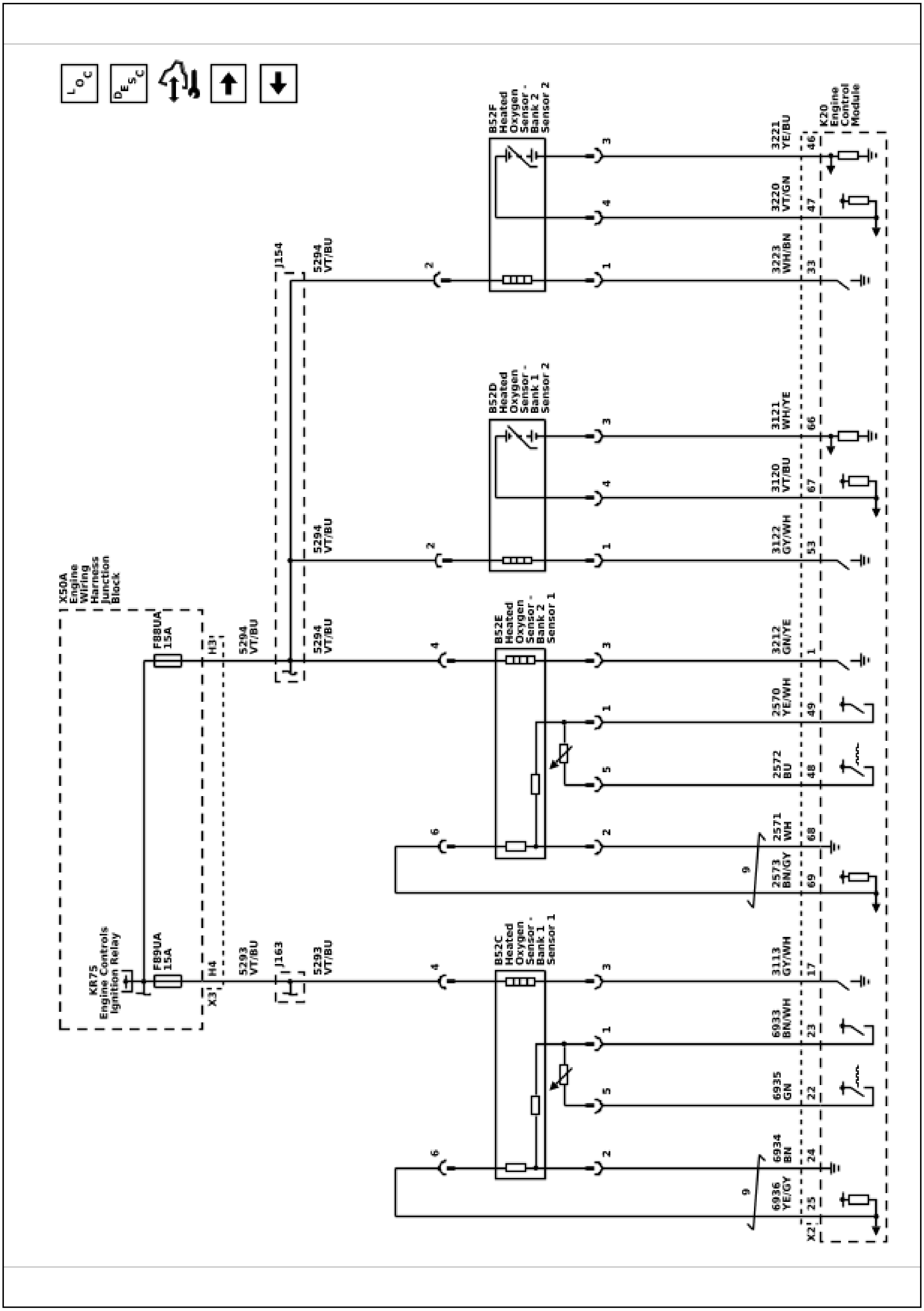

6846985
B310 Fuel Pressure and Temperature Sensor
548 BK/GN
X160 12
548 BK/YE
X2 3
B378 Engine Oil Pressure Sensor
580 BK/GN
X1 23
B34 Engine Coolant Temperature Sensor
626 BK/YE
X962 10
626 BK/GY
J157
X3 43
B1 Air Conditioning Refrigerant Pressure Sensor
T12 Automatic Transmission
B303 Transmission Range Sensor
X3 13
X1 20
MQB/MQC
A9B Outside Rearview Mirror - Passenger
B9 Ambient Air Temperature Sensor
X600 22
J209
X125 23
B22 Brake Pedal Position Sensor
K20 Engine Control Module
X2 30
2130 BK/GY
J161
T8H Ignition Coil 8
T8F Ignition Coil 6
T8D Ignition Coil 4
T8B Ignition Coil 2
J158
2129 BK/BU
T8G Ignition Coil 7
T8E Ignition Coil 5
T8C Ignition Coil 3
T8A Ignition Coil 1
6753 BK/BN
Q6 Camshaft Position Actuator Solenoid Valve
5301 BK/GN
X128
B23 Camshaft Position Sensor
6272 BK/VT
B26 Crankshaft Position Sensor
1271 BK/BU
1272 BK/VT
X125
B107 Accelerator Pedal Position Sensor
2752 BK/BN
Q38 Throttle Body
469 BK/GN
B74 Manifold Absolute Pressure Sensor
X3 37
X1 30

Engine Controls Schematics (L84 / L87) (Engine Data Sensors - Oxygen Sensors (FHS))


LOC
DESC
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F88UA 15A
F89UA 15A
H3
H4
X3
5294 VT/BU
5293 VT/BU
J154
J163
B52F Heated Oxygen Sensor - Bank 2 Sensor 2
B52D Heated Oxygen Sensor - Bank 1 Sensor 2
B52E Heated Oxygen Sensor - Bank 2 Sensor 1
B52C Heated Oxygen Sensor - Bank 1 Sensor 1
1
2
3
4
3221 YE/BU
3220 VT/GN
3223 WH/BN
3121 WH/YE
3120 VT/BU
3122 GY/WH
3211 YE/WH
3210 VT/WH
3212 GN/YE
3111 WH/BK
3110 VT/GY
3113 GY/WH
46
47
33
66
67
53
16
15
14
27
26
1
11
10
17
IGN
X2
K20 Engine Control Module

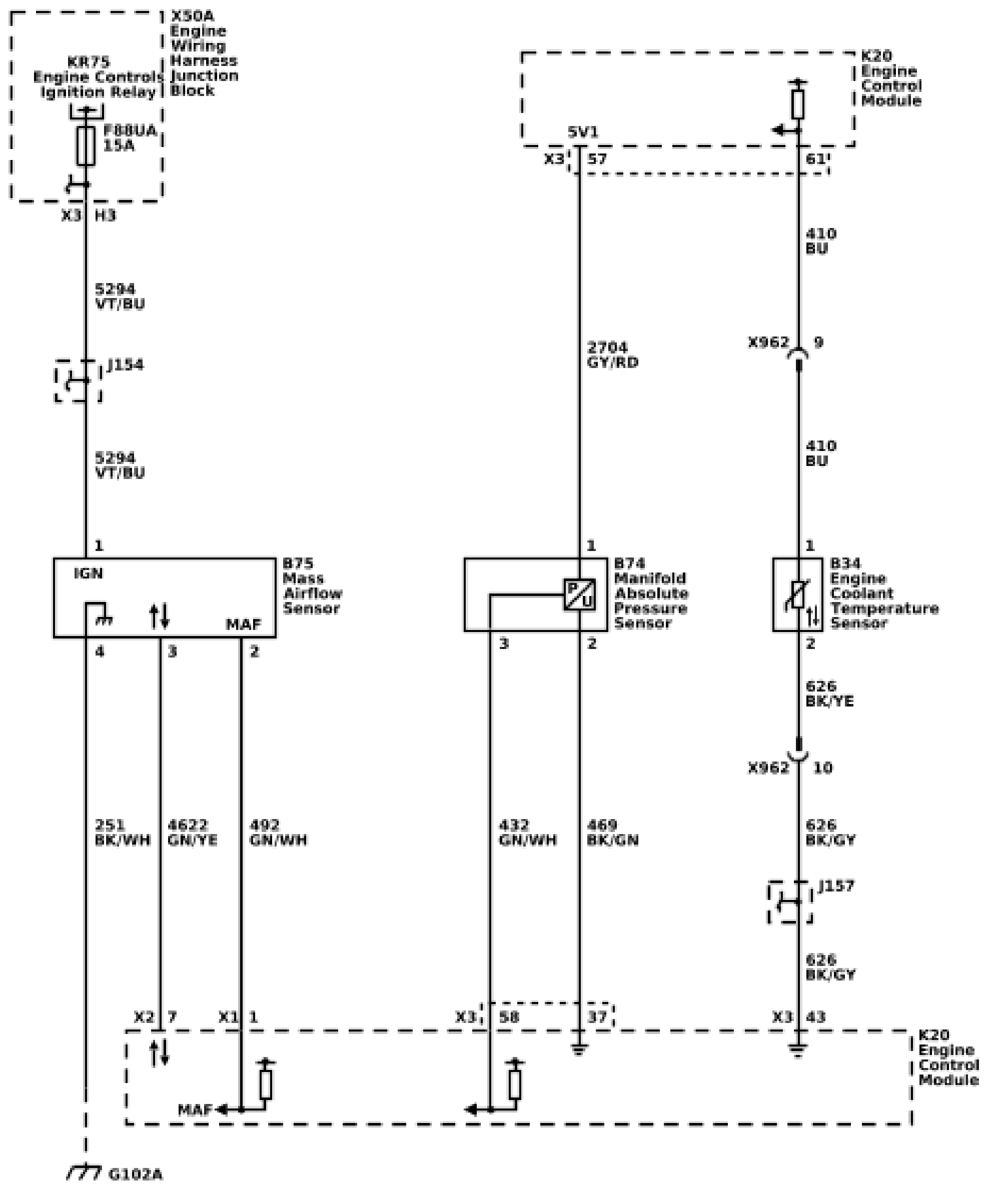
6846986

Engine Controls Schematics (L84 / L87) (Engine Data Sensors - Oxygen Sensors (FJW))


LOC
DESC
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F89UA 15A
F88UA 15A
H3
H4
X3
5293 VT/BU
5294 VT/BU
J154
J163
B52F Heated Oxygen Sensor - Bank 2 Sensor 2
B52D Heated Oxygen Sensor - Bank 1 Sensor 2
B52E Heated Oxygen Sensor - Bank 2 Sensor 1
B52C Heated Oxygen Sensor - Bank 1 Sensor 1
1
2
3
4
5
6
9
3221 YE/BU 46
3220 VT/GN 47
3223 WH/BN 33
3121 WH/YE 66
3120 VT/BU 67
3122 GY/WH 53
3212 GN/YE 1
2570 YE/WH 49
2572 BU 48
2571 WH 68
2573 BN/GY 69
3113 GY/WH 17
6933 BN/WH 23
6935 GN 22
6934 BN 24
6936 YE/GY 25
X2
K20 Engine Control Module

6846987

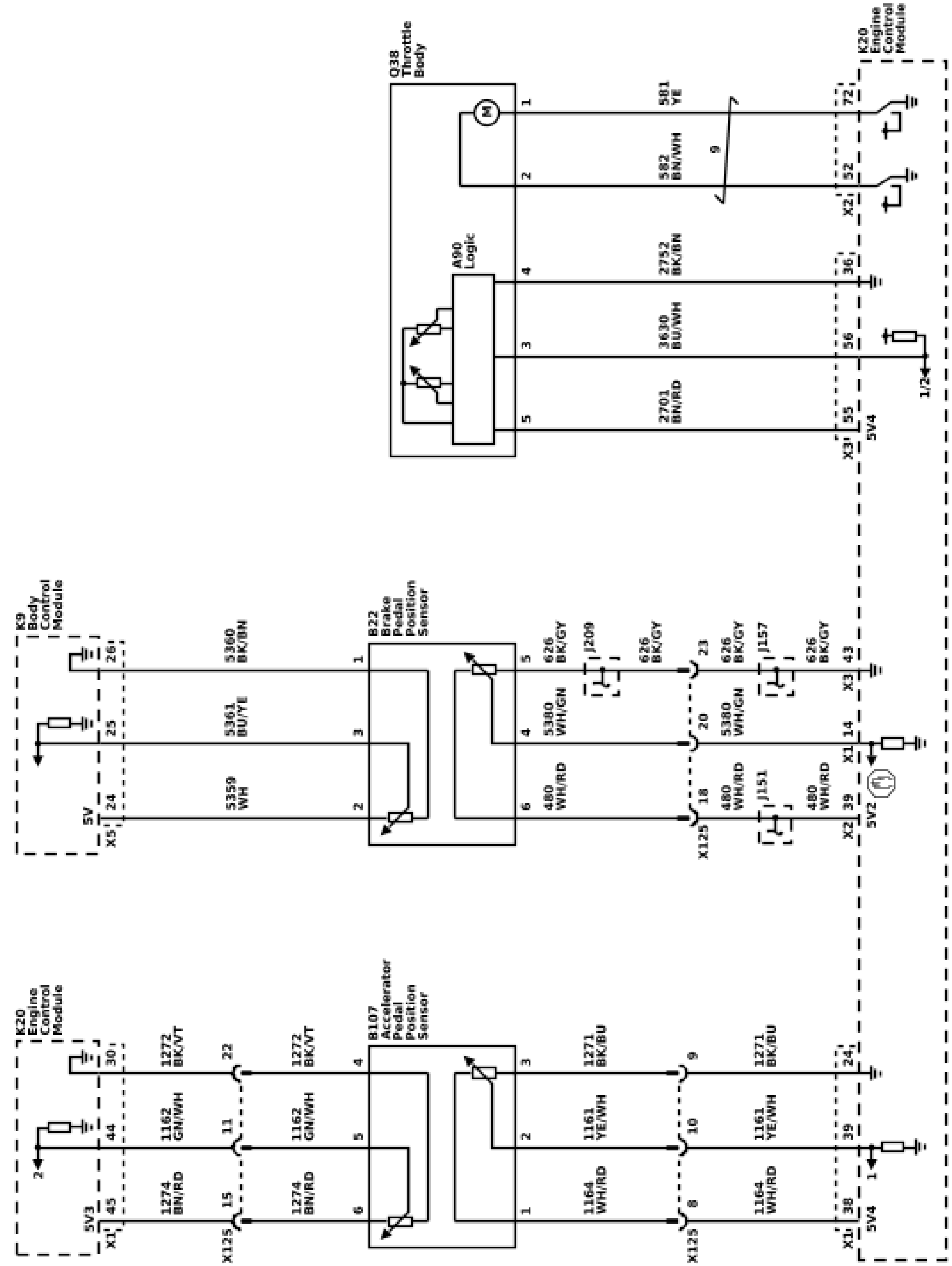
Engine Controls Schematics (L84 / L87) (Engine Data Sensors - Pressure and Temperature)


X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F88UA 15A
X3 H3
5294 VT/BU
J154
5294 VT/BU
1
IGN
B75 Mass Airflow Sensor
MAF
4
3
2
251 BK/WH
4622 GN/YE
492 GN/WH
X2 7
X1 1
MAF
G102A
K20 Engine Control Module
5V1
X3 57
61
410 BU
2704 GY/RD
X962 9
410 BU
1
1
B74 Manifold Absolute Pressure Sensor
P U
3
2
B34 Engine Coolant Temperature Sensor
2
626 BK/YE
X962 10
432 GN/WH
469 BK/GN
626 BK/GY
J157
626 BK/GY
X3 58
37
X3 43
K20 Engine Control Module

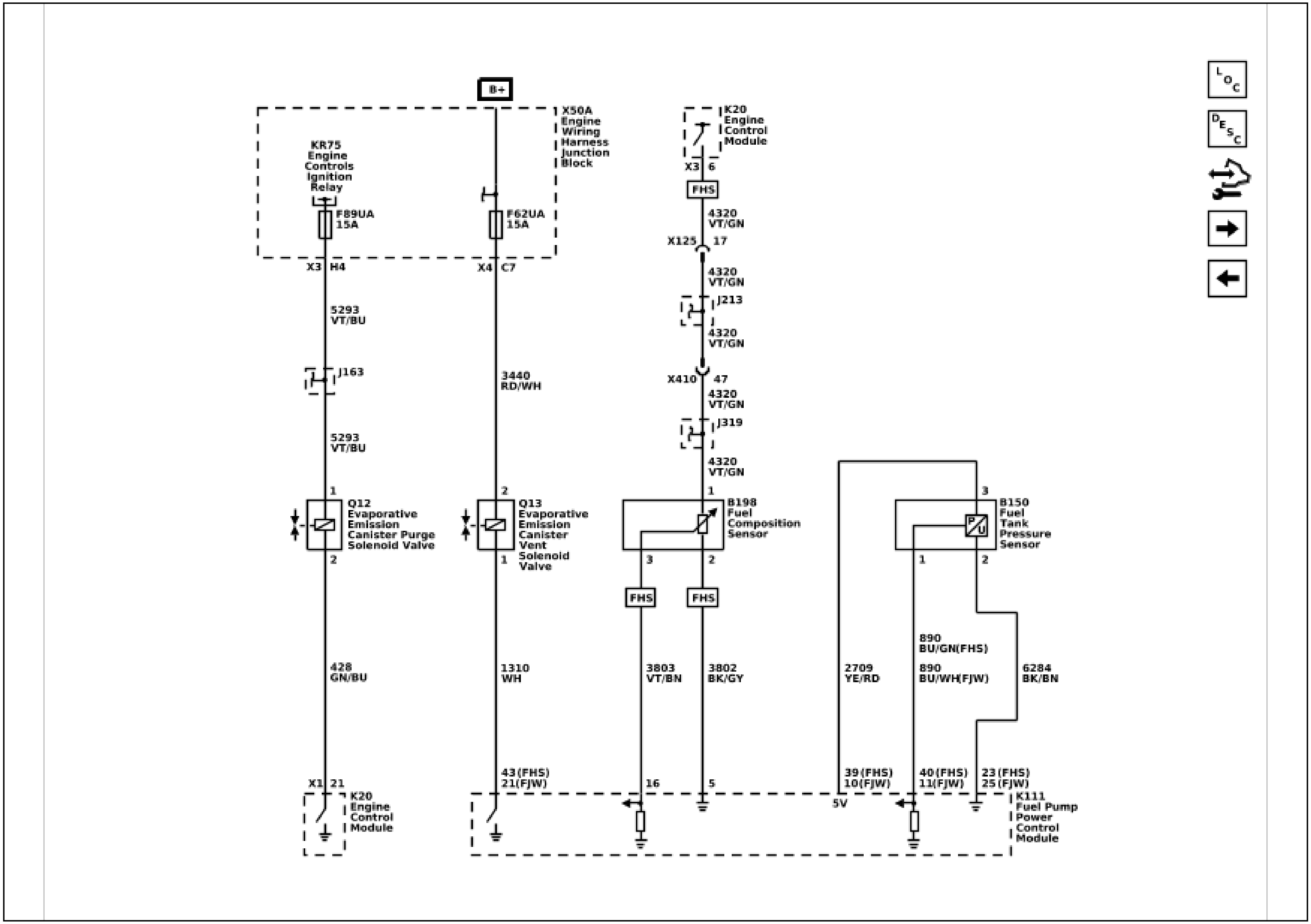
6846988

Engine Controls Schematics (L84 / L87) (Engine Data Sensors - Throttle Controls and Override)

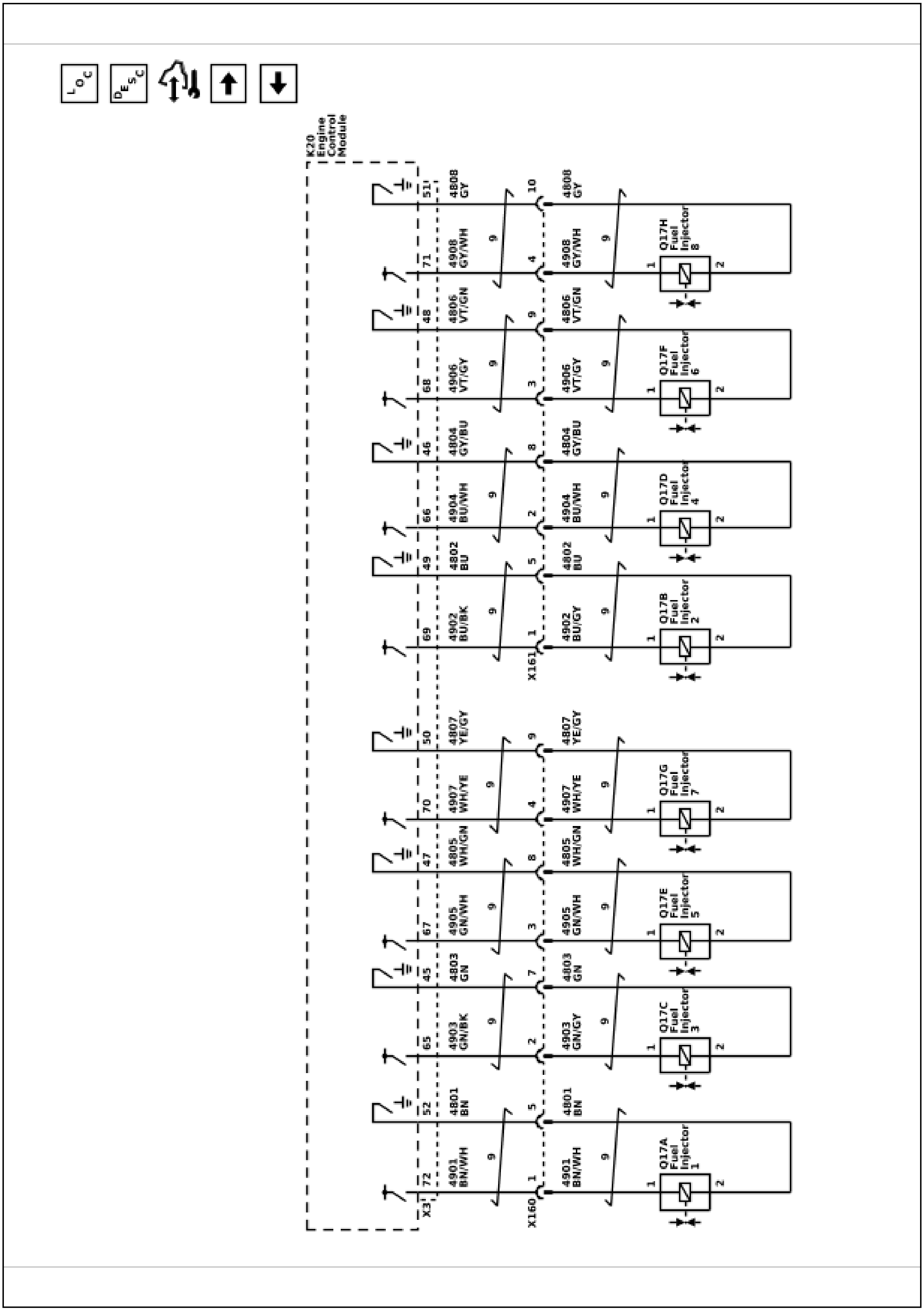
6846989


Q38 Throttle Body
M
A90 Logic
1
2
4
3
5
581 YE
582 BN/WH
2752 BK/BN
3630 BU/WH
2701 BN/RD
9
X2
72
52
X3
36
56
55
5V4
1/2
K20 Engine Control Module
K9 Body Control Module
X5
26
25
24
5V
5360 BK/BN
5361 BU/YE
5359 WH
B22 Brake Pedal Position Sensor
1
3
2
5
4
6
626 BK/GY
5380 WH/GN
480 WH/RD
J209
X125
23
20
18
J157
J151
X3
43
X1
14
X2
39
5V2
K20 Engine Control Module
X1
30
44
45
5V3
2
1272 BK/VT
1162 GN/WH
1274 BN/RD
X125
22
11
15
B107 Accelerator Pedal Position Sensor
4
5
6
3
2
1
1271 BK/BU
1161 YE/WH
1164 WH/RD
X125
9
10
8
X1
24
39
38
1
5V4

Engine Controls Schematics (L84 / L87) (Fuel Controls - Evaporative Emissions Controls)

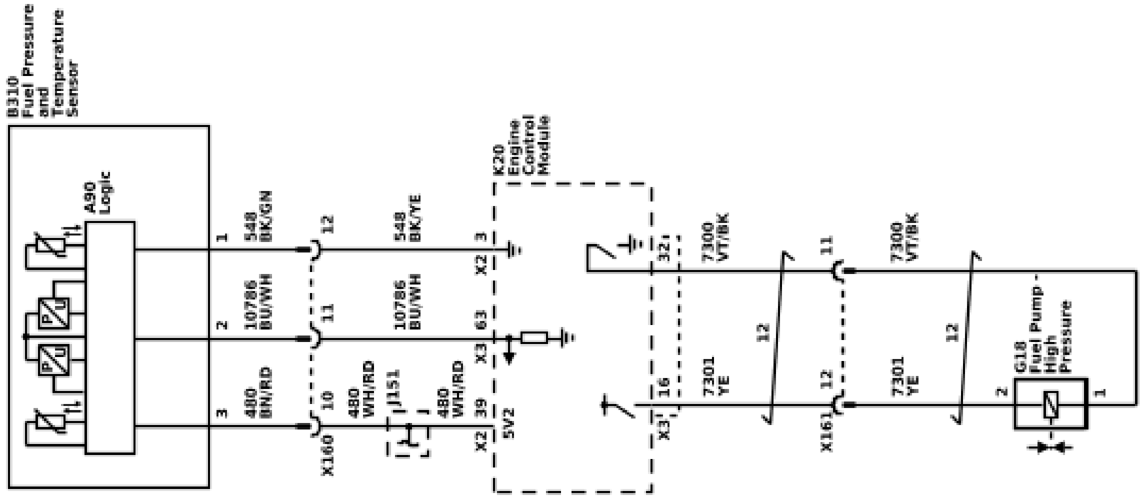

B+
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F89UA 15A
F62UA 15A
X3 H4
X4 C7
5293 VT/BU
J163
5293 VT/BU
3440 RD/WH
1
Q12 Evaporative Emission Canister Purge Solenoid Valve
2
2
Q13 Evaporative Emission Canister Vent Solenoid Valve
1
428 GN/BU
1310 WH
X1 21
K20 Engine Control Module
43 (FHS) 21(FJW)
K20 Engine Control Module
X3 6
FHS
4320 VT/GN
X125 17
4320 VT/GN
J213
4320 VT/GN
X410 47
4320 VT/GN
J319
4320 VT/GN
1
B198 Fuel Composition Sensor
3
2
FHS
FHS
3803 VT/BN
3802 BK/GY
16
5
3
B150 Fuel Tank Pressure Sensor
1
2
890 BU/GN(FHS)
890 BU/WH(FJW)
2709 YE/RD
6284 BK/BN
39 (FHS) 10(FJW)
40 (FHS) 11(FJW)
23 (FHS) 25 (FJW)
5V
K111 Fuel Pump Power Control Module
6846990

Engine Controls Schematics (L84 / L87) (Fuel Controls - Fuel Injectors)

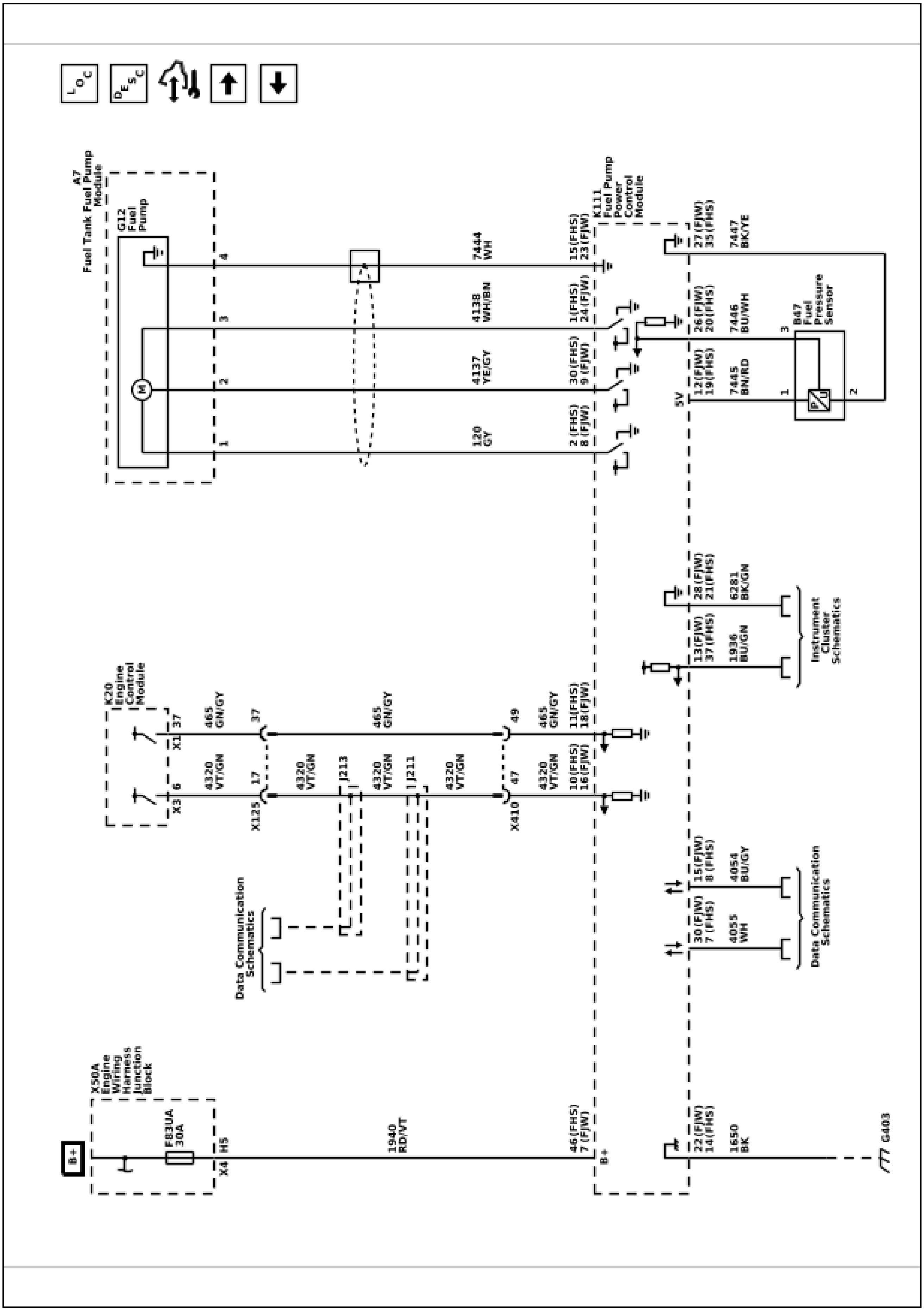

6846991
K20 Engine Control Module
X3
72
4901 BN/WH
52
4801 BN
65
4903 GN/BK
45
4803 GN
67
4905 GN/WH
47
4805 WH/GN
70
4907 WH/YE
50
4807 YE/GY
69
4902 BU/BK
49
4802 BU
66
4904 BU/WH
46
4804 GY/BU
68
4906 VT/GY
48
4806 VT/GN
71
4908 GY/WH
51
4808 GY
9
X160
1
5
2
7
3
8
4
9
X161
1
5
2
8
3
9
4
10
4901 BN/WH
4801 BN
4903 GN/GY
4803 GN
4905 GN/WH
4805 WH/GN
4907 WH/YE
4807 YE/GY
4902 BU/GY
4802 BU
4904 BU/WH
4804 GY/BU
4906 VT/GY
4806 VT/GN
4908 GY/WH
4808 GY
Q17A Fuel Injector 1
Q17C Fuel Injector 3
Q17E Fuel Injector 5
Q17G Fuel Injector 7
Q17B Fuel Injector 2
Q17D Fuel Injector 4
Q17F Fuel Injector 6
Q17H Fuel Injector 8
1
2

Engine Controls Schematics (L84 / L87) (Fuel Controls - High Pressure)

6846992

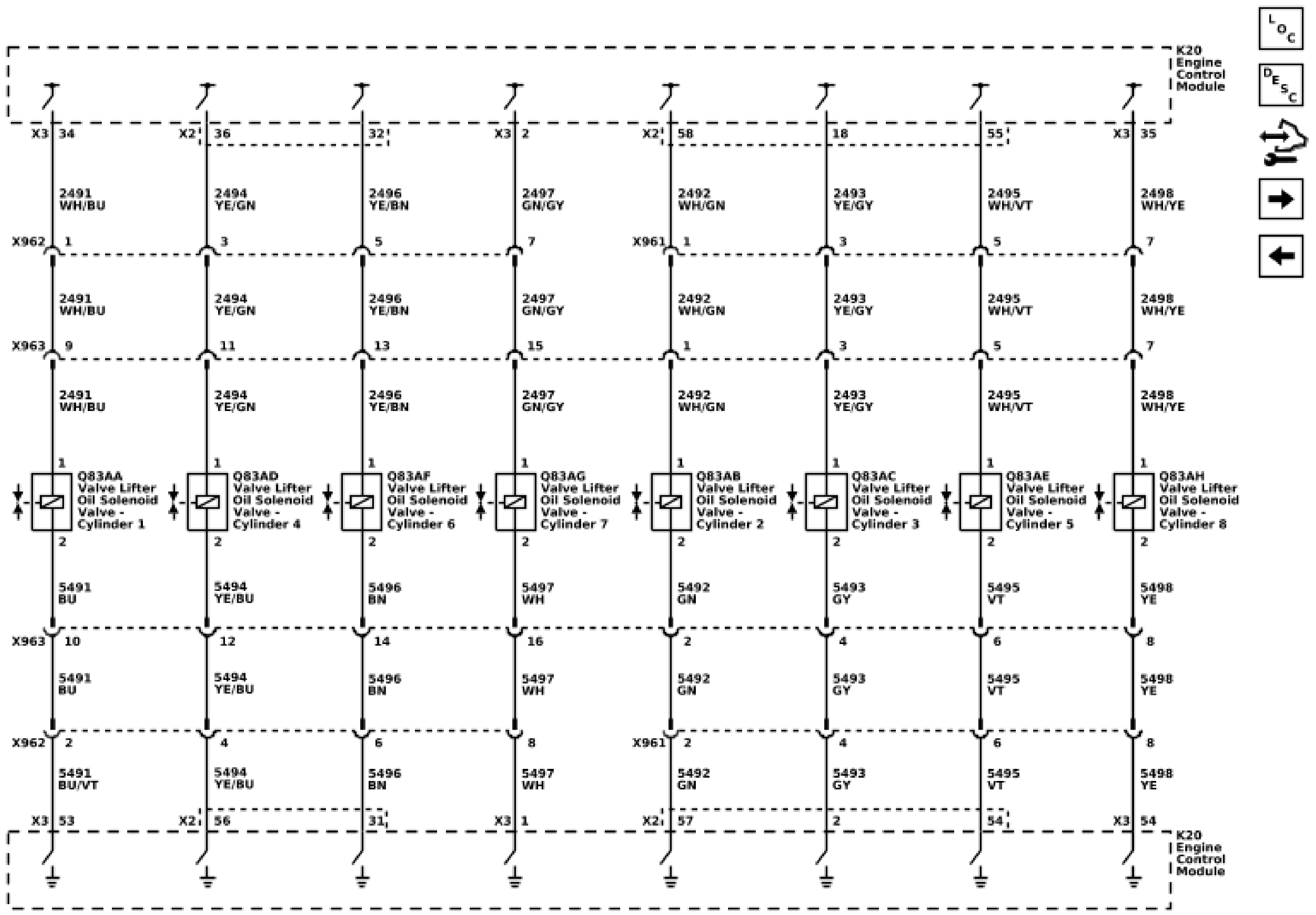

B310
Fuel Pressure and Temperature Sensor
A90
Logic
1
548
BK/GN
2
10786
BU/WH
3
480
BN/RD
12
11
10
X160
548
BK/YE
10786
BU/WH
480
WH/RD
J151
480
WH/RD
X2 3
X3 63
X2 39
5V2
K20
Engine Control Module
32
X3
16
7300
VT/BK
7301
YE
12
11
12
X161
7300
VT/BK
7301
YE
12
G18
Fuel Pump - High Pressure
2
1

Engine Controls Schematics (L84 / L87) (Fuel Controls - Low Pressure)



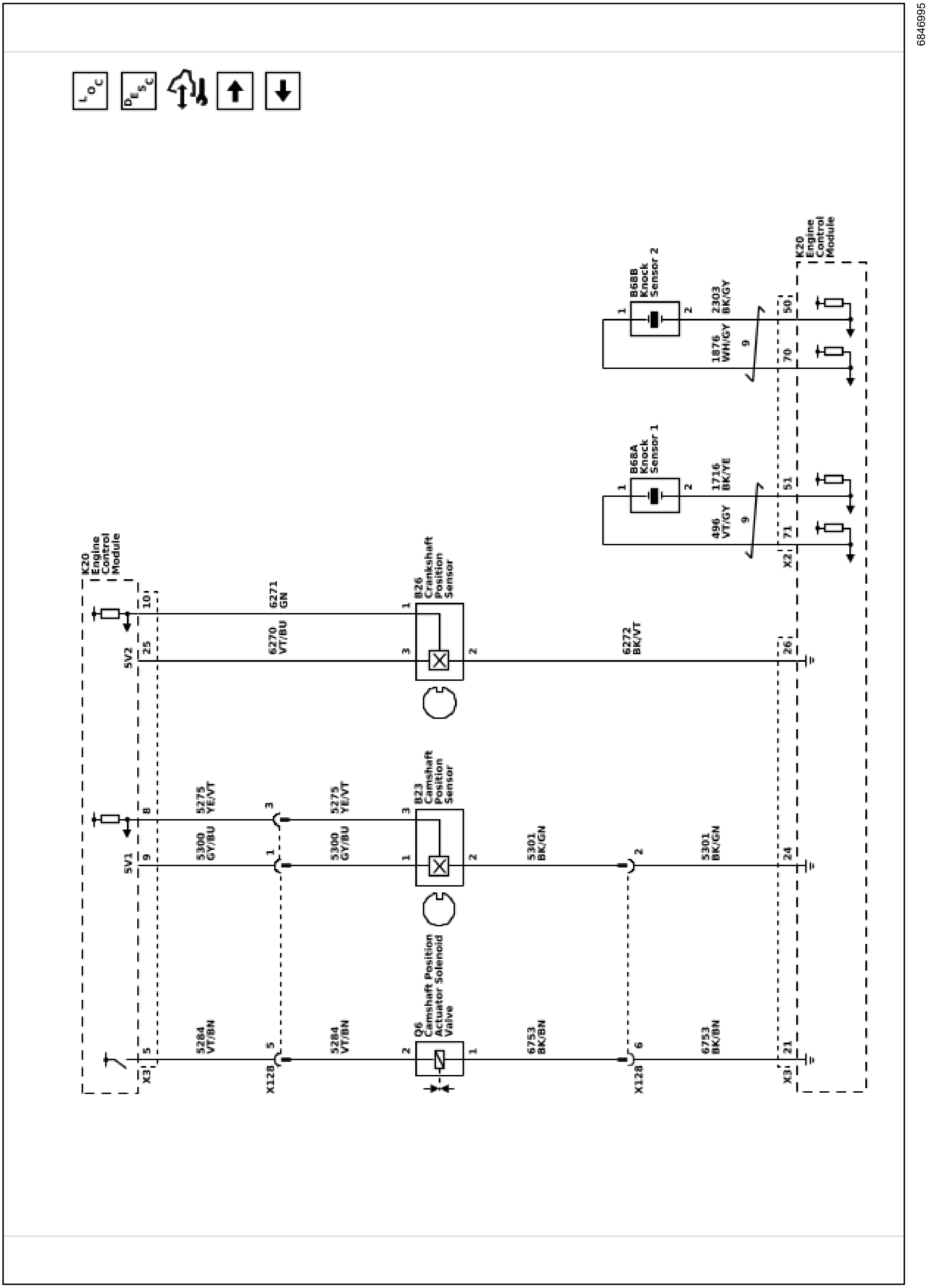
6846993
A7 Fuel Tank Fuel Pump Module
G12 Fuel Pump
M
4
3
2
1
7444 WH
4138 WH/BN
4137 YE/GY
120 GY
15(FHS) 23(FJW)
1(FHS) 24(FJW)
30(FHS) 9(FJW)
2(FHS) 8(FJW)
K111 Fuel Pump Power Control Module
27(FJW) 35(FHS)
7447 BK/YE
26(FJW) 20(FHS)
7446 BU/WH
12(FJW) 19(FHS)
7445 BN/RD
5V
B47 Fuel Pressure Sensor
3
1
2
28(FJW) 21(FHS)
6281 BK/GN
13(FJW) 37(FHS)
1936 BU/GN
Instrument Cluster Schematics
K20 Engine Control Module
X1 37
X3 6
465 GN/GY
4320 VT/GN
37
17
X125
J213
J211
49
47
X410
11(FHS) 18(FJW)
10(FHS) 16(FJW)
Data Communication Schematics
15(FJW) 8(FHS)
4054 BU/GY
30(FJW) 7(FHS)
4055 WH
Data Communication Schematics
X50A Engine Wiring Harness Junction Block
B+
FB3UA 30A
X4 H5
1940 RD/VT
46(FHS) 7(FJW)
B+
22(FJW) 14(FHS)
1650 BK
G403

Engine Controls Schematics (L84 / L87) (Device Controls - Displacement on Demand)

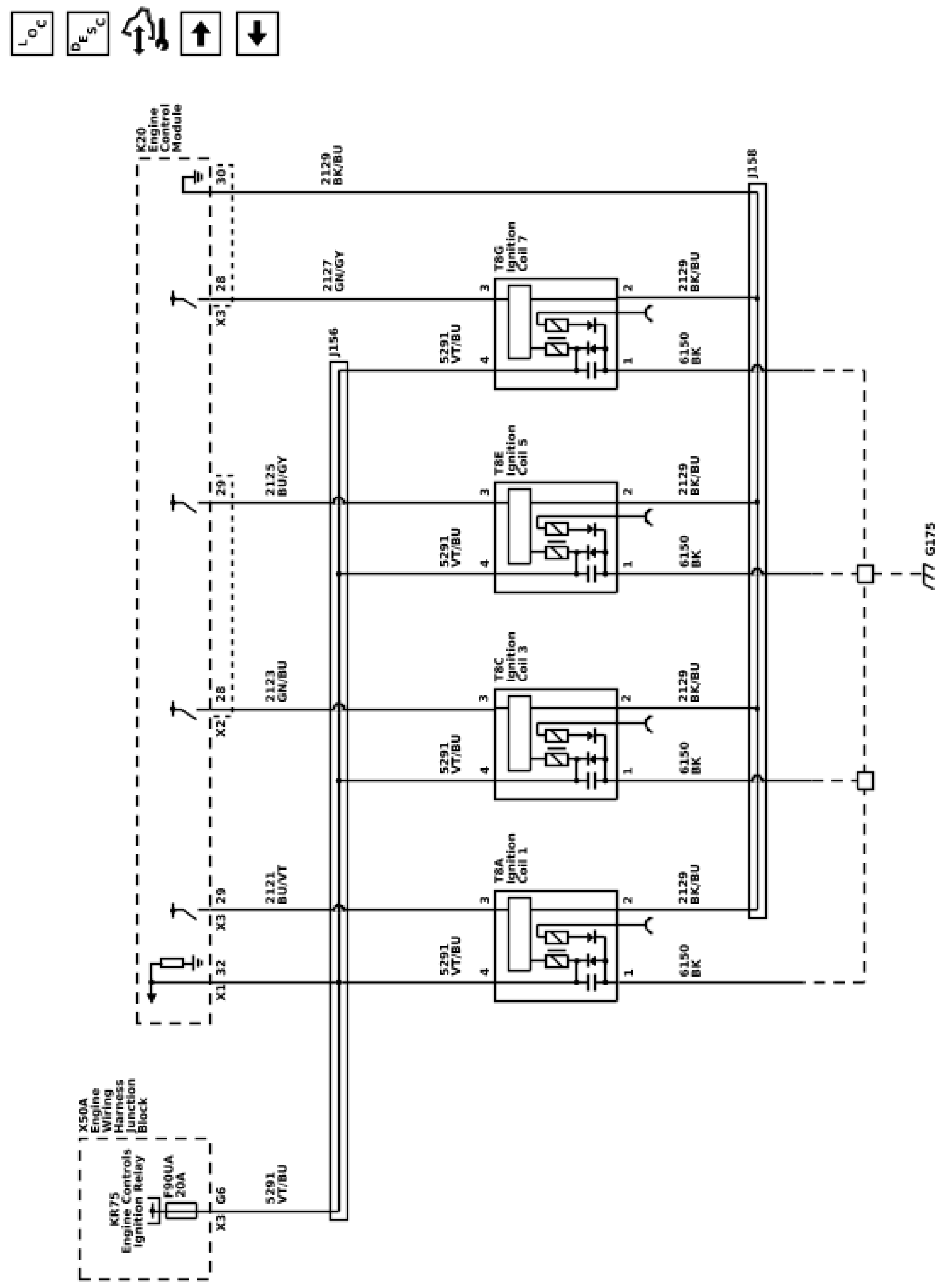

K20 Engine Control Module
X3 34
X2 36
32
X3 2
X2 58
18
55
X3 35
2491 WH/BU
2494 YE/GN
2496 YE/BN
2497 GN/GY
2492 WH/GN
2493 YE/GY
2495 WH/VT
2498 WH/YE
X962 1
3
5
7
X961 1
3
5
7
X963 9
11
13
15
1
3
5
7
Q83AA Valve Lifter Oil Solenoid Valve - Cylinder 1
Q83AD Valve Lifter Oil Solenoid Valve - Cylinder 4
Q83AF Valve Lifter Oil Solenoid Valve - Cylinder 6
Q83AG Valve Lifter Oil Solenoid Valve - Cylinder 7
Q83AB Valve Lifter Oil Solenoid Valve - Cylinder 2
Q83AC Valve Lifter Oil Solenoid Valve - Cylinder 3
Q83AE Valve Lifter Oil Solenoid Valve - Cylinder 5
Q83AH Valve Lifter Oil Solenoid Valve - Cylinder 8
1
2
5491 BU
5494 YE/BU
5496 BN
5497 WH
5492 GN
5493 GY
5495 VT
5498 YE
X963 10
12
14
16
2
4
6
8
X962 2
4
6
8
X961 2
4
6
8
5491 BU/VT
5494 YE/BU
5496 BN
5497 WH
5492 GN
5493 GY
5495 VT
5498 YE
X3 53
X2 56
31
X3 1
X2 57
2
54
X3 54
K20 Engine Control Module
LOC
DESC

6846994

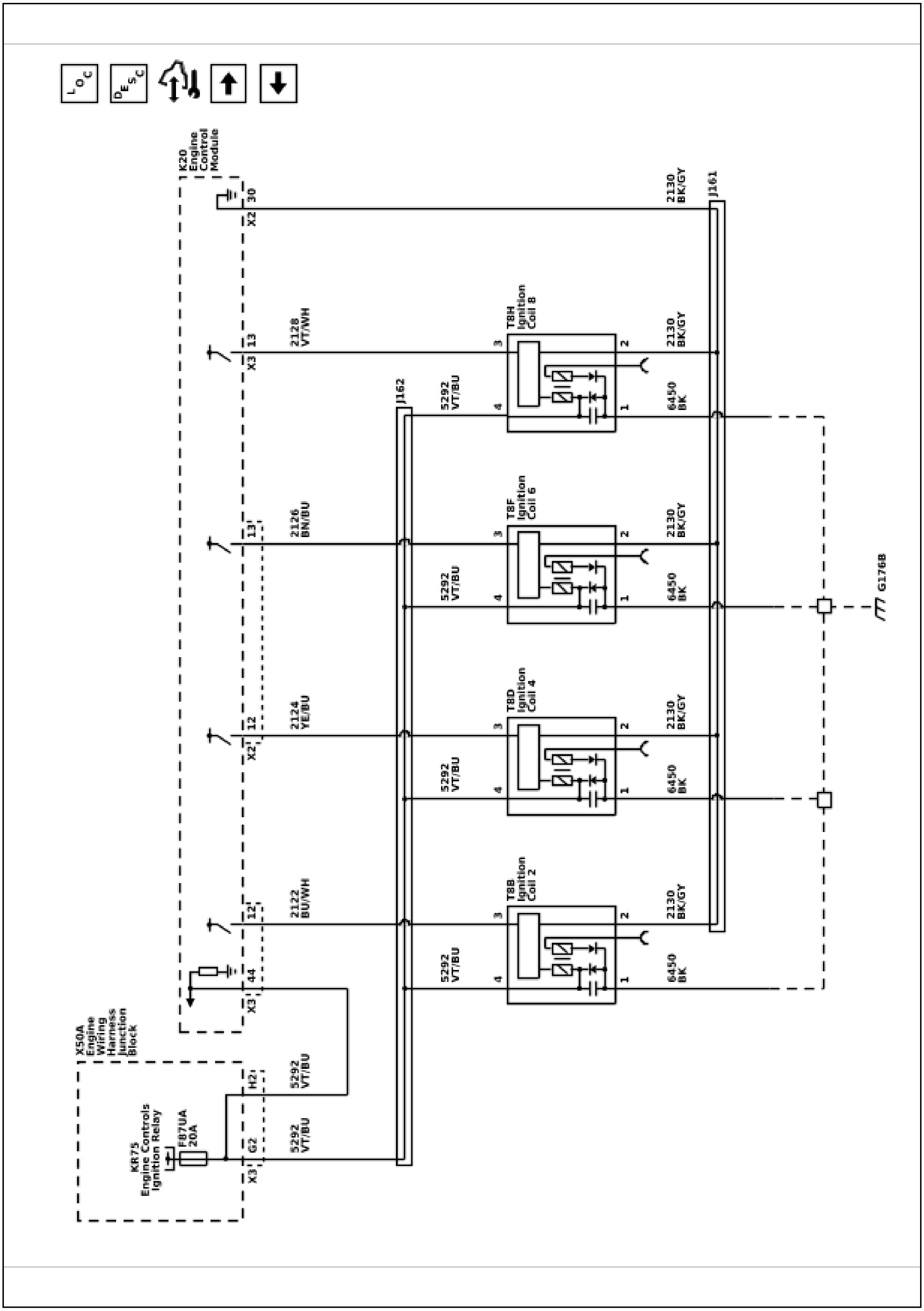
Engine Controls Schematics (L84 / L87) (Ignition Controls - Crankshaft Position, Camshaft Position, Knock Sensors, and Camshaft Position Actuator)


6846995
LOC
DESC
K20 Engine Control Module
5V2
25
10
6271 GN
6270 VT/BU
B26 Crankshaft Position Sensor
1
3
2
6272 BK/VT
26
5V1
9
8
5300 GY/BU
5275 YE/VT
3
1
B23 Camshaft Position Sensor
2
5301 BK/GN
24
X3
5
5284 VT/BN
X128
Q6 Camshaft Position Actuator Solenoid Valve
6753 BK/BN
6
21
X3
B68A Knock Sensor 1
1716 BK/YE
496 VT/GY
9
51
71
X2
B68B Knock Sensor 2
2303 BK/GY
1876 WH/GY
9
50
70
K20 Engine Control Module

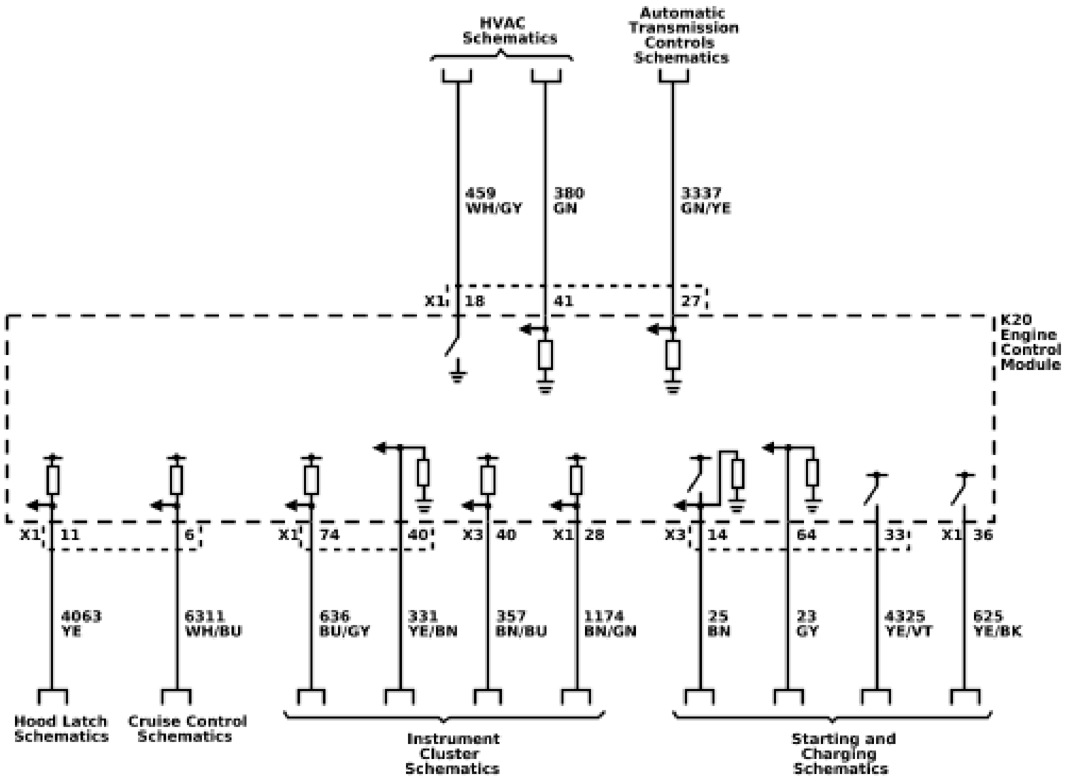
Engine Controls Schematics (L84 / L87) (Ignition Controls - Ignition Coils Bank 1)


6846996
K20 Engine Control Module
X3 30
2129 BK/BU
J158
X3 28
2127 GN/GY
T8G Ignition Coil 7
3
2
4
1
5291 VT/BU
2129 BK/BU
6150 BK
J156
29
2125 BU/GY
T8E Ignition Coil 5
G175
X2 28
2123 GN/BU
T8C Ignition Coil 3
X3 29
2121 BU/VT
T8A Ignition Coil 1
X1 32
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F90UA 20A
X3 G6
5291 VT/BU

Engine Controls Schematics (L84 / L87) (Ignition Controls - Ignition Coils Bank 2)


6846997
K20 Engine Control Module
X2 30
2130 BK/GY
J161
X3 13
2128 VT/WH
T8H Ignition Coil 8
3
2
4
1
J162
5292 VT/BU
6450 BK
13
2126 BN/BU
T8F Ignition Coil 6
G176B
X2 12
2124 YE/BU
T8D Ignition Coil 4
12
2122 BU/WH
T8B Ignition Coil 2
X3 44
X50A Engine Wiring Harness Junction Block
H2
G2
X3
KR75 Engine Controls Ignition Relay
F87UA 20A

Engine Controls Schematics (L84 / L87) (Controlled/Monitored Subsystem References)


HVAC Schematics
Automatic Transmission Controls Schematics
459 WH/GY
380 GN
3337 GN/YE
X1 18
41
27
K20 Engine Control Module
X1 11
6
X1 74
40
X3 40
X1 28
X3 14
64
33
X1 36
4063 YE
6311 WH/BU
636 BU/GY
331 YE/BN
357 BN/BU
1174 BN/GN
25 BN
23 GY
4325 YE/VT
625 YE/BK
Hood Latch Schematics
Cruise Control Schematics
Instrument Cluster Schematics
Starting and Charging Schematics
6846998

Description and Operation

Heated Oxygen Sensor Description and Operation

The engine control module (ECM) controls a closed loop air/fuel metering system in order to provide the best possible combination of driveability, fuel economy, and emission control. The ECM monitors the heated oxygen sensor (HO2S) signal and adjusts the fuel delivery based on the signal while in closed loop operation. The short term fuel trim values change rapidly in response to the HO2S signal. These changes fine tune the engine fueling. The long term fuel trim values change in response to trends in the short term fuel trim. The long term fuel trim makes coarse adjustments to fueling in order to re-center and restore control to short term fuel trim.

Heated Oxygen Sensor

When the engine is started, the ECM operates in an Open Loop mode, ignoring the HO2S signal voltage while calculating the air-to-fuel ratio. While the engine runs, the HO2S heats up and begins to generate a voltage within a range of 0–1,000 mV. Once sufficient HO2S voltage fluctuation is observed by the ECM, Closed Loop mode is entered. The ECM uses the HO2S voltage to determine the air-to-fuel ratio. An HO2S voltage that increases toward 1,000 mV indicates a rich fuel mixture. An HO2S voltage that decreases toward 0 mV indicates a lean fuel mixture.

Heated oxygen sensors are used for fuel control and post catalyst monitoring. Each HO2S compares the oxygen content of the surrounding air with the oxygen content in the exhaust stream. The HO2S must reach operating temperature to provide an accurate voltage signal. A heating element inside the HO2S minimizes the time required for the sensor to reach operating temperature. This allows the system to enter Closed Loop earlier and the ECM to calculate the air-to-fuel ratio sooner. Voltage is provided to the heater by an ignition voltage circuit through a fuse. With the engine running, ground is provided to the heater by the HO2S heater low control circuit through a low side driver within the ECM. The ECM uses pulse width modulation (PWM) to control the HO2S heater operation to maintain a specific HO2S operating temperature range.

Wide Band Heated Oxygen Sensor

The wide band heated oxygen sensor (HO2S) measures the amount of oxygen in the exhaust system and provides more information than the switching style HO2S. The wide band sensor consists of an oxygen sensing cell, an oxygen pumping cell, and a heater. The exhaust gas sample passes through a diffusion gap between the sensing cell and the pumping cell. An electronic circuit within the ECM controls the pump current through the oxygen pumping cell in order to maintain a constant voltage in the oxygen sensing cell. The ECM monitors the voltage variation in the sensing cell and attempts to keep the voltage constant by increasing or decreasing the amount of current flow, or oxygen ion flow, from the pumping cell. By measuring the amount of current required to maintain the voltage in the sensing cell, the ECM can determine the concentration of oxygen in the exhaust. The HO2S pumping current is displayed as a lambda value. A lambda value of 1 is equal to a stoichiometric air fuel ratio of 14.7:1. Under normal operating conditions, the lambda value will remain around 1. When the fuel system is lean, the oxygen level will be high and the lambda signal will be high or more than 1. When the fuel system is rich, the oxygen level will be low, and the lambda signal will be low or less than 1. The ECM uses this information to maintain the correct air/fuel ratio. If the ECM detects that the HO2S signal is out of range a DTC will set.

The heating element inside each HO2S heats the sensor to bring it up to operating conditions faster. This allows the system to enter Closed Loop mode earlier and the ECM to calculate the air-to-fuel ratio sooner.

Inspection/Maintenance Description and Operation

Some state/provincial and local governments require that a vehicle pass on-board diagnostic (OBD) system tests and the Inspection/Maintenance (I/M) emission inspection in order to renew license plates. This is accomplished by viewing the I/M System monitors on a scan tool and confirming that no Permanent DTCs are set.

The OBD II system monitors all emission control systems that are on-board. The OBD II regulations require monitoring of the following:

Monitor	Diesel	Gasoline
Boost System Monitor - Since Diagnostic Trouble Codes Cleared	X	—
Catalytic Converter Monitor - Since Diagnostic Trouble Codes Cleared	X	X
Evaporative Emission Monitor - Since Diagnostic Trouble Codes Cleared	—	X
Exhaust Aftertreatment Monitor - Since Diagnostic Trouble Codes Cleared	X	—
Exhaust Gas Recirculation Valve/Camshaft Position Monitor - Since Diagnostic Trouble Codes Cleared	X	X

Monitor	Diesel	Gasoline
Exhaust Gas Sensor Monitor - Since Diagnostic Trouble Codes Cleared	X	—
Fuel System Monitor - Since Diagnostic Trouble Codes Cleared	X	X
Heated Catalytic Converter Monitor - Since Diagnostic Trouble Codes Cleared	—	X
Misfire Monitor - Since Diagnostic Trouble Codes Cleared	X	X
Oxygen Sensor Heater Monitor - Since Diagnostic Trouble Codes Cleared	—	X
Oxygen Sensor/Heated Oxygen Sensor Monitor - Since Diagnostic Trouble Codes Cleared	—	X
Particulate Filter Monitor - Since Diagnostic Trouble Codes Cleared	X	X

I/M System Status

Each system monitor requires at least one, and sometimes several diagnostic tests. The result of each test is reported by a DTC. A system monitor is Complete when either all of the DTCs comprising the monitor have run and passed, or when any one of the DTCs comprising the monitor has illuminated the malfunction indicator lamp (MIL). For example, when the Oxygen Sensor Heater Monitor indicates Complete, all of the oxygen sensor heaters have been diagnosed. If the vehicle has 4 heated oxygen sensors, all 4 heaters have been diagnosed.

Once the system monitor is complete, the I/M System Status parameter will display Complete in the value column of the scan tool. Any monitor that is not applicable to a vehicle will display Not Supported in the scan tool value column. The I/M System Status parameter will display Incomplete in the value column when any of the required tests for that system have not run. The following is a list of conditions that would set the I/M System Status monitor to Incomplete:

- The vehicle is new from the factory and has not yet been driven through the necessary drive conditions to complete the tests.
- The battery has been disconnected or discharged below operating voltage.
- The control module power or ground has been interrupted.
- The control module has been programmed.
- The control module DTCs have been cleared.

Permanent DTCs

Permanent DTCs are defined as confirmed fault codes that are currently commanding the MIL on and stored in non-volatile memory. Permanent DTCs cannot be erased by any scan tool command or by disconnecting power to the controller.

The intended use of this data is to prevent vehicles from passing an I/M inspection by disconnecting the battery or clearing codes with a scan tool prior to the inspection. The presence of Permanent DTCs at an inspection without the MIL illuminated is an indication that a proper repair was not verified by the OBD II system.

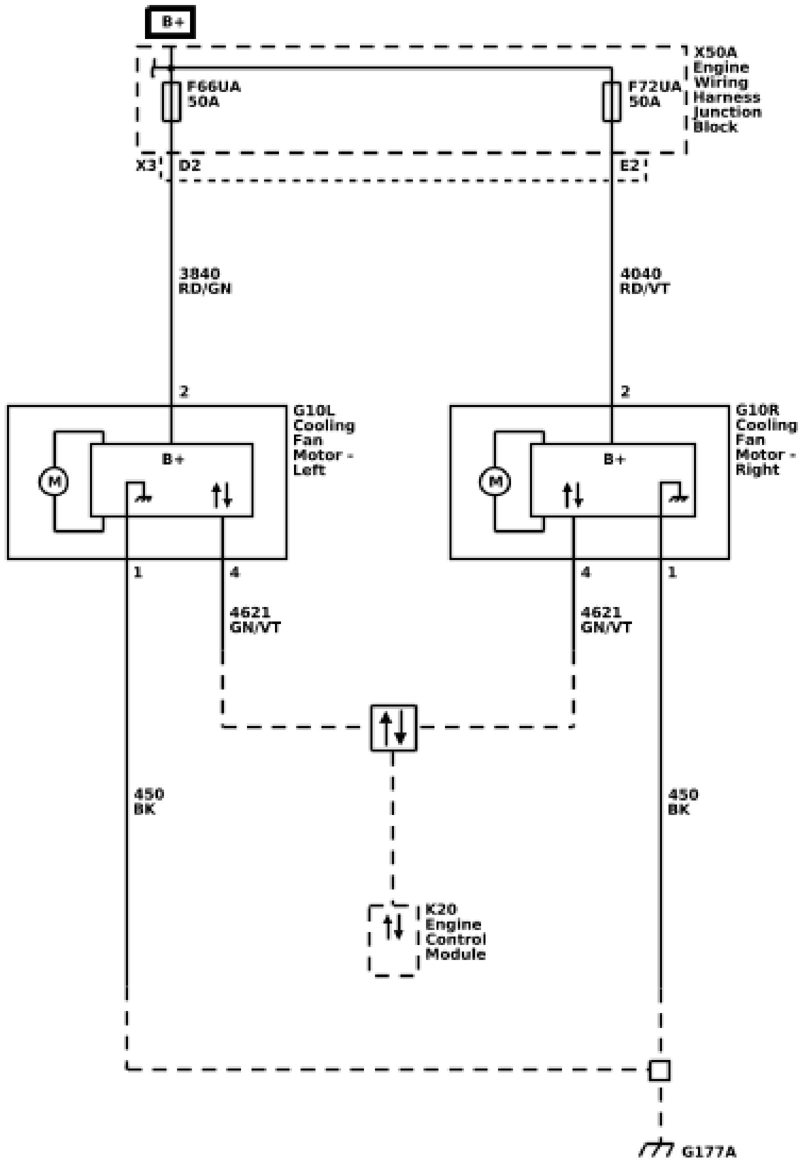
Only the OBD II system can clear Permanent DTCs. The OBD II system must determine that the malfunction that caused the Permanent DTC to be stored no longer exists and is not commanding the MIL.

- If the MIL goes out naturally due to 3 passing drive cycles (scan tool code clear is not used), then the Permanent DTC is cleared at power down of the last drive cycle.
- If a scan tool code clear is used to turn off the MIL then the Permanent DTC is not cleared, the DTC must PASS and not FAIL. The Permanent DTC is cleared at power down of the drive cycle.
- If the controller is programmed, all Permanent DTCs are cleared.

Engine Heating and Cooling

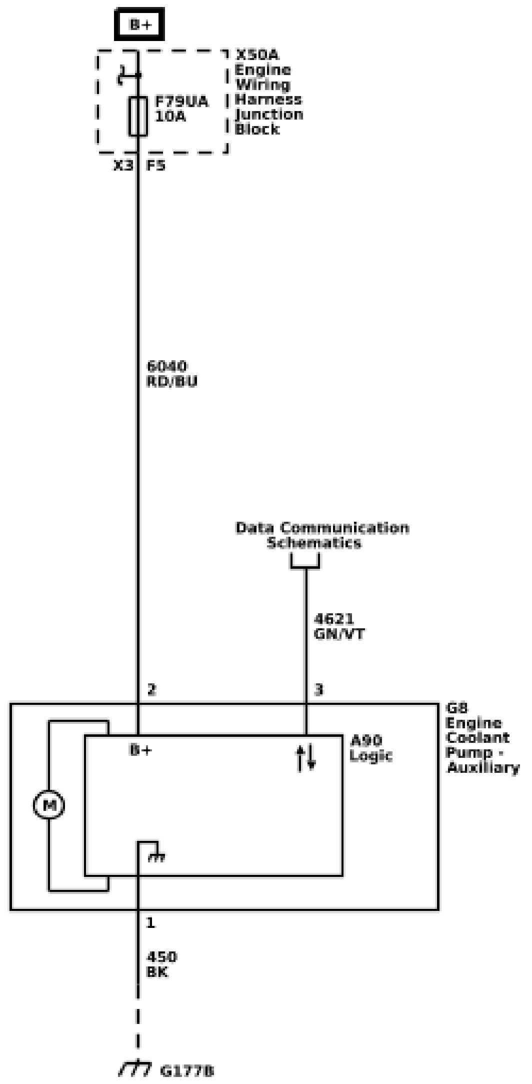
Schematic and Routing Diagrams

Engine Heating/Cooling Schematics (Engine Cooling Fans (L84 / L87))


B+
F66UA
50A
F72UA
50A
X50A
Engine
Wiring
Harness
Junction
Block
X3
D2
E2
3840
RD/GN
4040
RD/VT
2
2
G10L
Cooling
Fan
Motor -
Left
G10R
Cooling
Fan
Motor -
Right
B+
B+
M
M
1
4
4
1
4621
GN/VT
4621
GN/VT
450
BK
450
BK
K20
Engine
Control
Module
G177A

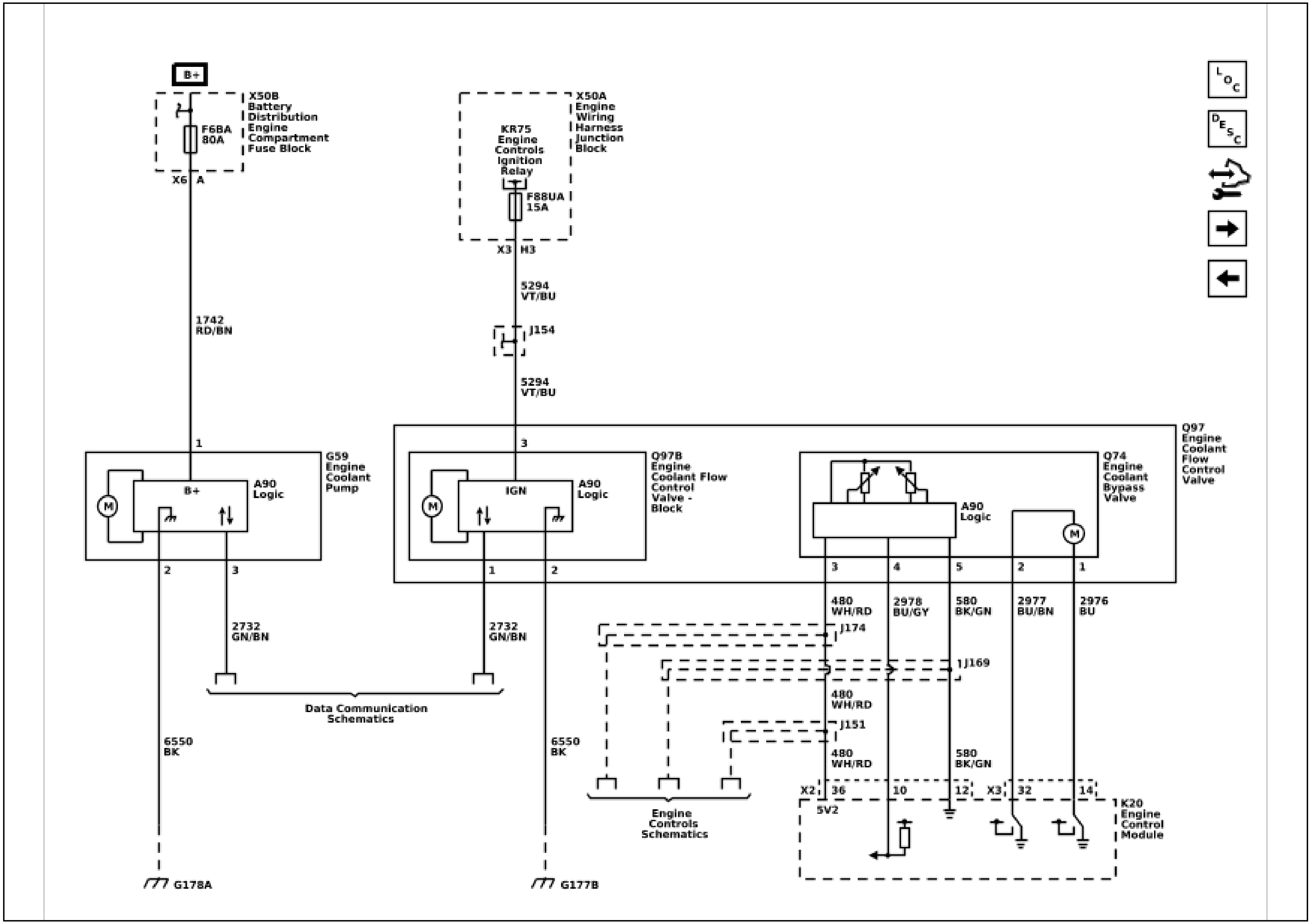
6846999

Engine Heating/Cooling Schematics (Auxiliary Engine Coolant Pump (L84 / L87 / LZ0))


B+
X50A
Engine
Wiring
Harness
Junction
Block
F79UA
10A
X3
F5
6040
RD/BU
Data Communication
Schematics
4621
GN/VT
2
3
B+
A90
Logic
G8
Engine
Coolant
Pump -
Auxiliary
M
1
450
BK
G177B

6847000

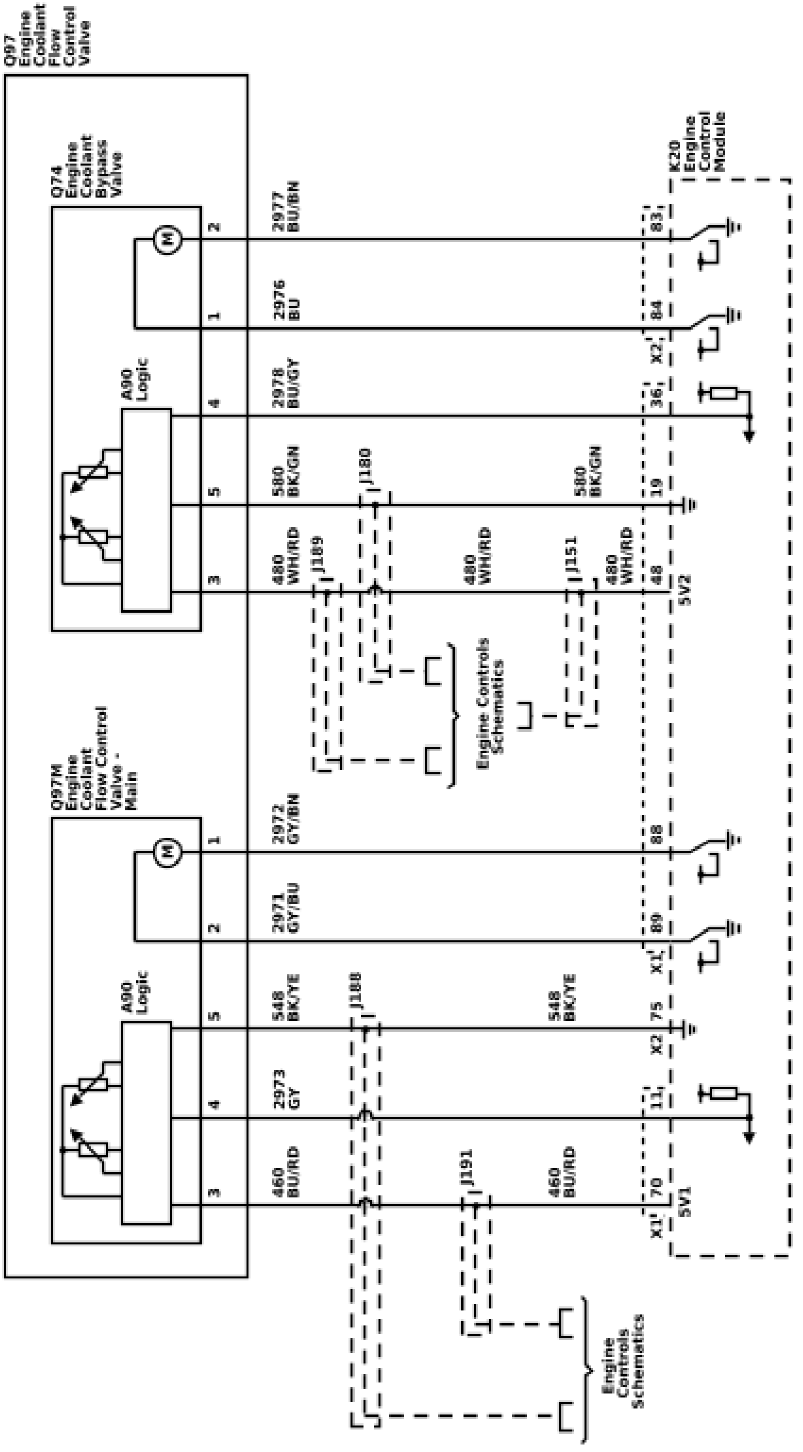
Engine Heating/Cooling Schematics (Coolant Circulation (L3B))


B+
X50B Battery Distribution Engine Compartment Fuse Block
F6BA 80A
X6 A
1742 RD/BN
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F88UA 15A
X3 H3
5294 VT/BU
J154
5294 VT/BU
G59 Engine Coolant Pump
1
B+
A90 Logic
M
2
3
2732 GN/BN
Data Communication Schematics
6550 BK
G178A
Q97 Engine Coolant Flow Control Valve
Q97B Engine Coolant Flow Control Valve - Block
3
IGN
A90 Logic
M
1
2
2732 GN/BN
6550 BK
G177B
Q74 Engine Coolant Bypass Valve
A90 Logic
M
3
4
5
2
1
480 WH/RD
2978 BU/GY
580 BK/GN
2977 BU/BN
2976 BU
J174
J169
480 WH/RD
J151
480 WH/RD
580 BK/GN
Engine Controls Schematics
X2
36
5V2
10
12
X3
32
14
K20 Engine Control Module
LOC
DESC

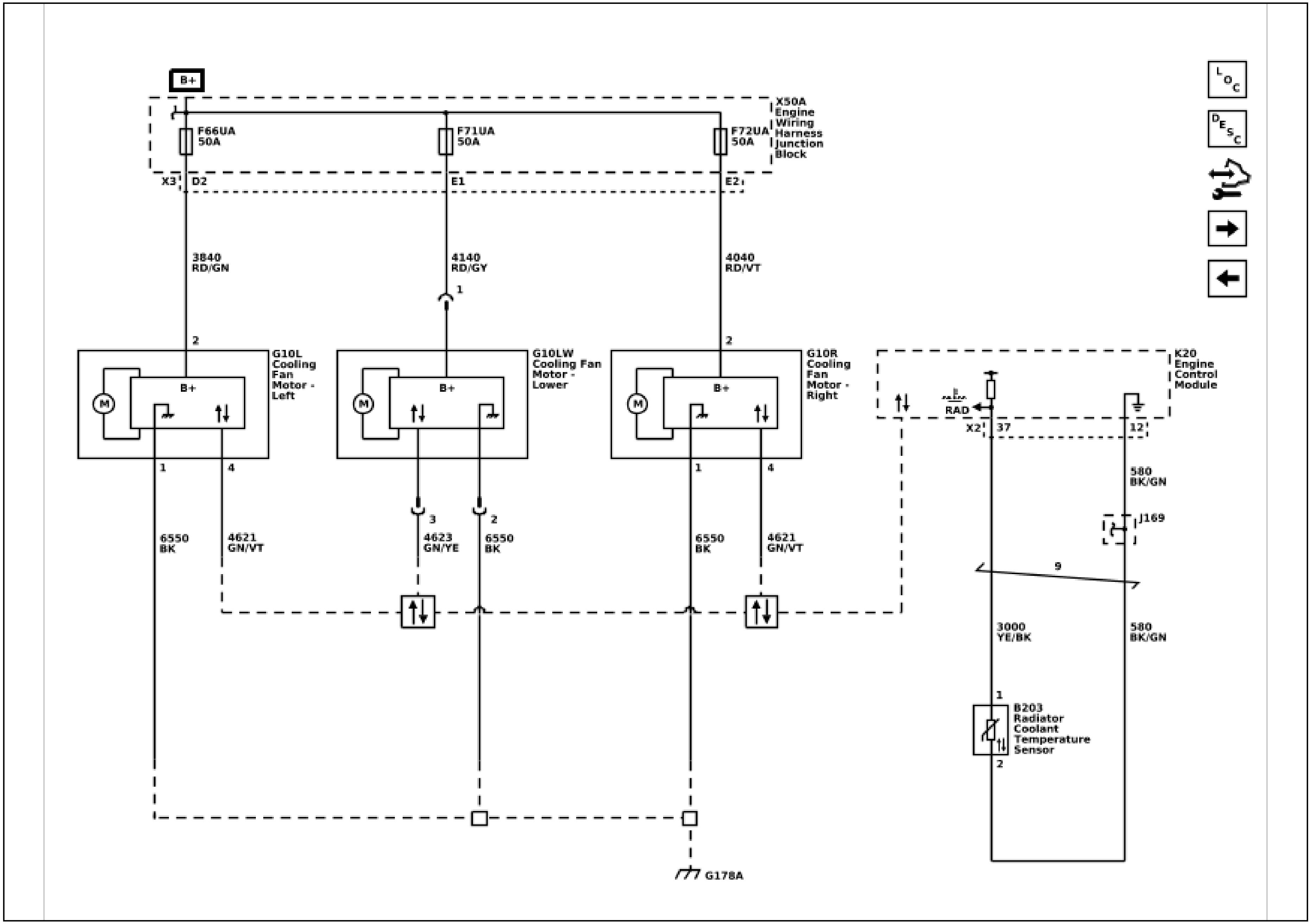
6847001

6847002

Engine Heating/Cooling Schematics (Coolant Circulation (LZ0))

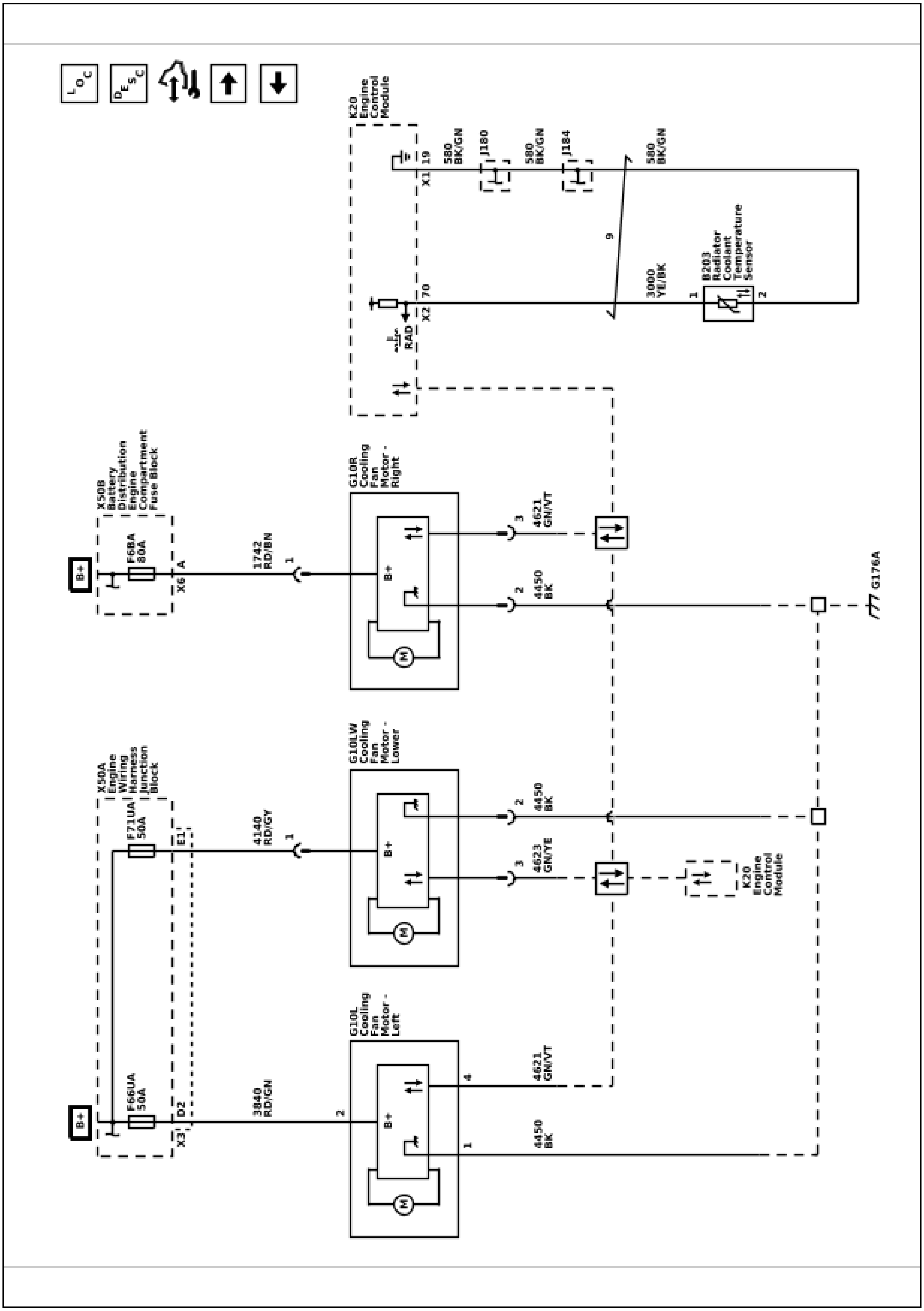

Q97 Engine Coolant Flow Control Valve
Q74 Engine Coolant Bypass Valve
A90 Logic
M
2
1
4
5
3
2977 BU/BN
2976 BU
2978 BU/GY
580 BK/GN
480 WH/RD
J180
J189
J151
580 BK/GN
480 WH/RD
480 WH/RD
Engine Controls Schematics
K20 Engine Control Module
83
84
X2
36
19
48
5V2
Q97M Engine Coolant Flow Control Valve - Main
A90 Logic
M
1
2
5
4
3
2972 GY/BN
2971 GY/BU
548 BK/YE
J188
2973 GY
460 BU/RD
J191
548 BK/YE
460 BU/RD
88
89
X1
75
X2
11
70
X1
5V1
Engine Controls Schematics

Engine Heating/Cooling Schematics (Engine Cooling Fans and Temperature (L3B))

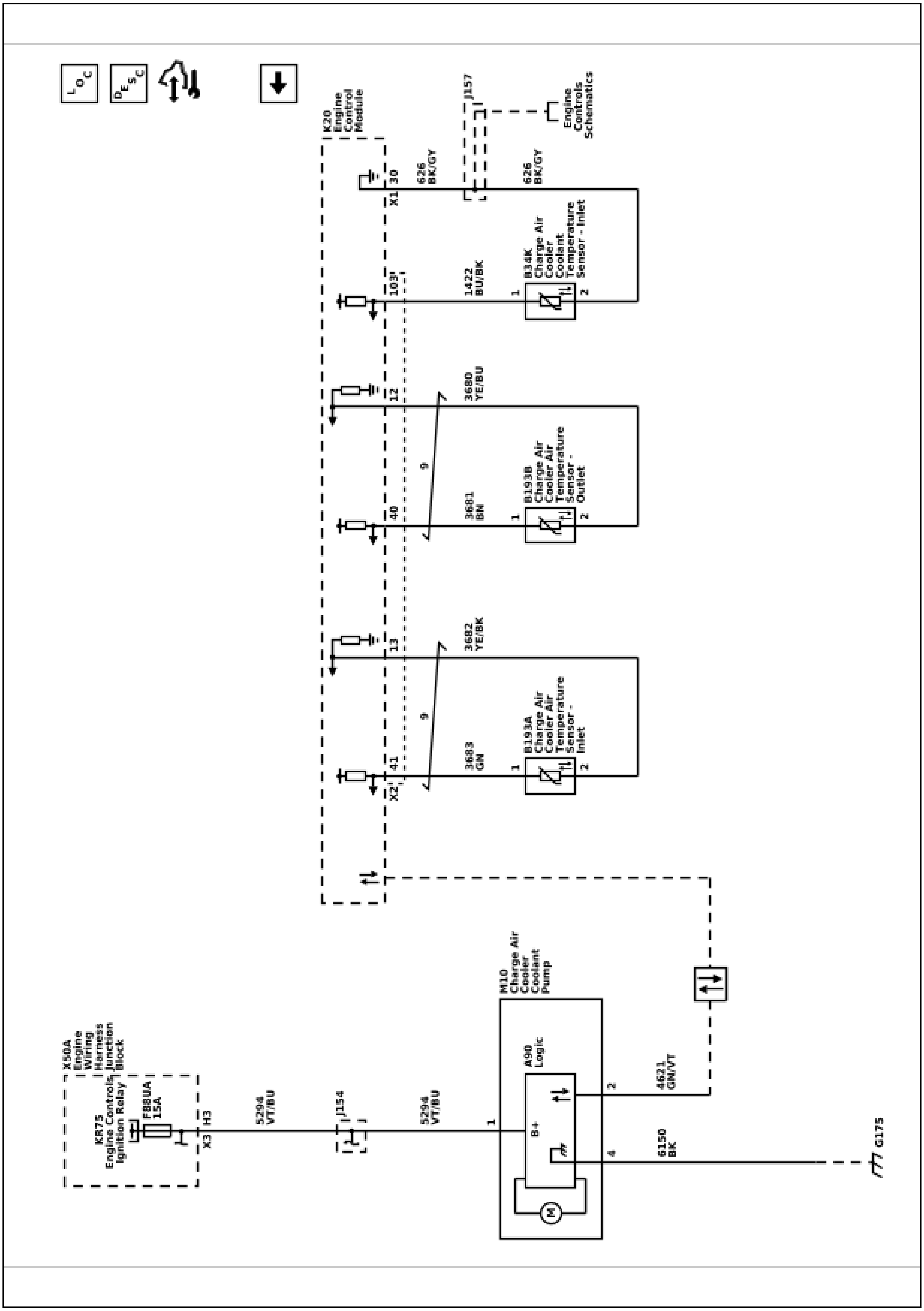

B+
F66UA 50A
F71UA 50A
F72UA 50A
X50A Engine Wiring Harness Junction Block
X3
D2
E1
E2
3840 RD/GN
4140 RD/GY
4040 RD/VT
1
2
2
G10L Cooling Fan Motor - Left
G10LW Cooling Fan Motor - Lower
G10R Cooling Fan Motor - Right
K20 Engine Control Module
M
B+
RAD
X2
37
12
1
4
3
2
1
4
6550 BK
4621 GN/VT
4623 GN/YE
6550 BK
6550 BK
4621 GN/VT
580 BK/GN
J169
9
3000 YE/BK
580 BK/GN
1
B203 Radiator Coolant Temperature Sensor
2
G178A

6847003

Engine Heating/Cooling Schematics (Engine Cooling Fans and Temperature (LZ0))


6847004
K20 Engine Control Module
X1 19
580 BK/GN
J180
580 BK/GN
J184
580 BK/GN
X2 70
RAD
9
3000 YE/BK
1
B203 Radiator Coolant Temperature Sensor
2
X50B Battery Distribution Engine Compartment Fuse Block
B+
F68A 80A
X6 A
1742 RD/BN
1
G10R Cooling Fan Motor - Right
B+
M
3
4621 GN/VT
2
4450 BK
G176A
X50A Engine Wiring Harness Junction Block
F71UA 50A
E1
4140 RD/GY
1
G10LW Cooling Fan Motor - Lower
B+
M
2
4450 BK
3
4623 GN/YE
K20 Engine Control Module
B+
F66UA 50A
X3 D2
3840 RD/GN
2
G10L Cooling Fan Motor - Left
B+
M
4
4621 GN/VT
1
4450 BK

Engine Heating/Cooling Schematics (Charge Air Cooler (LZ0))


6847005
K20 Engine Control Module
J157
Engine Controls Schematics
X1 30
626 BK/GY
626 BK/GY
103
1422 BU/BK
B34K Charge Air Cooler Coolant Temperature Sensor - Inlet
1
2
12
3680 YE/BU
40
3681 BN
9
B193B Charge Air Cooler Air Temperature Sensor - Outlet
1
2
13
3682 YE/BK
X2 41
3683 GN
9
B193A Charge Air Cooler Air Temperature Sensor - Inlet
1
2
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F88UA 15A
X3 H3
5294 VT/BU
J154
5294 VT/BU
M10 Charge Air Cooler Coolant Pump
1
B+
A90 Logic
2
4621 GN/VT
4
6150 BK
G175
M

Description and Operation

Cooling Fan Description and Operation

Cooling Fan Control

The engine cooling fan system is composed of 2 electric LIN (Local Interconnect Network) based cooling fans and 1 control module. The engine control module (ECM) controls the fan speed by sending a pulse width modulated (PWM) signal to the cooling fan control modules over one serial data circuit (LIN Bus01). The cooling fan control module varies the voltage drop across the cooling fan motors in relation to the pulse width modulated signal, which allows the cooling fans to operate at variable speeds.

Each cooling fan is specifically addressed with in the system. If the cooling fans are not connected to their specific connector, the fans will operate with out a DTC, but there will be noise or performance issues that will occur.

The cooling fan speed is effected by many different conditions and the ECM will adjust the duty cycle from 0–100 percent based on cooling system requirements. The scan tool output control is only capable of operating the cooling fan increments, between 10–90 percent. 90 percent is considered high speed fan. When multiple cooling fan speed requests are received, the ECM operates the fan at the highest of speed requests. The ECM commands the fans ON under the following conditions:

- The engine coolant temperature is warmer than a predetermined temperature.
- The engine oil temperature is warmer than a predetermined temperature.
- The A/C pressure reaches a predetermined pressure.
- If the engine coolant temperature at key-off is warmer than a predetermined value, or the A/C pressure is greater than a predetermined value, the cooling fan will operate at a low speed. The fan will shut OFF if the temperature or pressure drops below the predetermined value, but will only operate for 2 minutes, regardless of the coolant temperature or A/C pressure.

Cooling Fan Description and Operation

Cooling Fan Control

The engine cooling fan system is composed of 3 electric cooling fans. Each fan motor assembly contains an integral cooling fan control module. The cooling fan control modules communicate with the engine control module (ECM) independently, via a local interconnect network (LIN). The ECM controls the fan speed of each fan by sending a digital signal to the cooling fan control modules over two different serial data circuits. Each cooling fan control module decodes it’s respective signal to control the voltage drop across the cooling fan motor in relation to the speed request, using a pulse width modulated (PWM) signal. This allows each of the cooling fans to operate at variable speeds independent of each other.

Each cooling fan and module is programed to its location within the system. If the cooling fans are not connected to their specific connector, the fans will operate without a DTC, but there may be noise or performance issues that occur. The cooling fans may not operate at equal speeds for a given cooling fan command to prevent unwanted noise or vibration.

The cooling fan speed is affected by many different conditions and the ECM will adjust the duty cycle from 0–100 percent based on cooling system requirements. The actual commanded cooling fan speed is based on a number of inputs from the ECM, and cooling fan requests from other modules, such as the BCM, TCM, and HPCM, if equipped. When multiple cooling fan speed requests are received, the ECM commands the cooling fan control module to operate the fan at the highest requested speed.

The scan tool Cooling Fan Request Source parameter identifies the predominant sub-system requiring cooling fan operation. The scan tool output control is only capable of operating a cooling fan in increments between 20–80 percent. 80 percent is considered high speed. The increments and ranges found within the scan tool function may vary from vehicle to vehicle.

The ECM commands the fan On under the following conditions:

- The engine coolant temperature is warmer than a predetermined temperature.
- The engine oil temperature is warmer than a predetermined temperature.
- The A/C pressure reaches a predetermined pressure.
- If the engine coolant temperature at key-off is warmer than a predetermined value, or the A/C pressure is greater than a predetermined value, the cooling fan will operate at a low speed. The fan

will shut OFF if the temperature or pressure drops below the predetermined value, but will only operate for 2 minutes, regardless of the coolant temperature or A/C pressure.

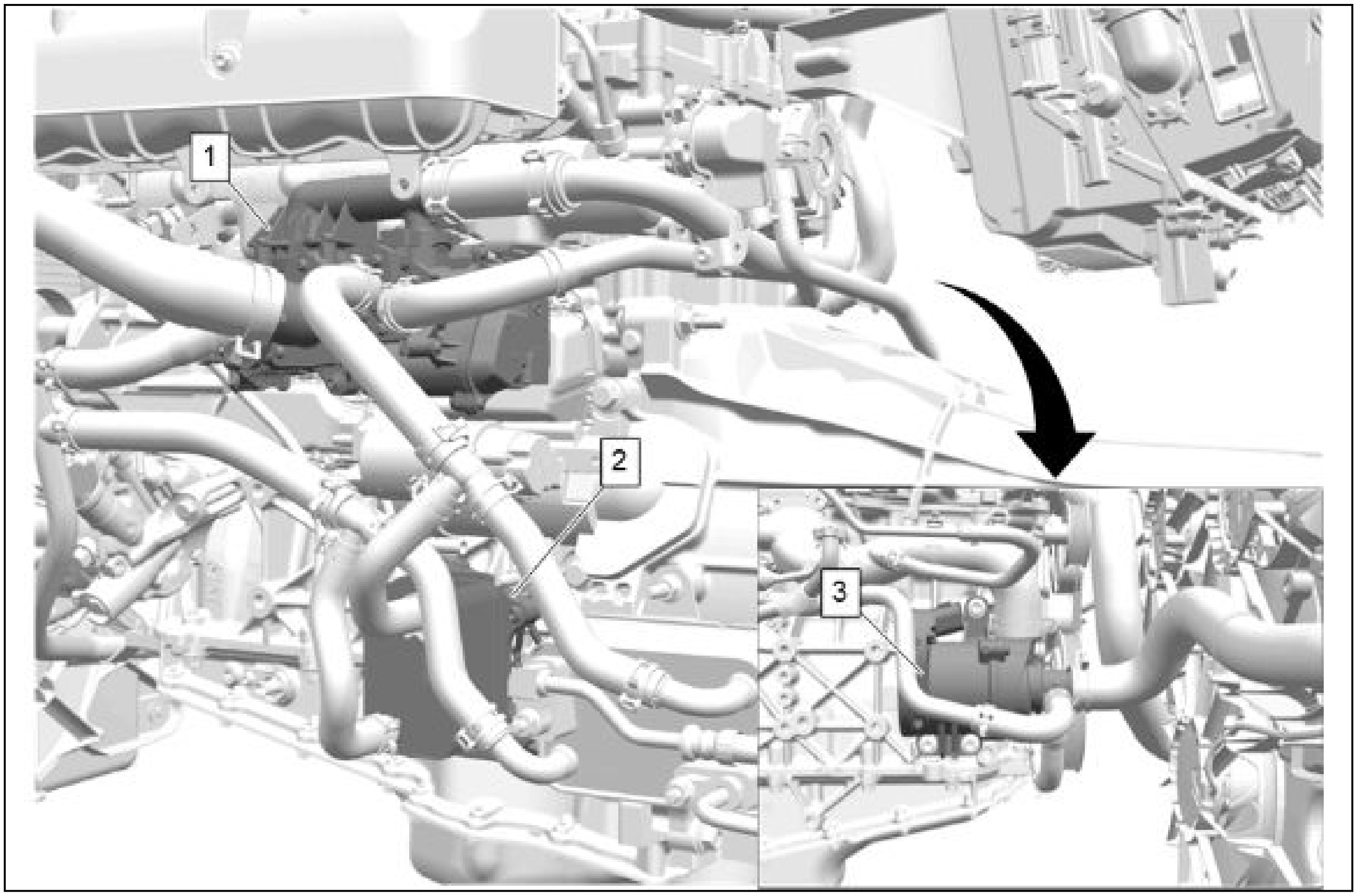
Cooling System Description and Operation

Active Thermal Management

This vehicle uses advance technology cooling system design, which makes use of active thermal management strategy. The difference between conventional cooling systems that use mechanical water pumps and active thermal management is that the predominant goal of the active thermal management strategy is to prioritize fuel economy by maintaining an ideal engine operating temperature during all engine speeds and operating conditions, while still meeting customer expectations for vehicle performance and reducing vehicle emissions.

The key features of Active Thermal Management include:

- **Engine: Internal**
  - Integrated exhaust manifold that pulls heat from the engine exhaust.
  - Improved engine coolant jacket that targets hot spots in the engine.
- **Engine Mounted Cooling**

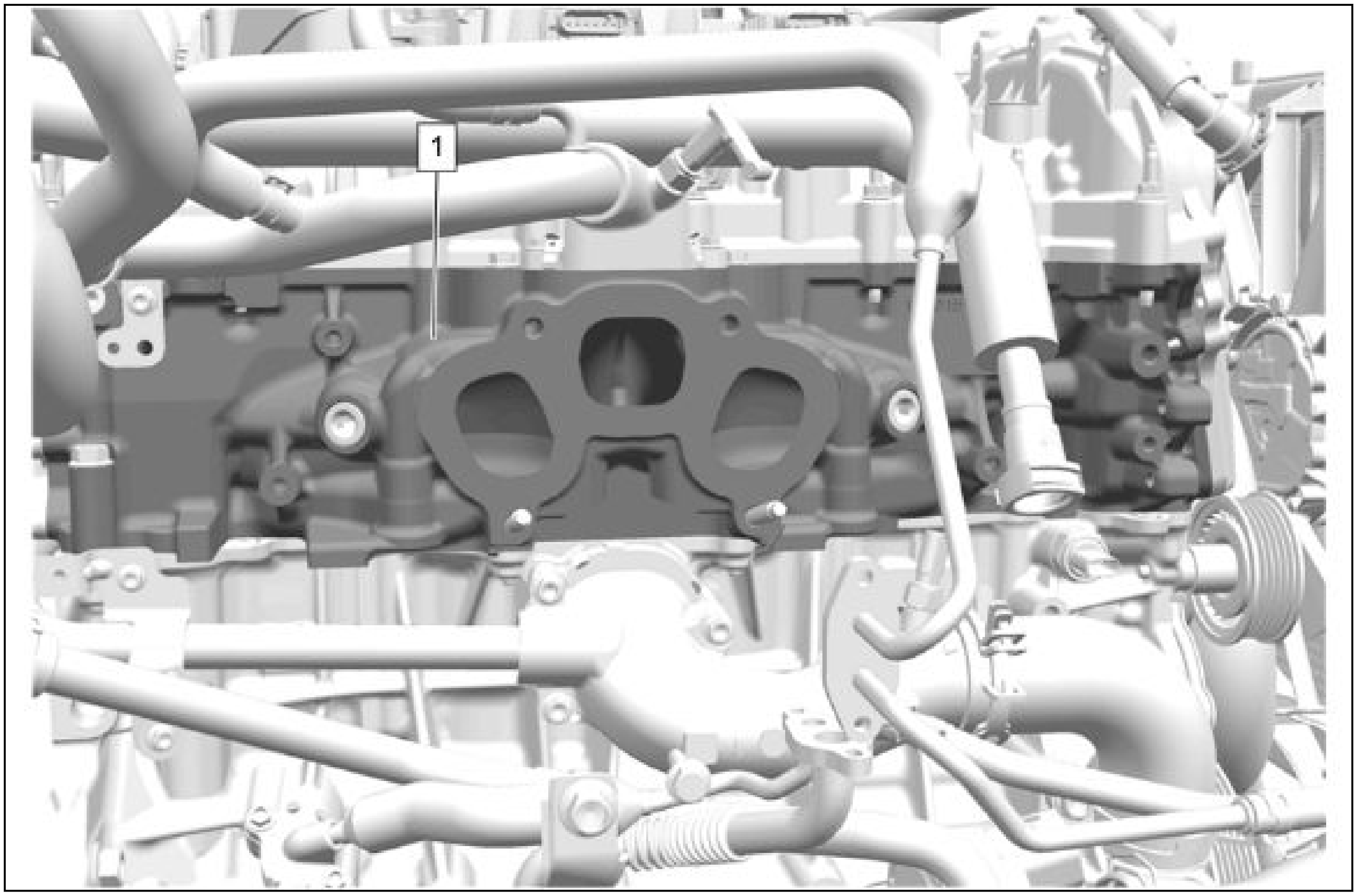


6637336

  - Electric water pump (1) that replaces the conventional mechanical water pump.
  - The coolant control valve (2) contains two rotary control valves. The block rotary coolant valve and the main rotary coolant valve both eliminate the need for the conventional cooling system thermostat.
  - Engine oil cooler (3) that uses coolant to heat or cool the engine oil as required.
- **Temperature and Position Sensors**
  - The engine control module, which controls the complete active thermal management system using feedback from numerous sensors:
  - Engine Block Coolant Temperature Sensor
  - Engine Cylinder Head Coolant Temperature Sensor
  - Engine Inlet Coolant Temperature Sensor

- Engine Outlet Coolant Temperature Sensor
- Engine Oil Temperature Sensor 1 and 2
- Transmission Oil Temperature Sensor
- Radiator Outlet Coolant Temperature Sensor
- Engine Coolant Flow Control Valve Position Sensor

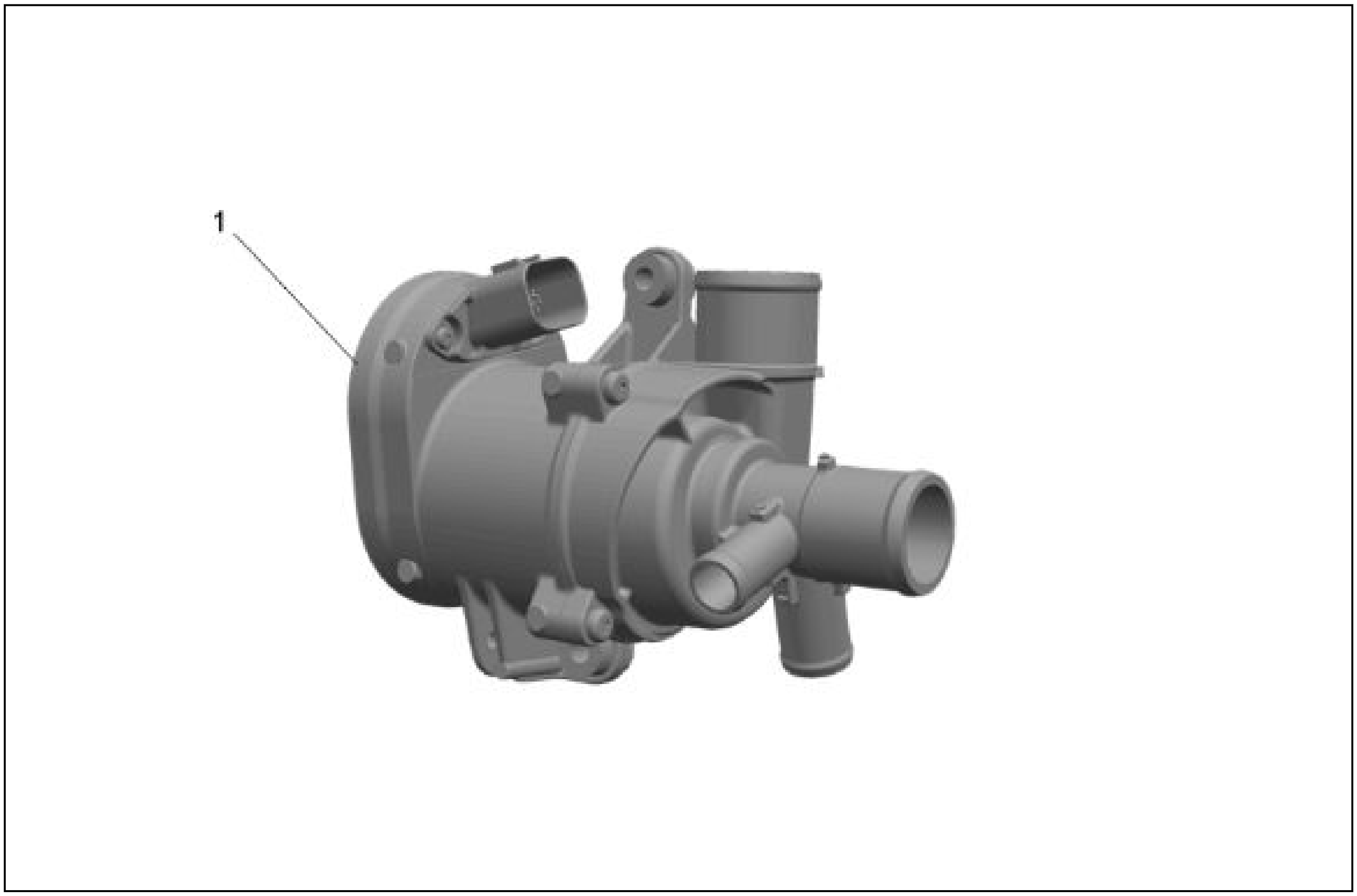
- **Integrated Exhaust Manifold**



6637266

- The integrated exhaust manifold (1) is part of the cylinder head and is used to extract heat from the exhaust, which can then be directed to either the engine, engine oil cooler, automatic transmission fluid cooling exchanger, or the passenger compartment heater core. The integrated exhaust manifold provides a large portion of recuperated heat to the coolant.

- **Electric Water Pump**



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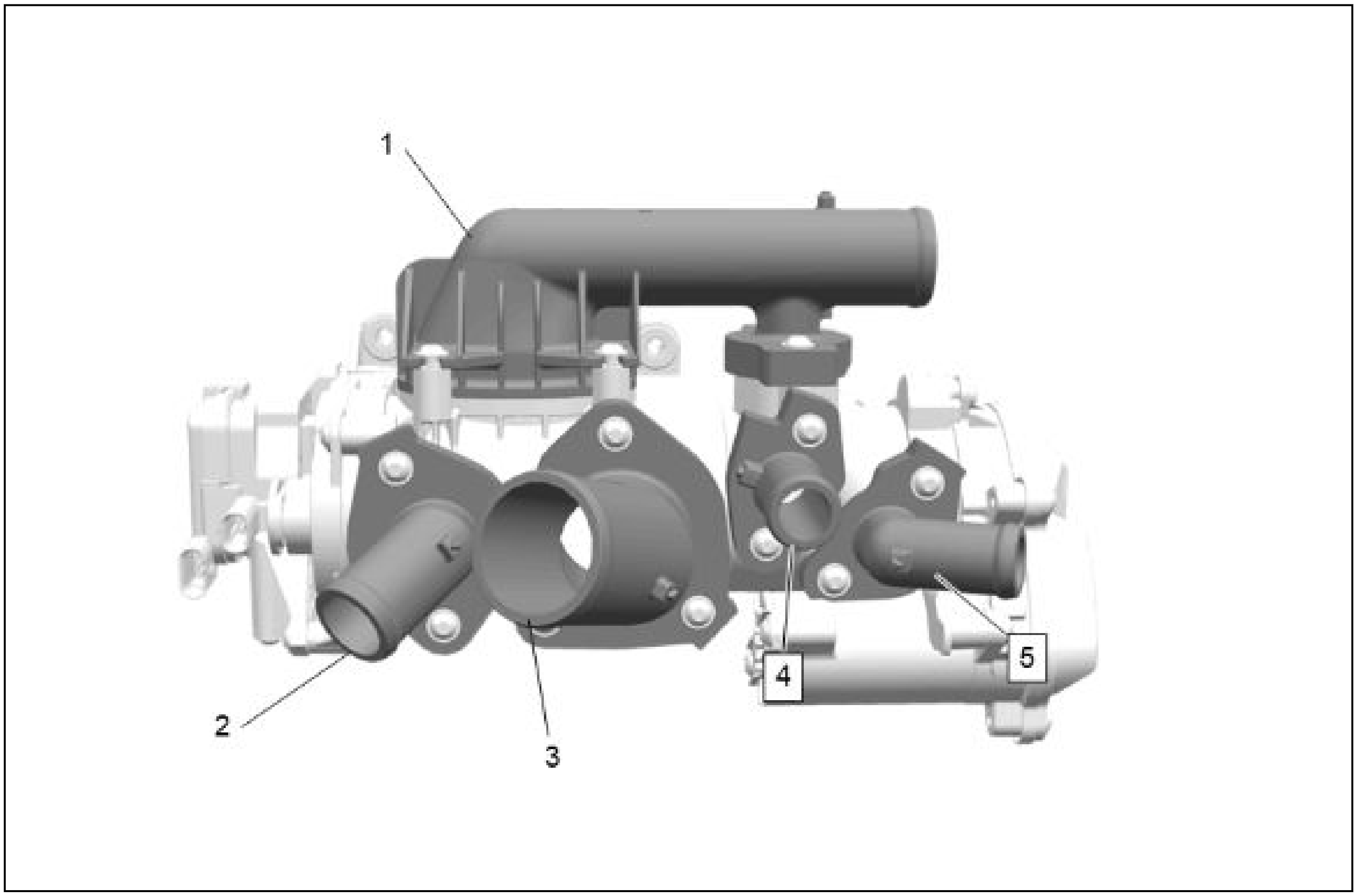
− The electric water pump (1) is attached to the side of the engine and controls the coolant flow through the entire coolant system. The electric water pump replaces the conventional belt or chain driven pump whose speed is directly coupled to the engine speed. The coolant flow from the electric water pump is not related to engine speed but it is independently controlled by the engine control module.

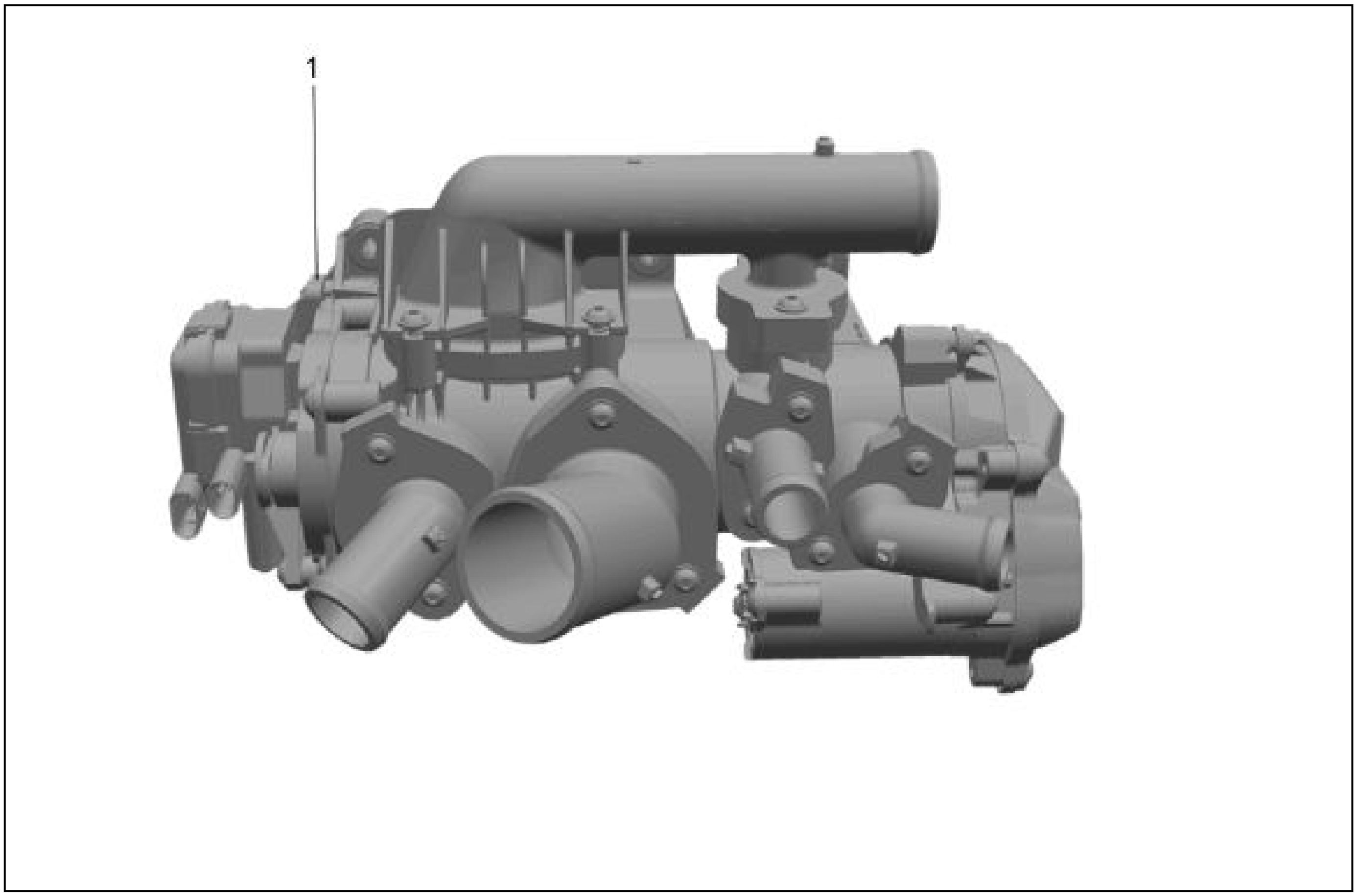
- **Engine Coolant Flow Control Valve**



6692447

- The engine coolant flow control valve controls coolant flow to the radiator as well as the engine and transmission oil heat exchangers eliminating the need for a conventional wax-operated thermostat and is controlled by the engine control module, through sensor feedback. Hot coolant from the integrated exhaust manifold is brought in through the port on the top of the valve (1). The left most port (2) is the bypass port and sends hot coolant back to the water pump. The port that is second from the left, and the biggest port (3), is the radiator port and sends hot coolant to the radiator. The right two ports (4, 5) are for the engine and transmission oil heat exchangers and the ports send hot coolant to the oil heat exchangers when the oils are cold, and cold coolant to the oil heat exchangers when the oils are hot.

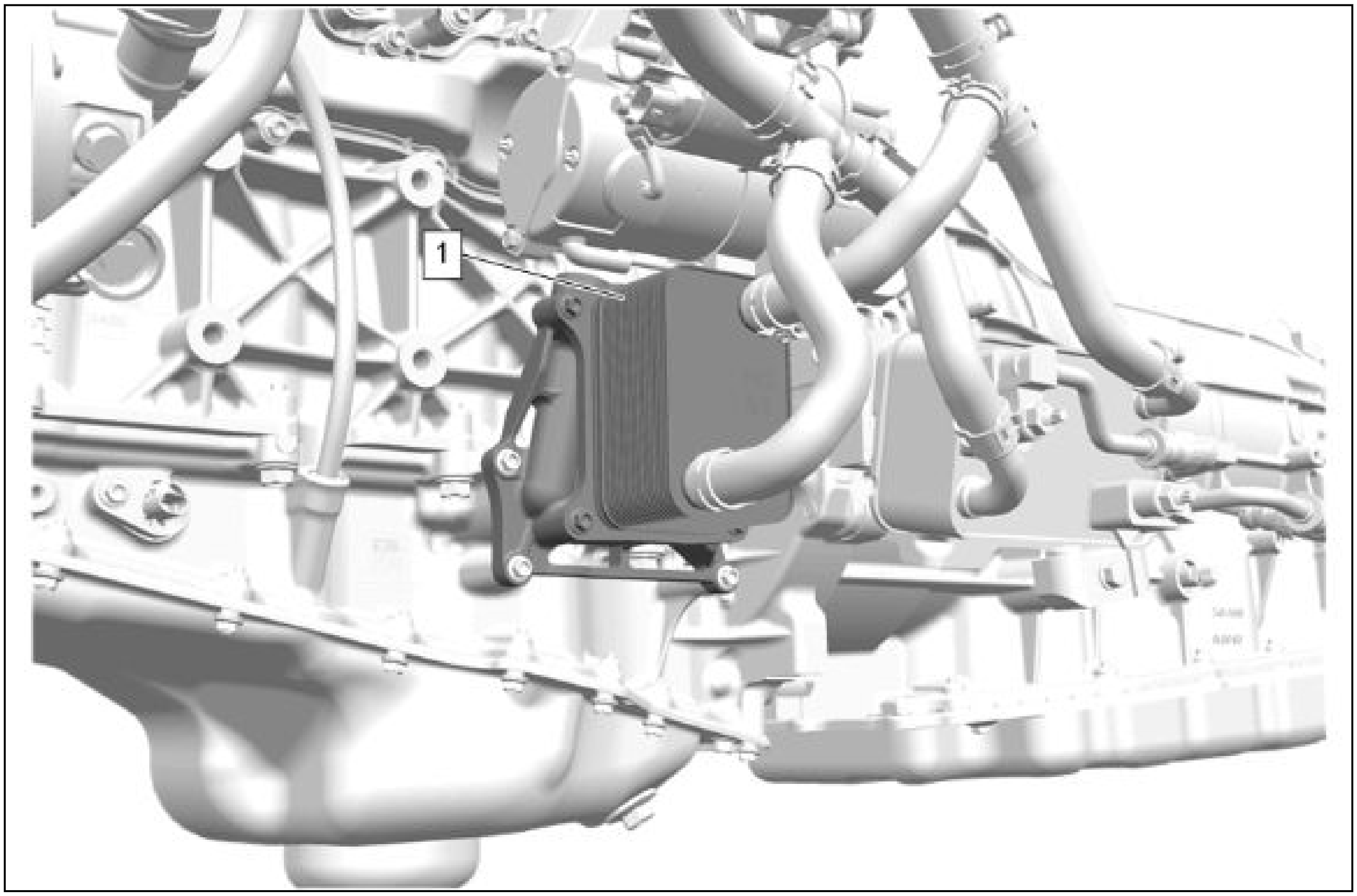
- **Engine Coolant Flow Control Valve (Block Rotary Coolant Valve)**



6637274

- The main rotary valve is part of the engine coolant flow control valve and is located on the right side of the valve assembly (1). The main rotary valve controls coolant flow to the radiator, bypass and oil heat exchangers.
- The block rotary coolant valve is part of the engine coolant flow control valve and is located on the left side of the valve assembly. The block rotary control valve has its own actuator and allows independent/separate control of the block temperature and can be activated at any point during vehicle operation.
- The combination of the main rotary coolant valve and the block rotary coolant valve is critical to achieving optimal combustion chamber temperatures as quickly as possible during engine warm up.

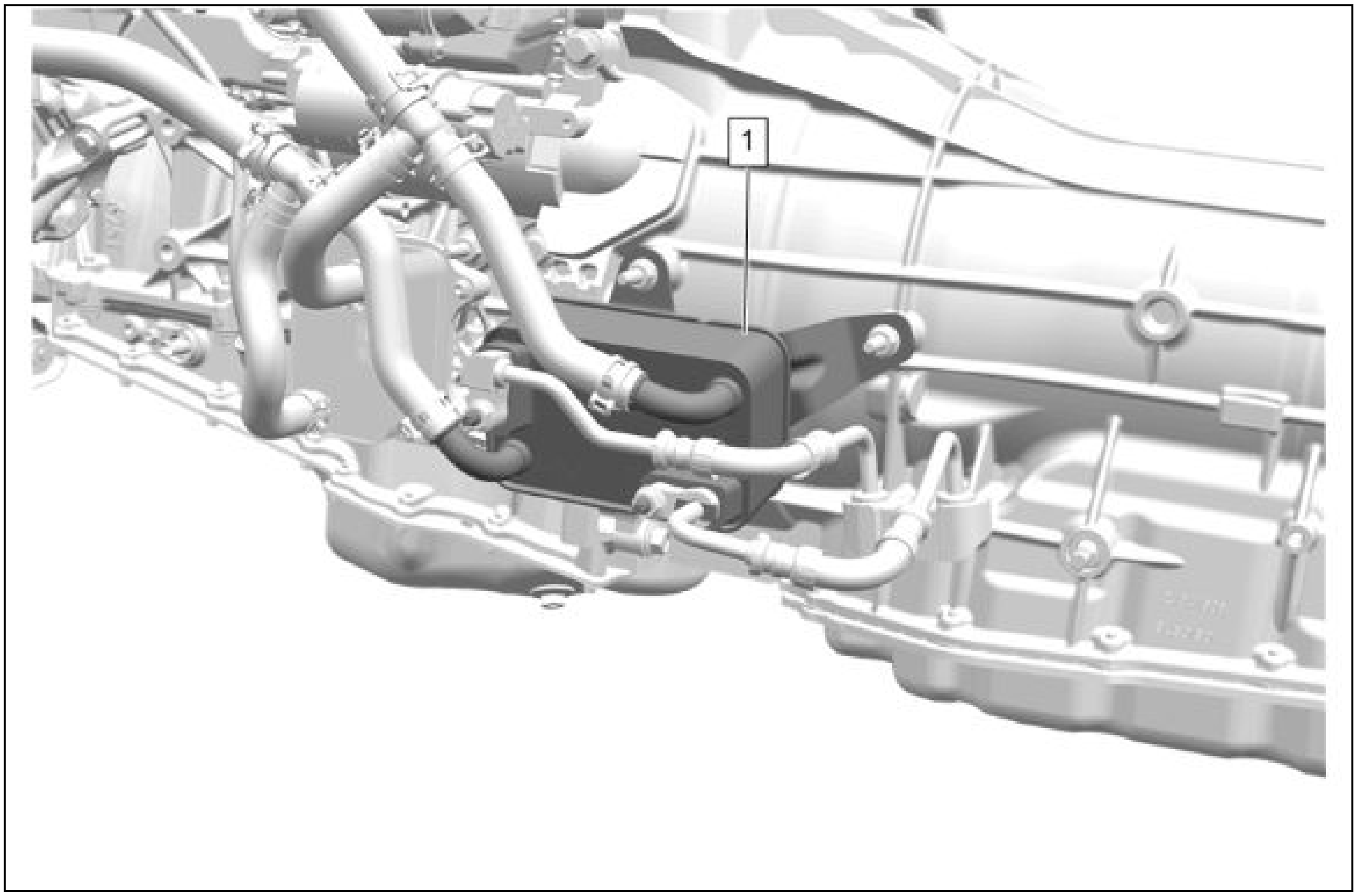
- **Engine Oil Cooler**



6636990

- The engine oil cooler (1) is a heat exchanger that is attached to the side of the engine and exchanges heat between the engine oil and engine coolant. The engine oil fluid cooling exchanger can flow no coolant, provide hot coolant for transmission oil heating (during engine warm-up) or provide cooled coolant for transmission oil cooling (under high thermal loads).

- **Automatic Transmission Fluid Cooling Exchanger**

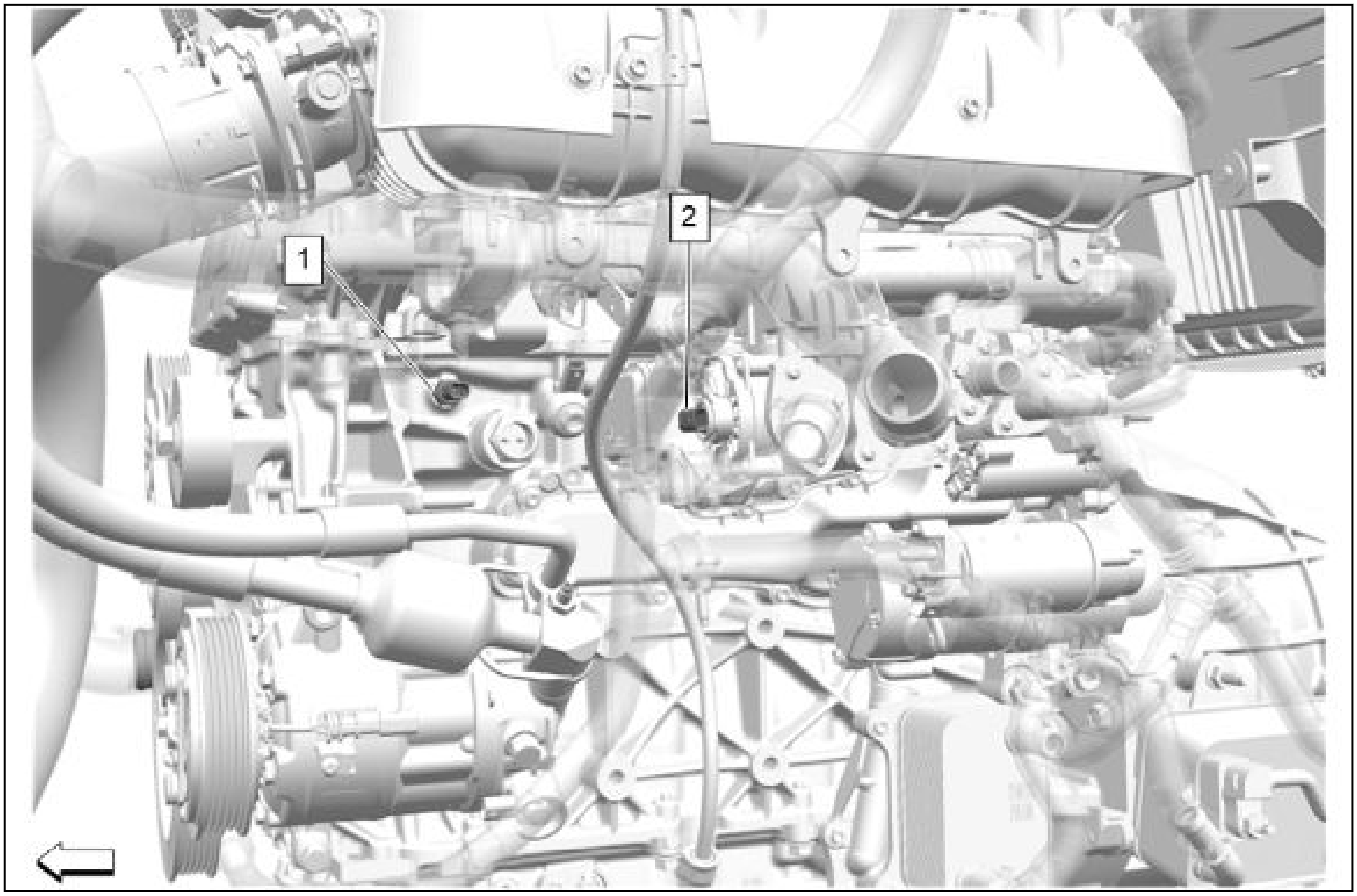


6636992

- The automatic transmission fluid cooling exchanger is a heat exchanger that is attached to the front of the transmission and exchanges heat between the transmission oil and engine coolant. The automatic transmission fluid cooling exchanger can flow no coolant, provide hot coolant for transmission oil heating (during engine warm-up) or provide cooled coolant for transmission oil cooling (under high thermal loads).

- **Automatic Coolant Service Fill Description**
  - Active thermal management systems are more difficult to fill with coolant than traditional thermostat based systems. Therefore the vehicle is equipped with an automatic coolant service fill that can be activated via the scan tool or driver controls that will cycle the electric water pump and coolant valves to de-aerate the coolant system.

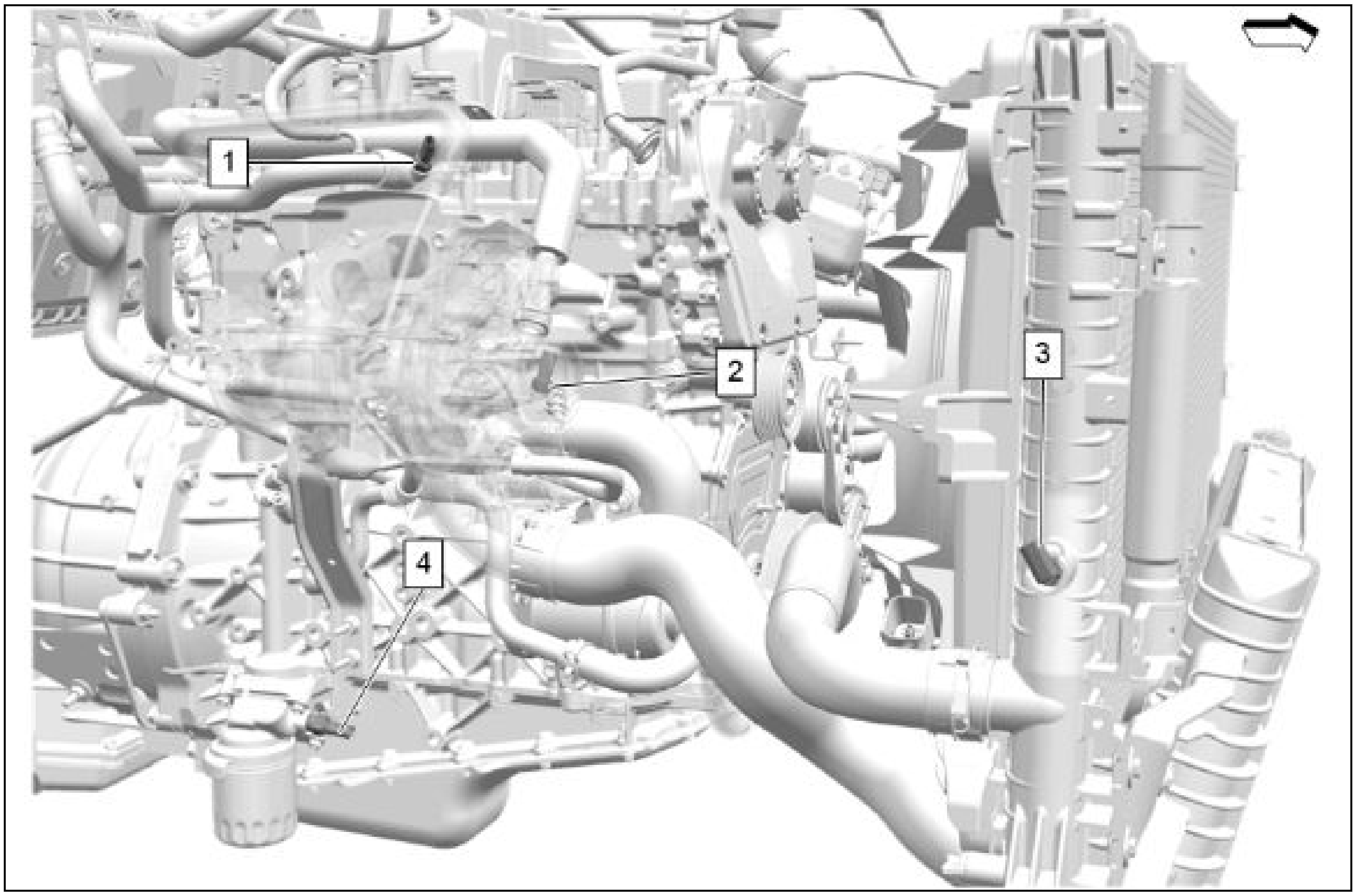
Component Locator - Engine View



6719820

Left side of engine view

Callout	Scan Tool Reference	Service Information Part Name or Electronic Part Catalog Name
1	Engine Coolant Temperature Sensor 6	Engine Block Coolant Temperature Sensor
2	Engine Coolant Temperature Sensor 1	Engine Outlet Coolant Temperature Sensor
—	Engine Block Coolant Control Valve Position Sensor	Part of Engine Coolant Flow Control Valve
—	Engine Coolant Control Valve Position Sensor	Part of Engine Coolant Flow Control Valve



6719821

Right side of engine view

Callout	Scan Tool Reference	Service Information Part Name or Electronic Part Catalog Name
1	Engine Coolant Temperature Sensor 5	Engine Cylinder Head Coolant Temperature Sensor
2	Engine Coolant Temperature Sensor 2	Engine Inlet Coolant Temperature Sensor
3	Radiator Coolant Temperature Sensor	Radiator Outlet Coolant Temperature Sensor
4	Engine Oil Temperature Sensor	Engine Oil Temperature Sensor 1 and 2
Internal to the transmission	Transmission Oil Temperature Sensor	Transmission Oil Temperature Sensor

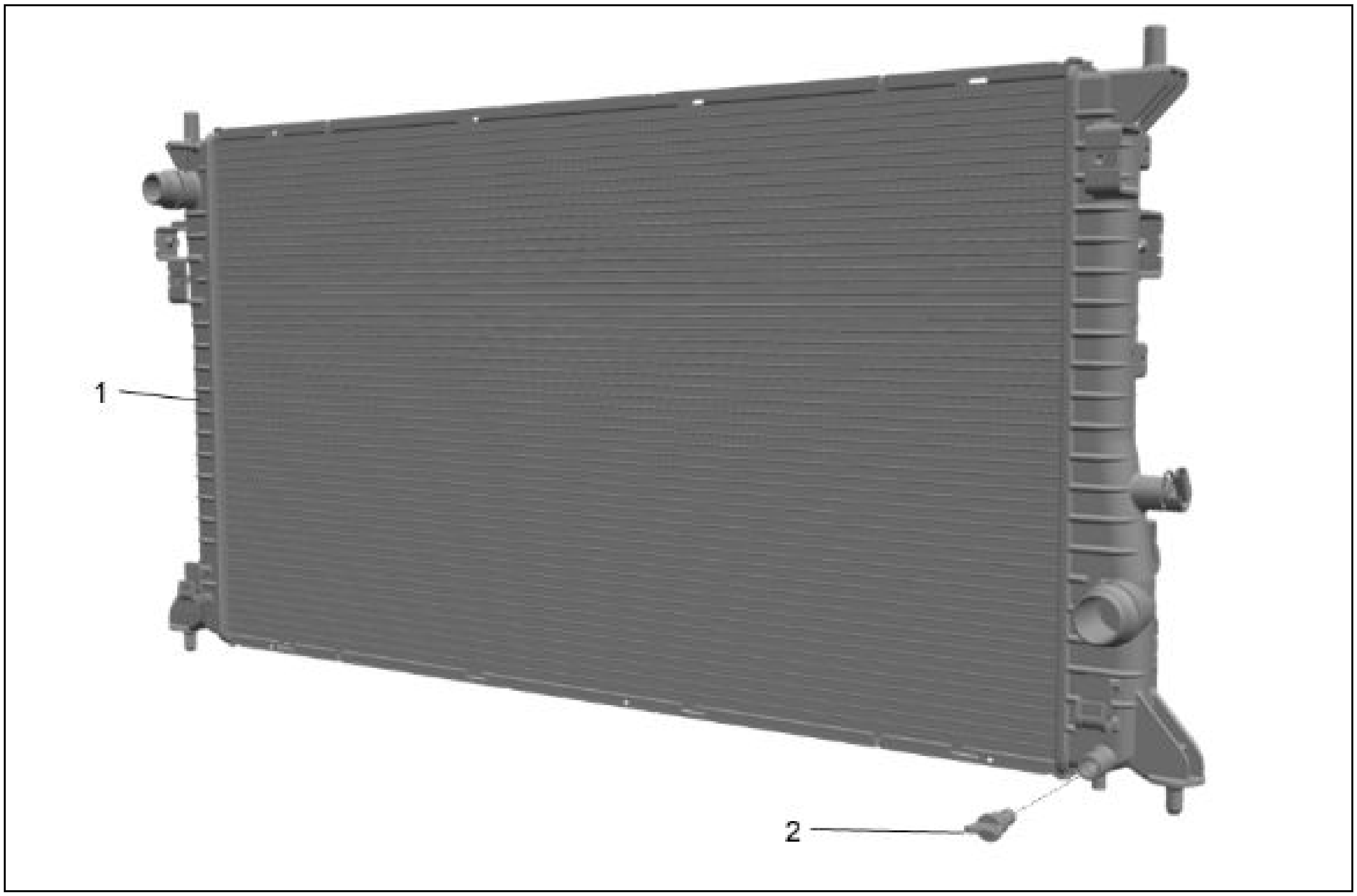
Cooling System Components

- Various temperature and position sensors provide data back to the engine control module.
- Active thermal management still uses many of the conventional cooling system features, including:
  - Coolant
  - Coolant Hoses
  - Radiator
  - Radiator Bypass Route
  - Radiator Surge Tank
  - Surge Tank Pressure Cap
  - Engine Coolant Indicators
  - Air Baffles/Guides and Seals
  - Cabin Heater Core Route, if equipped with Rear Cabin Heater

Coolant

The engine coolant is a solution made up of a 50-50 mixture of DEX-COOL® and suitable drinking water. The coolant solution transfers heat between the components of the engine heating/cooling system.

Radiator

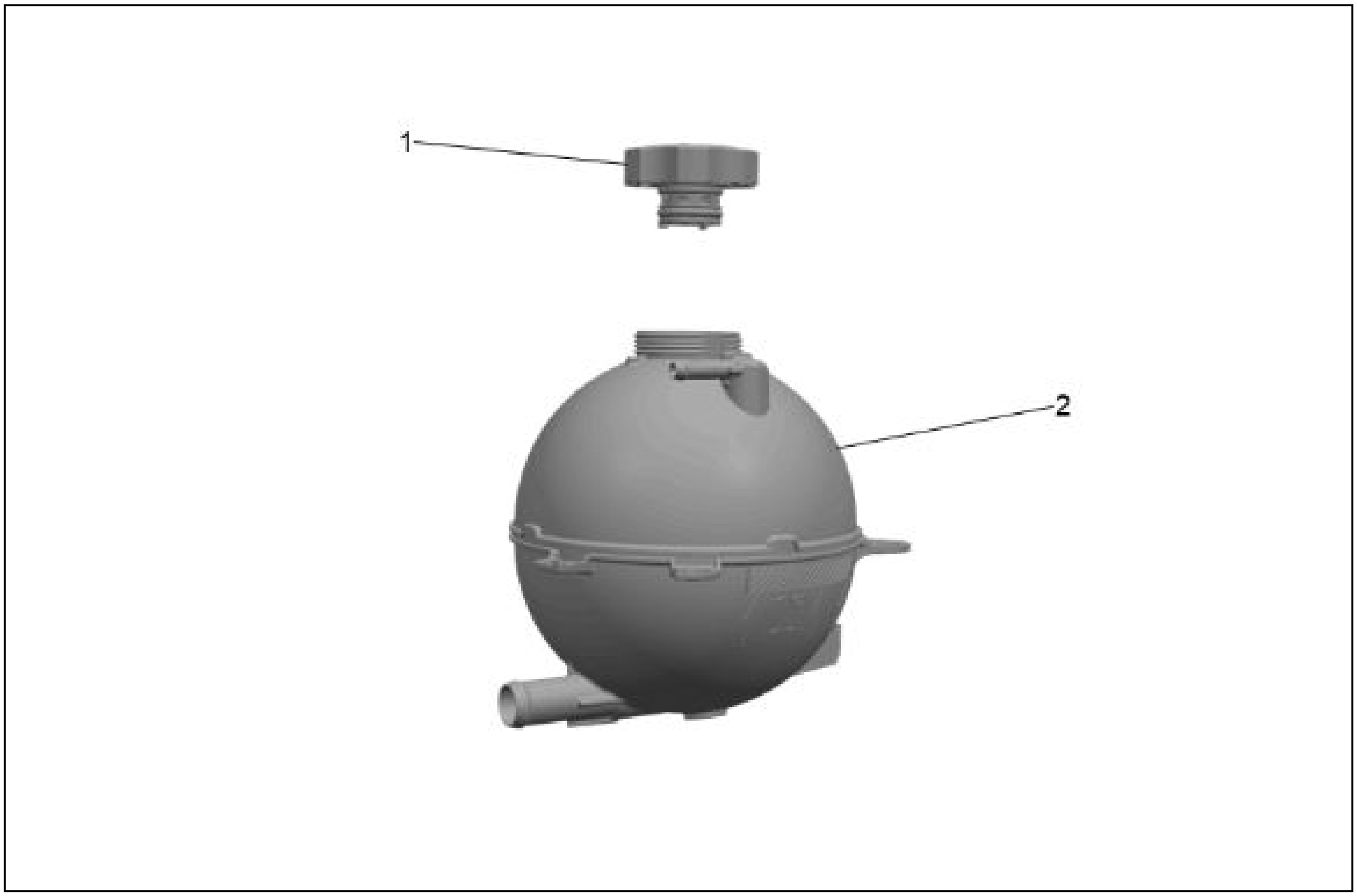


6637073

The radiator (1) is a heat exchanger. It consists of a core and two end tanks. The aluminum core is a tube and fin crossflow design that extends from the inlet tank to the outlet tank. Fins are placed around the outside of the tubes to improve heat transfer to the atmosphere. The inlet and outlet tanks are a molded high temperature nylon reinforced plastic material. A high temperature rubber gasket seals the tank flange edge to the aluminum core. The tanks are clamped to the core with clinch tabs. The tabs are part of the aluminum header at each end of the core. The fins on the core transfer heat from the coolant passing through the tubes. Air passing between the fins absorbs the heat and cools the coolant. Heat is removed from the coolant as the coolant passes through the radiator.

The radiator also has a drain cock (2) located in the bottom of the left or right hand tank. The drain cock unit includes the drain cock and drain cock seal.

Radiator Surge Tank



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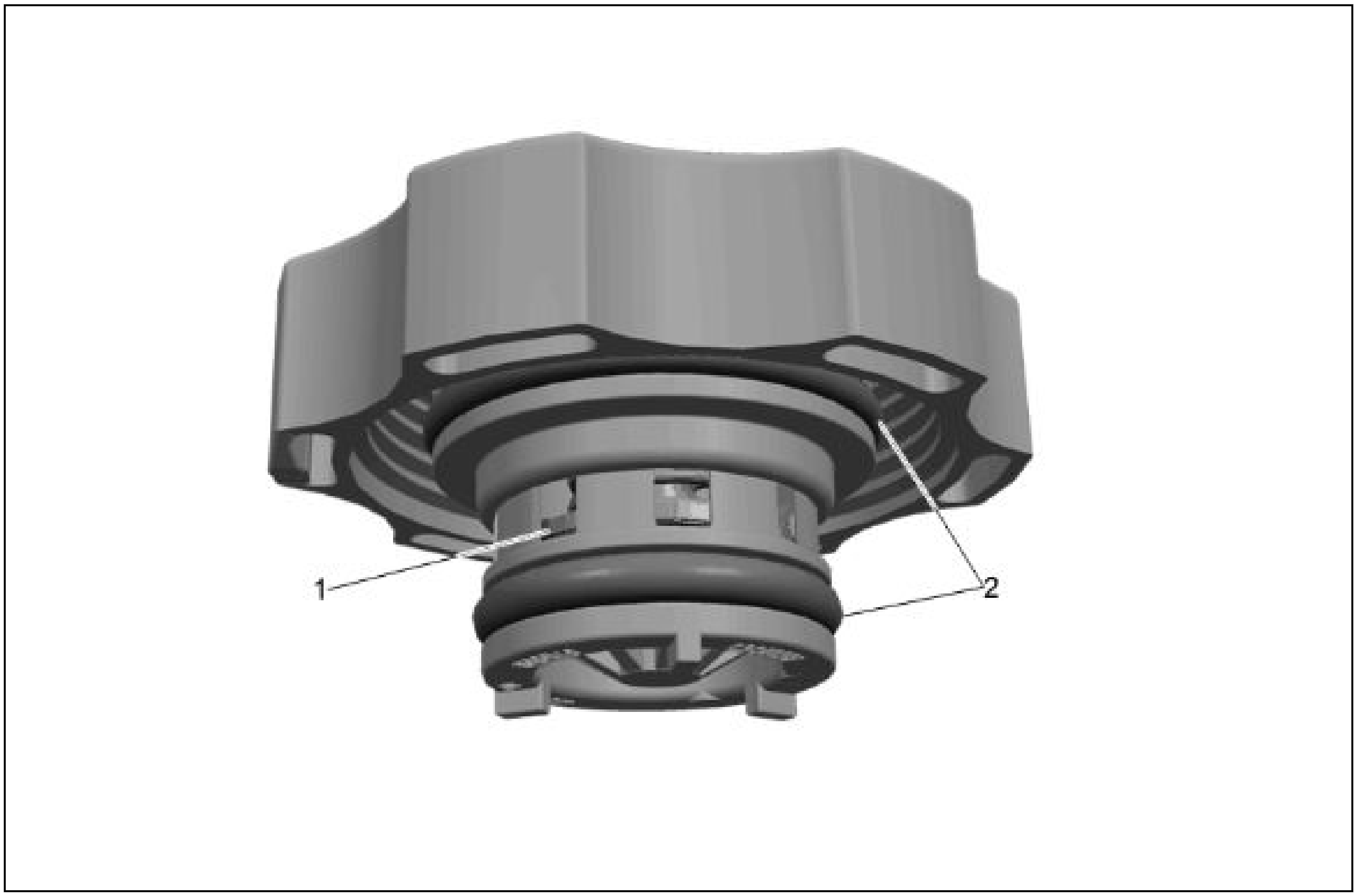
The radiator surge tank (2) is a plastic tank with a pressure cap (1) mounted to it. The tank is mounted at a point higher than all other coolant passages. The surge tank provides an air space in the cooling system. The air space allows the coolant to expand and contract. The surge tank also provides a coolant fill point and a central air bleed location. During vehicle use, the coolant heats and expands. The coolant that is displaced by this expansion flows into the surge tank. As the coolant circulates, air is allowed to exit. This is an advantage to the cooling system. Coolant without air bubbles absorbs heat much better than coolant with air bubbles.

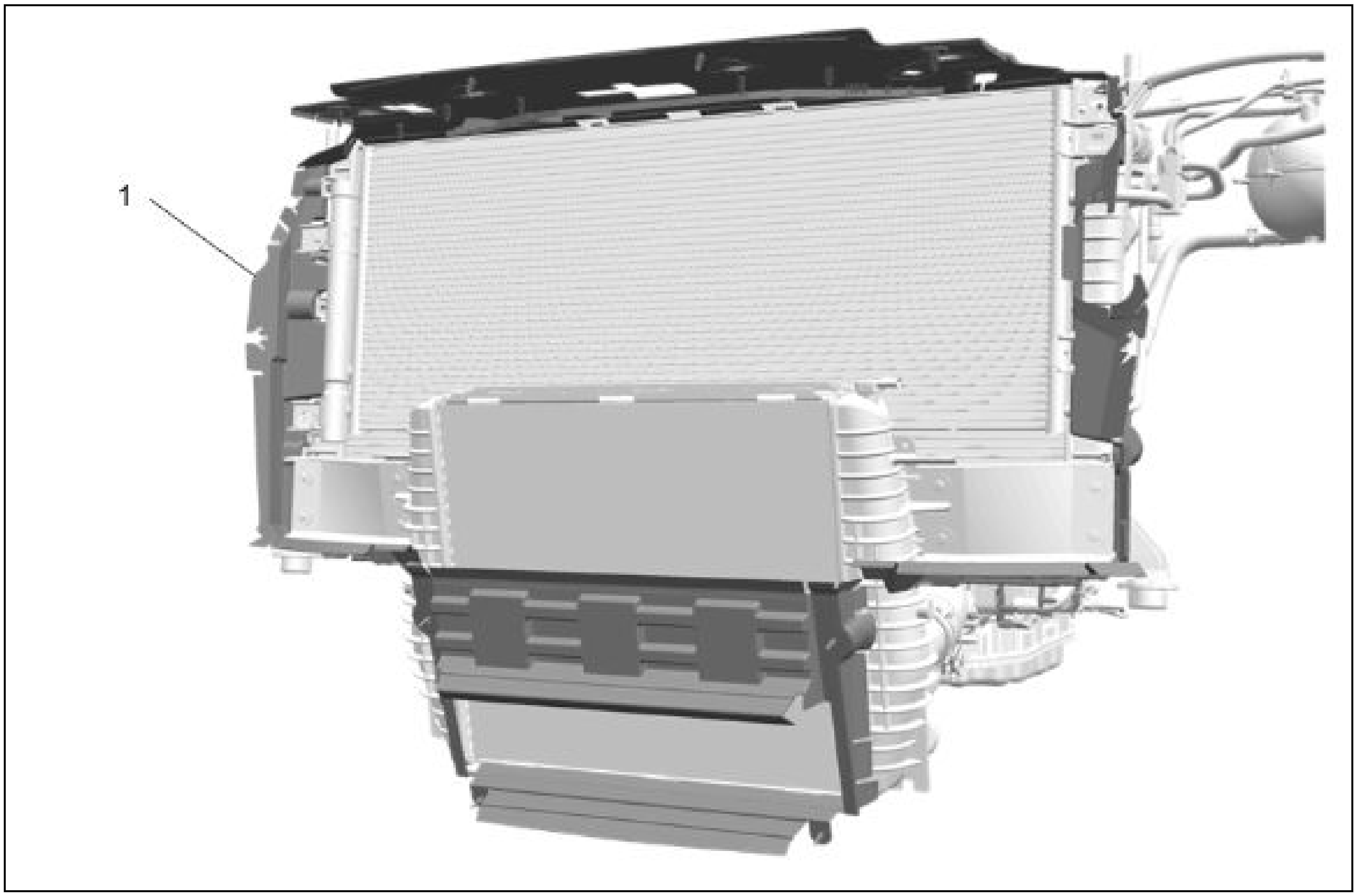
Radiator Surge Tank Cap



The radiator surge tank cap is a pressure cap that seals (2) and pressurizes the cooling system. It contains a blow off or pressure valve (1) and a vacuum or atmospheric valve.

- The pressure valve is held against its seat by a spring and protects the radiator by relieving pressure if it exceeds 20 psi.
- The vacuum valve is held against its seat by a spring, which permits opening of the valve to relieve vacuum created in the cooling system as it cools off. The vacuum, if not relieved, could cause the radiator hoses to collapse.
- The pressure cap allows pressure in the cooling system to build up. As the pressure builds, the boiling point of the coolant goes up as well. Therefore, the coolant can be safely run at a temperature higher than the boiling point of the coolant at atmospheric pressure.
- The hotter the coolant is, the faster the heat moves from the radiator to the cooler passing air. However, if the pressure exceeds the strength of the spring, the pressure valve rises so that the excess pressure can escape.
- When the engine cools down, the temperature of the coolant drops and a vacuum is created in the cooling system. This vacuum causes the vacuum valve to open, allowing outside air into the cooling system. This equalizes the pressure in the cooling system with atmospheric pressure, thus preventing the radiator hoses from collapsing.

Air Baffles/Guides and Seals



6637263

The cooling system uses deflectors, air baffles/guides and air seals to increase cooling system capability. Deflectors are installed under the vehicle to redirect airflow beneath the vehicle and through the radiator to increase engine cooling. Air baffles/guides are also used to direct airflow through the radiator and increase cooling capability. Air seals prevent air from bypassing the radiator and air conditioning condenser, and prevent recirculation of hot air for better hot weather cooling and air conditioning condenser performance.

Engine Coolant Indicators

The instrument panel cluster shows the engine temperature on the temperature gauge. The value is sent on the data communication line from engine control module. When the coolant temperature is hot, the instrument panel cluster receives a discrete input from engine control module requesting illumination.

The instrument panel cluster performs the display test at the start of each ignition cycle. The instrument panel cluster illuminates the TEMP indicator.

Coolant Heater (If Equipped)

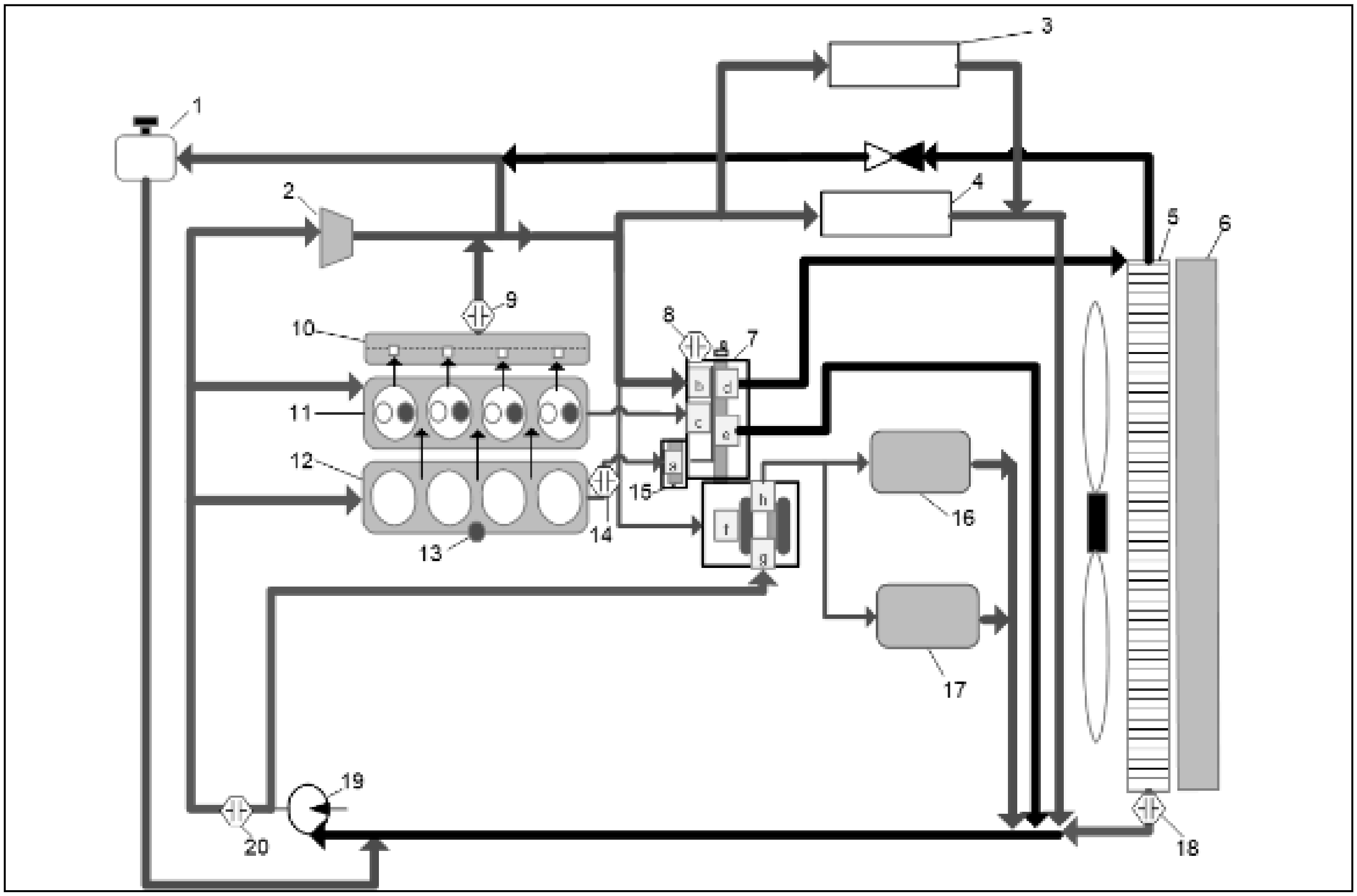
The optional coolant heater (RPO K05) operates using 110 V AC external power and is designed to warm the coolant in the engine block area for improved starting in very cold weather. The coolant heater also helps reduce fuel consumption when a cold engine is warming up. The unit is equipped with a detachable AC power cord. There is an internal thermal switch in the coolant heater cord that prevents operation above **-18°C (0°F)**. A weather shield on the cord is provided to protect the plug when not in use.

Cooling Cycle

Coolant flows from the electric water pump outlet and into the engine circuit and turbocharger cooling circuit. It also provides cooled coolant flow from the radiator to the engine coolant flow control valve to be used as necessary to manage transmission and engine oil temperature. In the engine, the coolant flow direction and volume is controlled by the engine coolant flow control valve and the block control valve to provide necessary flow for optimal engine block, cylinder head, and exhaust manifold cooling. The engine coolant flow control valve can also provide the transmission and engine oil circuits warmed coolant from the engine to optimize the oil temperatures. Excess heat is removed from the coolant in the radiator and the cooled coolant returns to the electric water pump.

Mode 1 (Low Flow):

Flow Diagram - Mode 1



6752510

(1) Surge Tank

(2) Turbocharger

(3) Auxiliary Heater Core (If Equipped)

(4) Heater Core

(5) Radiator

(6) Condenser

(7) Main Rotary Valve

(8) Engine Outlet Coolant Temperature Sensor

(9) Engine Cylinder Head Coolant Temperature Sensor

(10) Integrated Exhaust Manifold

(11) Cylinder Head

(12) Engine Block

(13) Engine Block Heater

(14) Engine Block Coolant Temperature Sensor

(15) Block Rotary Valve

(16) Engine Oil Heat Exchanger

(17) Transmission Oil Heat Exchanger

(18) Radiator Outlet Coolant Temperature Sensor

(19) Electric Water Pump

(20) Engine Inlet Coolant Temperature Sensor

Valve Port A

Valve Port B

Valve Port C

Valve Port D

Valve Port E

Valve Port F

Valve Port G

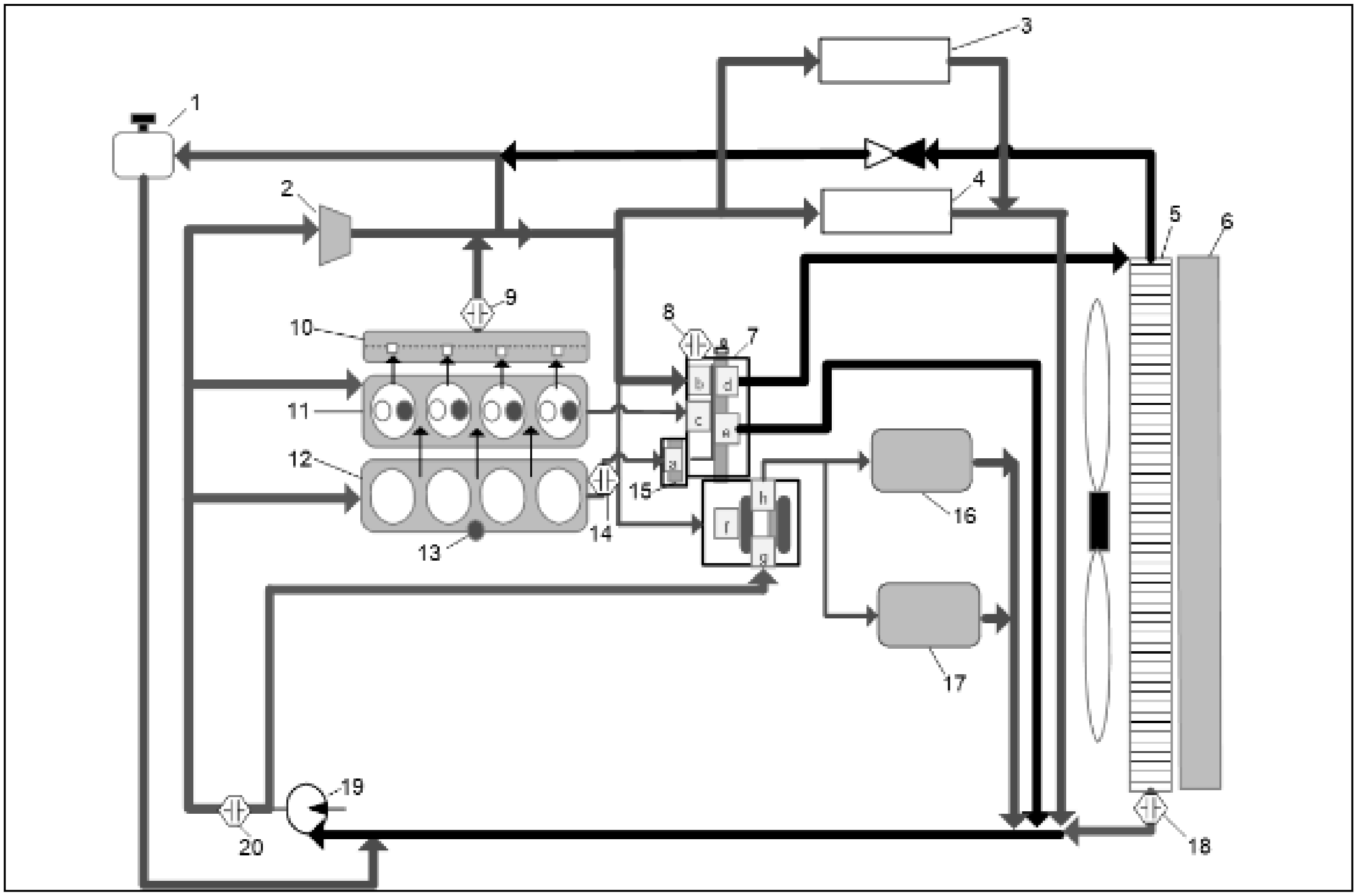
Valve Port H

If the engine is started cold, the system will go to low flow mode, which means the electric water pump runs just enough for the sensors to provide reliable information on the state of the system. As the engine warms up, the heat stays around the combustion chamber and is not taken away by coolant flow. Low flow mode is the fastest method for engine warm up. Low flow mode will not enable if the interior HVAC is turned on.

COMPONENT	CONDITION
Electric Water Pump	Low Speed, Low Flow
Main Rotary Coolant Valve	Low Speed, Low Flow
Block Rotary Coolant Control Valve	Low Speed, Low Flow

Mode 2 (Engine Warm Up With Cabin Heating Only):

Flow Diagram - Mode 2



6752533

(1) Surge Tank

(2) Turbocharger

(3) Auxiliary Heater Core (If Equipped)

(4) Heater Core

(5) Radiator

(6) Condenser

(7) Main Rotary Valve

(8) Engine Outlet Coolant Temperature Sensor

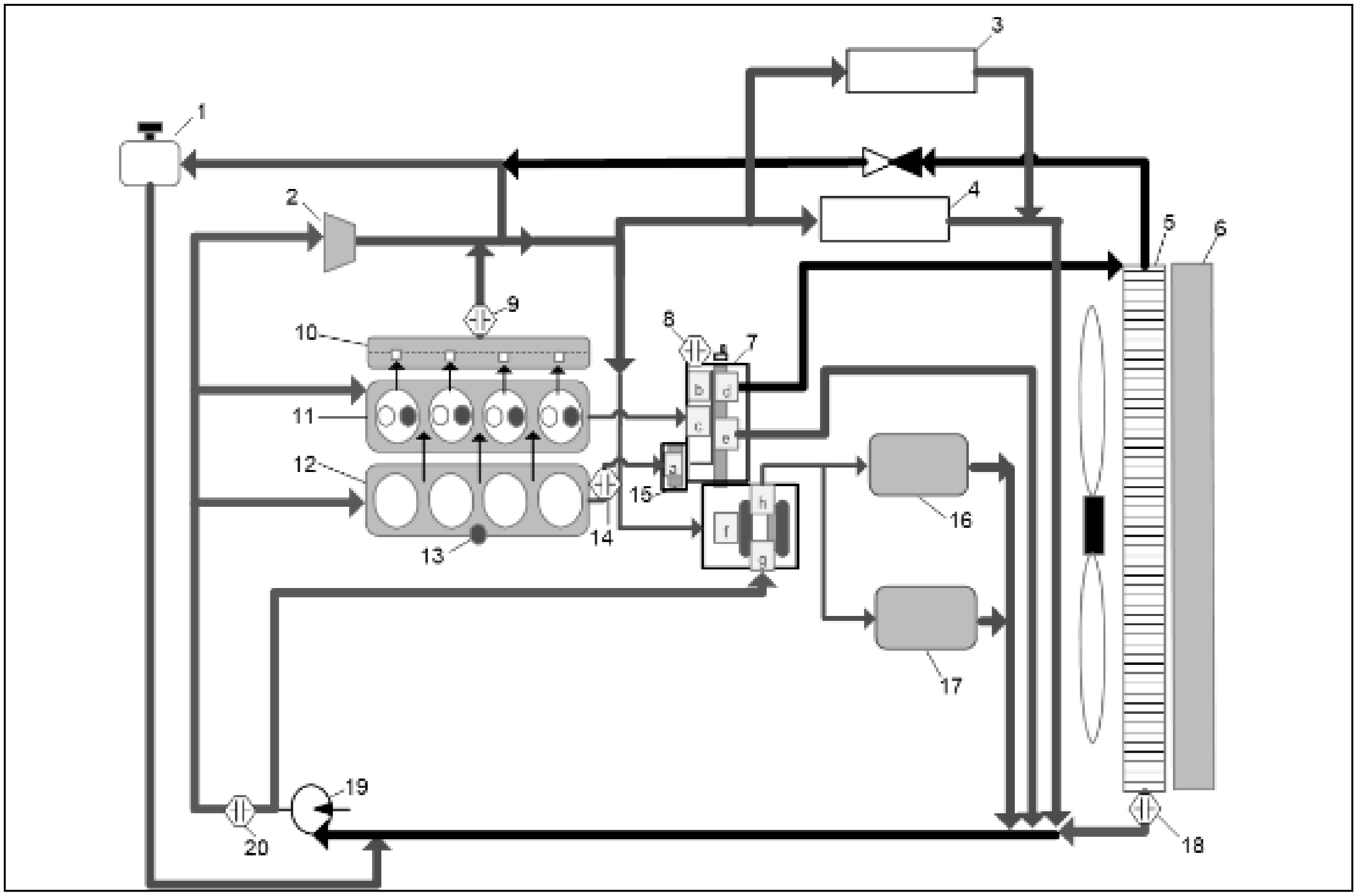
(9) Engine Cylinder Head Coolant Temperature Sensor
(10) Integrated Exhaust Manifold
(11) Cylinder Head
(12) Engine Block
(13) Engine Block Heater
(14) Engine Block Coolant Temperature Sensor
(15) Block Rotary Valve
(16) Engine Oil Heat Exchanger
(17) Transmission Oil Heat Exchanger
(18) Radiator Outlet Coolant Temperature Sensor
(19) Electric Water Pump
(20) Engine Inlet Coolant Temperature Sensor
Valve Port A
Valve Port B
Valve Port C
Valve Port D
Valve Port E
Valve Port F
Valve Port G
Valve Port H

When the driver requests passenger compartment heat or windshield defrosting, the electric water pump will control flow to maximize coolant heat transfer from engine to passenger compartment. This heater circuit is fed by a combination of warmed coolant from the cylinder head, integrated exhaust manifold and turbocharger cooler. The engine coolant flow control valve is at an all-closed position at this time. The warmed coolant goes directly to the passenger compartment heater core. Heater core flow returns to the electric water pump.

COMPONENT	CONDITION
Electric Water Pump	Low Speed or Speed-Controlled to Heater Core Demand
Main Rotary Coolant Valve	Low Speed, Low Flow
Block Rotary Control Valve	Low Speed, Low Flow

Mode 3 (Engine Warm Up With Cabin Heating And Radiator Bypass):

Flow Diagram - Mode 3



6752542

(1) Surge Tank

(2) Turbocharger

(3) Auxiliary Heater Core (If Equipped)

(4) Heater Core

(5) Radiator

(6) Condenser

(7) Main Rotary Valve

(8) Engine Outlet Coolant Temperature Sensor

(9) Engine Cylinder Head Coolant Temperature Sensor

(10) Integrated Exhaust Manifold

(11) Cylinder Head

(12) Engine Block

(13) Engine Block Heater

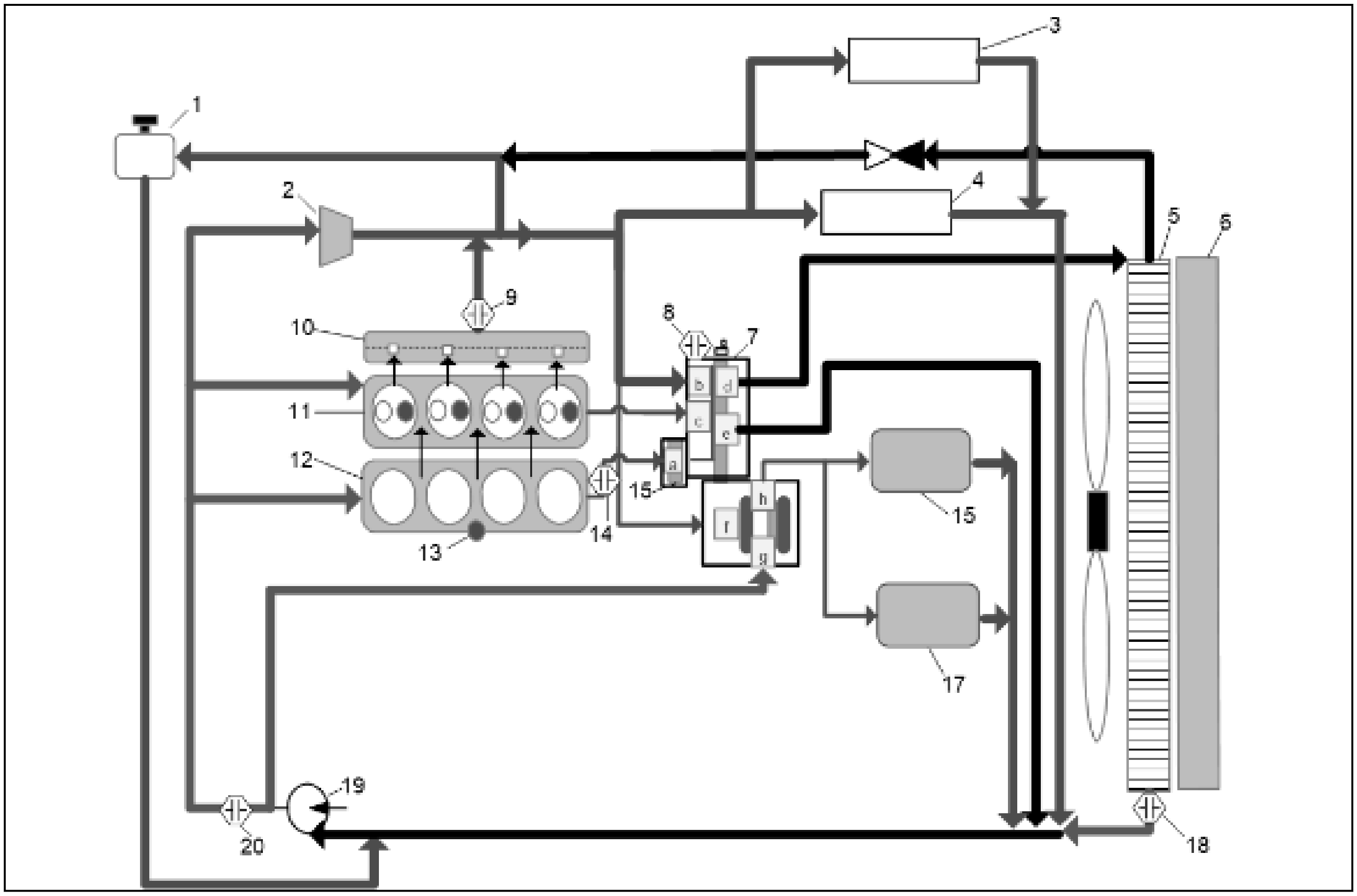
(14) Engine Block Coolant Temperature Sensor
(15) Block Rotary Valve
(16) Engine Oil Heat Exchanger
(17) Transmission Oil Heat Exchanger
(18) Radiator Outlet Coolant Temperature Sensor
(19) Electric Water Pump
(20) Engine Inlet Coolant Temperature Sensor
Valve Port A
Valve Port B
Valve Port C
Valve Port D
Valve Port E
Valve Port F
Valve Port G
Valve Port H

The cylinder head, integrated exhaust manifold and turbocharger cooler passages are still flowing and providing warmed coolant directly to the passenger compartment heater core, if requested. As combustion chamber temperatures get hotter, it is necessary to flow coolant through the cylinder head without losing heat to the radiator or engine/transmission oil heat exchangers. The block rotary coolant valve will allow flow through the cylinder head by opening the radiator bypass loop, which returns coolant directly to the electric water pump.

COMPONENT	CONDITION
Electric Water Pump	Speed-Controlled to Engine Demand
Main Rotary Coolant Valve	Bypass Radiator
Block Rotary Control Valve	Position-Controlled

Mode 4 (Engine Warm Up With Cabin Heating, Radiator Bypass And Oil Heating):

Flow Diagram - Mode 4



6752547

(1) Surge Tank
(2) Turbocharger
(3) Auxiliary Heater Core (If Equipped)
(4) Heater Core
(5) Radiator
(6) Condenser
(7) Main Rotary Valve
(8) Engine Outlet Coolant Temperature Sensor
(9) Engine Cylinder Head Coolant Temperature Sensor
(10) Integrated Exhaust Manifold
(11) Cylinder Head
(12) Engine Block
(13) Engine Block Heater

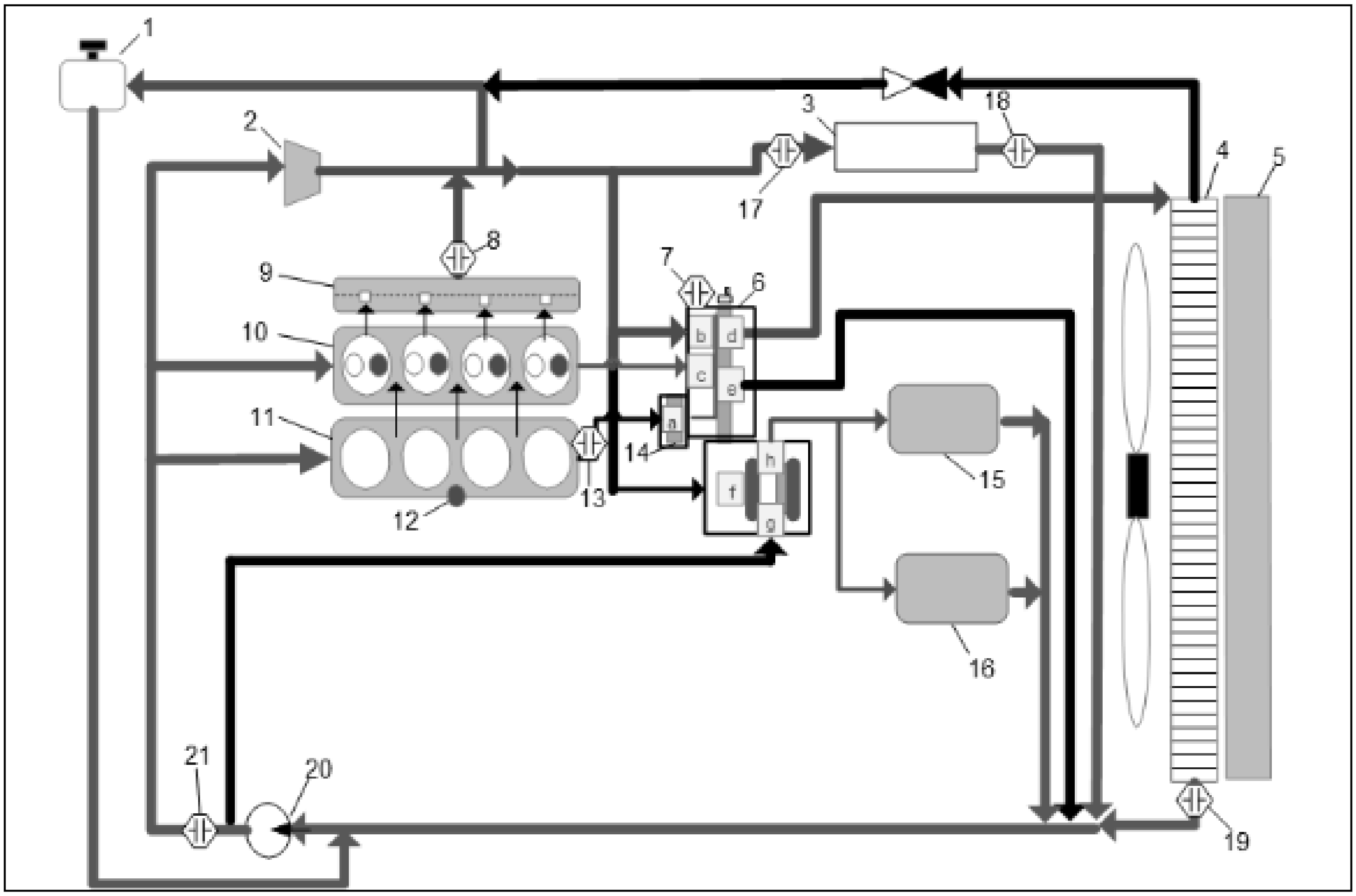
(14) Engine Block Coolant Temperature Sensor
(15) Block Rotary Valve
(16) Engine Oil Heat Exchanger
(17) Transmission Oil Heat Exchanger
(18) Radiator Outlet Coolant Temperature Sensor
(19) Electric Water Pump
(20) Engine Inlet Coolant Temperature Sensor
Valve Port A
Valve Port B
Valve Port C
Valve Port D
Valve Port E
Valve Port F
Valve Port G
Valve Port H

The cylinder head, integrated exhaust manifold and turbocharger cooler passages are still flowing and providing warmed coolant directly to the passenger compartment heater core, if requested. Once the optimal combustion chamber temperature has been reached, warmed coolant can be used to quickly raise the engine and transmission to their optimal temperatures. The engine coolant flow control valve will still allow flow through the cylinder head with the open radiator bypass loop but will now also allow coolant flow to the engine/transmission oil heat exchangers. Coolant flows from the bypass and heat exchangers returns to the electric water pump.

Flow Diagram - Mode 5

COMPONENT	CONDITION
Electric Water Pump	Speed-Controlled to Engine Demand
Main Rotary Coolant Valve	Bypass Radiator and Oil Heating
Block Rotary Control Valve	Position-Controlled

Mode 5 (Engine-Demand Cooling With Cabin Heating And Oil Heating):



6976296

(1) Surge Tank

(2) Turbocharger

(3) Auxiliary Heater Core (If Equipped)

(4) Heater Core

(5) Radiator

(6) Condenser

(7) Main Rotary Valve

(8) Engine Outlet Coolant Temperature Sensor

(9) Engine Cylinder Head Coolant Temperature Sensor

(10) Integrated Exhaust Manifold

(11) Cylinder Head

(12) Engine Block

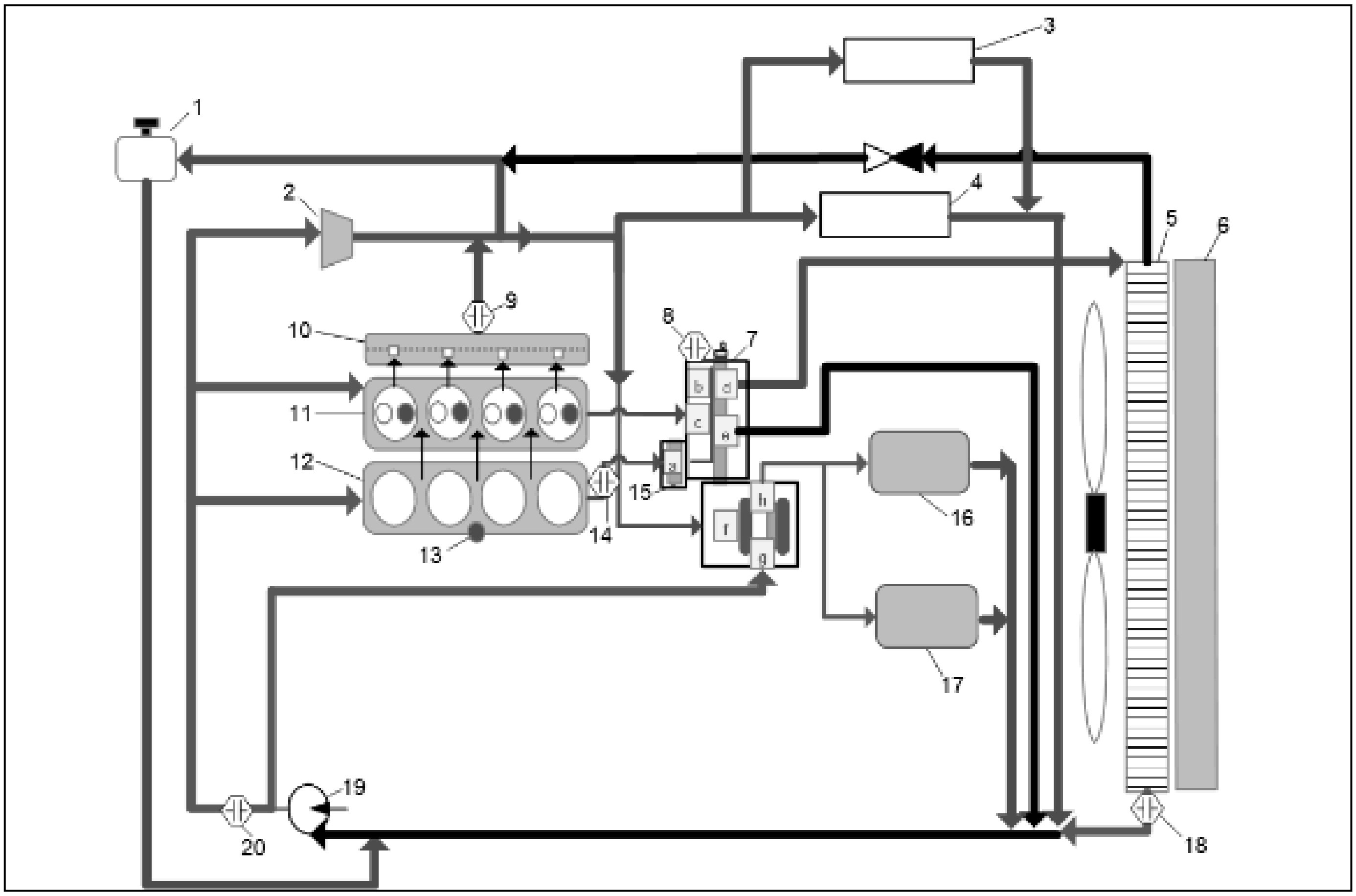
(13) Engine Block Heater
(14) Engine Block Coolant Temperature Sensor
(15) Block Rotary Valve
(16) Engine Oil Heat Exchanger
(17) Transmission Oil Heat Exchanger
(18) Radiator Outlet Coolant Temperature Sensor
(19) Electric Water Pump
(20) Engine Inlet Coolant Temperature Sensor
Valve Port A
Valve Port B
Valve Port C
Valve Port D
Valve Port E
Valve Port F
Valve Port G
Valve Port H

The cylinder head, integrated exhaust manifold and turbocharger cooler passages are still flowing and providing warmed coolant directly to the passenger compartment heater core, if requested. At this point, the combustion chamber temperature has reached its optimal temperature and the engine needs to dissipate heat through the radiator. Based on engine temperature, the engine coolant flow control valve will split the flow between the radiator and bypass in a ratio necessary to maintain optimal engine temperatures. Additionally, coolant flow will continue to flow to the engine/transmission oil heat exchangers. Engine oil and transmission oil can take significantly longer time to reach optimal temperatures after the engine is already warmed. Coolant flow from the radiator, bypass, and heat exchangers returns to the electric water pump.

COMPONENT	CONDITION
Electric Water Pump	Speed-Controlled to Engine Demand
Main Rotary Coolant Valve	Position-Controlled with Oil Heating
Block Control Valve	Position-Controlled

Mode 6 (Engine-Demand Cooling With Cabin Heating And Oil Cooling):

Flow Diagram - Mode 6



6752554

(1) Surge Tank

(2) Turbocharger

(3) Auxiliary Heater Core (If Equipped)

(4) Heater Core

(5) Radiator

(6) Condenser

(7) Main Rotary Valve

(8) Engine Outlet Coolant Temperature Sensor

(9) Engine Cylinder Head Coolant Temperature Sensor

(10) Integrated Exhaust Manifold

(11) Cylinder Head

(12) Engine Block
(13) Engine Block Heater
(14) Engine Block Coolant Temperature Sensor
(15) Block Rotary Valve
(16) Engine Oil Heat Exchanger
(17) Transmission Oil Heat Exchanger
(18) Radiator Outlet Coolant Temperature Sensor
(19) Electric Water Pump
(20) Engine Inlet Coolant Temperature Sensor
Valve Port A
Valve Port B
Valve Port C
Valve Port D
Valve Port E
Valve Port F
Valve Port G
Valve Port H

The cylinder head, integrated exhaust manifold and turbocharger cooler passages are still flowing and providing warmed coolant directly to the passenger compartment heater core, if requested. In extreme hot driving conditions, the engine and transmission become extremely hot and their oils need to be cooled. The engine coolant flow control valve will continue to split the flow between the radiator and bypass in a ratio necessary to maintain optimal engine temperatures and will now allow colder coolant directly from the electric water pump to flow to the engine/transmission oil heat exchangers. Coolant flow from the radiator, bypass, and heat exchangers returns to the electric water pump.

COMPONENT	CONDITION
Electric Water Pump	Speed-Controlled to Engine Demand
Main Rotary Coolant Valve	Position-Controlled with Oil Cooling
Block Control Valve	Position-Controlled

Mode 7 (After Run Cooling):

The after run mode is after key off and is needed only after extreme hot conditions with high engine, oil and coolant temperatures. For after run mode, the same valve positions are used as in Mode 6, but the electric water pump is run at a lower speed to continue cooling.

COMPONENT	CONDITION
Electric Water Pump	Low Speed
Main Rotary Coolant Valve	Max Cooling
Block Control Valve	Open

SHUT DOWN

At engine shutdown, the control valves remain open to permit radiator flow and allow coolant service fill by gravity alone. Both control valves also undergo an diagnostic check after engine shutdown, which is sometimes audible.

Cooling System Description and Operation

Engine Coolant Indicators

ENGINE COOLANT HOT

The instrument panel cluster (IPC) displays ENGINE COOLANT HOT message when the IPC receives a message from the powertrain control module (PCM) requesting illumination of this driver warning.

ENGINE OVERHEATED

The IPC displays ENGINE OVERHEATED message when the IPC receives a message from the PCM requesting illumination of this driver warning.

REDUCED ENGINE POWER

The IPC displays REDUCED ENGINE POWER message when the IPC detects a reduced engine power condition from the PCM. The IPC receives a message from the PCM requesting illumination when the engine temperature exceeds a calibrated value.

Coolant Heater (If Equipped)

The optional coolant heater (RPO K05) operates using 110 V AC external power and is designed to warm the coolant in the engine block area for improved starting in very cold weather. The coolant heater also helps reduce fuel consumption when a cold engine is warming up. The unit is equipped with a detachable AC power cord. There is an internal thermal switch in the coolant heater cord that prevents operation above −18°C (0°F). A weather shield on the cord is provided to protect the plug when not in use.

Cooling System

The cooling system's function is to maintain an efficient engine operating temperature during all engine speeds and operating conditions. The cooling system is designed to remove various amounts of the heat produced by the burning of the air-fuel mixture. When the engine is cold, the coolant does not flow to the radiator until the thermostat opens. This allows the engine to warm quickly.

Cooling Cycle

Coolant is drawn from the radiator outlet and into the water pump inlet by the water pump. Coolant will then be pumped through the water pump outlet and into the engine block. In the engine block, the coolant circulates through the water jackets surrounding the cylinders, where it absorbs heat.

Some coolant is also pumped from the water pump to the heater core, then back to the water pump. This provides the passenger compartment with heat and defrost.

The coolant is then forced through the cylinder head gasket openings and into the cylinder heads. In the cylinder heads, the coolant flows through the water jackets surrounding the combustion chambers and valve seats, where it absorbs additional heat.

Coolant

The engine coolant is a solution made up of a 50-50 mixture of DEX-COOL® and suitable drinking water. The coolant solution carries excess heat away from the engine to the radiator, where the heat is dissipated to the atmosphere.

Radiator

The radiator is a heat exchanger. It consists of a core and two tanks. The aluminum core is a tube and fin crossflow design that extends from the inlet tank to the outlet tank. Fins are placed around the outside of the tubes to improve heat transfer to the atmosphere.

The inlet and outlet tanks are a molded, high temperature, nylon reinforced plastic material. A high temperature rubber gasket seals the tank flange edge to the aluminum core. The tanks are clamped to the core with clinch tabs. The tabs are part of the aluminum header at each end of the core.

The radiator also has a radiator drain cock, located in the bottom of the right hand tank. The radiator drain cock unit includes the drain cock and drain cock seal.

The radiator removes heat from the coolant passing through it. The fins on the core transfer heat from the coolant passing through the tubes. As air passes between the fins, it absorbs heat and cools the coolant.

Radiator Surge Tank and Radiator Surge Tank Cap

The radiator surge tank is a plastic tank with a threaded pressure radiator surge tank cap that contains a blow off or pressure relief valve, vacuum or atmospheric valve and seals the cooling system. The radiator surge tank is mounted at a point higher than all other coolant passages. The radiator surge tank provides an air space in the cooling system that allows the coolant to expand and contract. The radiator surge tank provides a coolant fill point and a central air bleed location. The radiator surge tank cap pressure valve is held against its seat by a spring, which protects the radiator from excessive cooling system pressure. The vacuum valve is held against its seat by a spring, which permits opening of the valve to relieve vacuum created in the cooling system as it cools off.

During vehicle use, the coolant heats and expands. The pressure cap allows cooling system pressure to build up as the temperature increases. As the pressure builds, the boiling point of the coolant increases. Engine coolant can be safely run at a temperature much higher than the boiling point of the coolant at atmospheric pressure. The hotter the coolant is, the faster the heat transfers from the radiator to the cooler, passing air. Increased coolant volume flows into the radiator surge tank. If the pressure in the cooling system exceeds the rating of the pressure cap, it raises the pressure valve, venting the excess pressure through a channel into the overflow bottle. As the coolant circulates, the air is allowed to bubble out. This air is then transferred to the overflow bottle, through the radiator surge tank cap, where it returns to the atmosphere. Coolant without air bubbles absorbs heat much better than coolant with bubbles. When the engine cools, the coolant, without air bubbles, contracts back into the radiator surge tank from the bottom of the overflow bottle and a vacuum is created in the cooling system. This vacuum causes the vacuum valve to open, allowing outside air into the radiator surge tank. This equalizes the pressure in the cooling system with atmospheric pressure, preventing the radiator and coolant hoses from collapsing.

Air Baffles and Seals

The cooling system uses deflectors, air baffles and air seals to increase cooling system capability. Deflectors are installed under the vehicle to redirect airflow beneath the vehicle and through the radiator to increase engine cooling. Air baffles are also used to direct airflow through the radiator and increase cooling capability. Air seals prevent air from bypassing the radiator and air conditioning condenser, and prevent recirculation of hot air for better hot weather cooling and air conditioning condenser performance.

Engine Oil Cooler

Excessive heat in the engine oil is removed via a heat exchanger located in the right side tank of the radiator.

The engine oil temperature is controlled by the temperature of the engine coolant that surrounds the oil cooler in the radiator.

The engine oil pump, pumps the oil through the engine oil cooler line to the oil cooler. The oil then flows through the cooler where excessive heat is transferred to the engine coolant. The oil is then pumped through the oil cooler return line, to the engine block system.

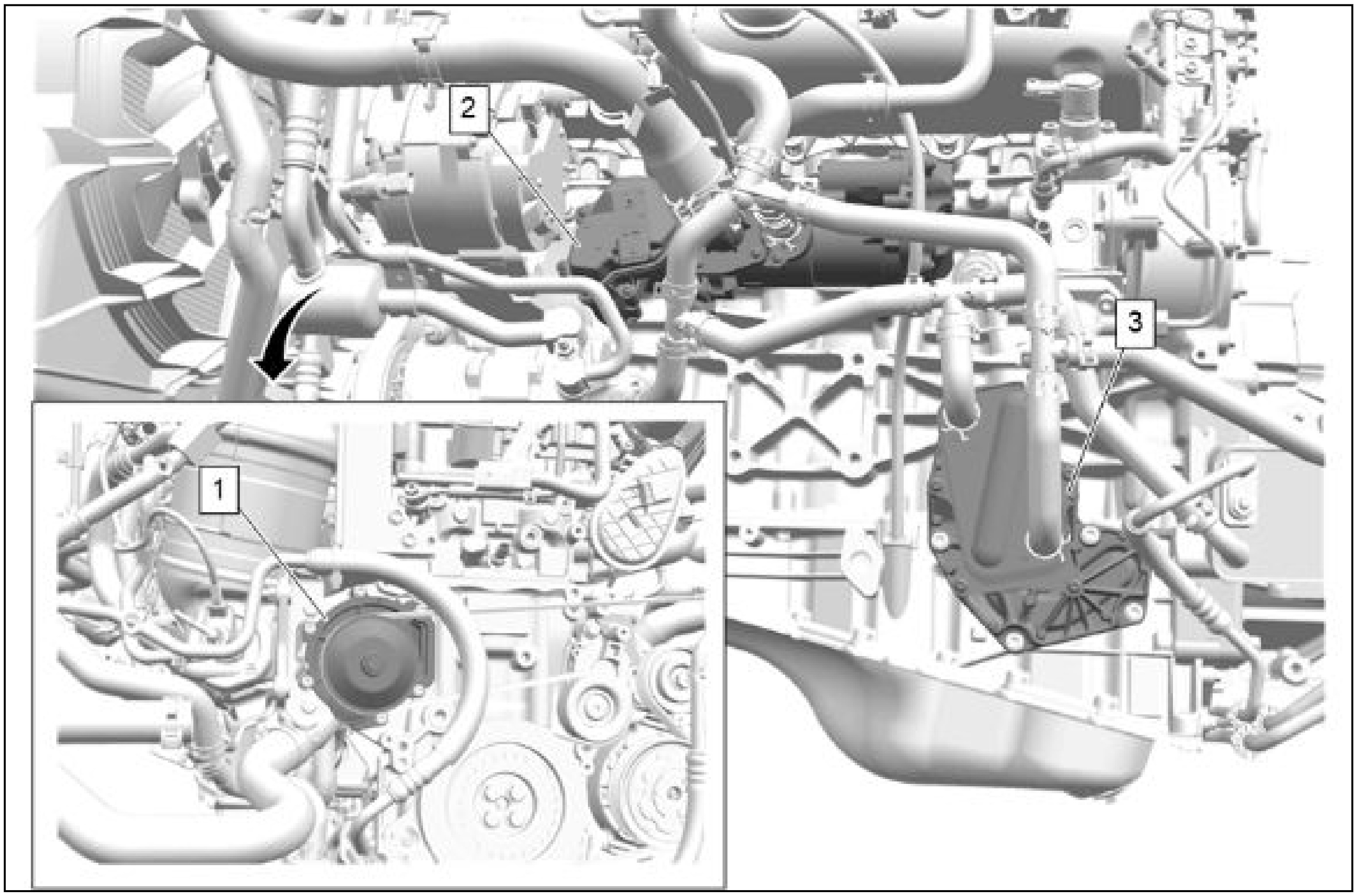
Cooling System Description and Operation (High Temperature Coolant Loop)

Active Thermal Management

This vehicle uses an advance technology cooling system design, which makes use of active thermal management strategy. The difference between conventional cooling systems that use mechanical water pumps and active thermal management is that the predominant goal of the active thermal management strategy is to prioritize fuel economy by maintaining an ideal engine operating temperature during all engine speeds and operating conditions, while still meeting customer expectations for vehicle performance and reducing vehicle emissions. This vehicle utilizes a secondary coolant loop which circulates coolant to the water charge air cooler, fuel cooler, and the diesel exhaust fluid injectors via an auxiliary low temperature radiator and chassis mounted electric coolant pump. Refer to low temperature coolant loop description and operation: *Cooling System Description and Operation 6-84* *Cooling System Description and Operation 6-107* *Cooling System Description and Operation (Low Temperature Coolant Loop) 6-131* *Cooling System Description and Operation (High Temperature Coolant Loop) 6-109*

The key features of active thermal management include:

- **Engine: Internal**
  - Improved engine coolant jacket that targets hot spots in the engine.
- **Engine Mounted Cooling**



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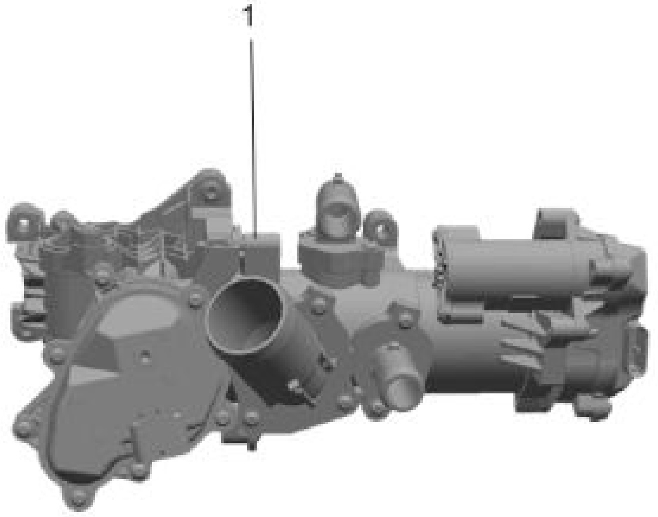
- Conventional mechanical water pump (1).
- The engine coolant flow control valve (2) contains two rotary control valves. The flow control coolant valve and the main rotary coolant valve both eliminate the need for the conventional cooling system thermostat.
- Engine oil cooler (3) that uses coolant to heat or cool the engine oil as required.

- **Temperature and Position Sensors**
  - The engine control module, which controls the complete active thermal management system using feedback from numerous sensors:
  - Engine Block Coolant Temperature Sensor
  - Engine Cylinder Head Metal Temperature Sensor
  - Engine Inlet Coolant Temperature Sensor
  - Engine Outlet Coolant Temperature Sensor
  - Engine Oil Temperature Sensor and Engine Oil Temperature Sensor 2
  - Transmission Oil Temperature Sensor
  - Radiator Outlet Coolant Temperature Sensor
  - Engine Coolant Flow Control Valve Position Sensor
- **Mechanical Water Pump**

6852815

- Mechanical water pump (1) provides constant coolant flow to the engine cylinder block, cylinder head and the engine coolant flow control valve.

- **Engine Coolant Flow Control Valve**



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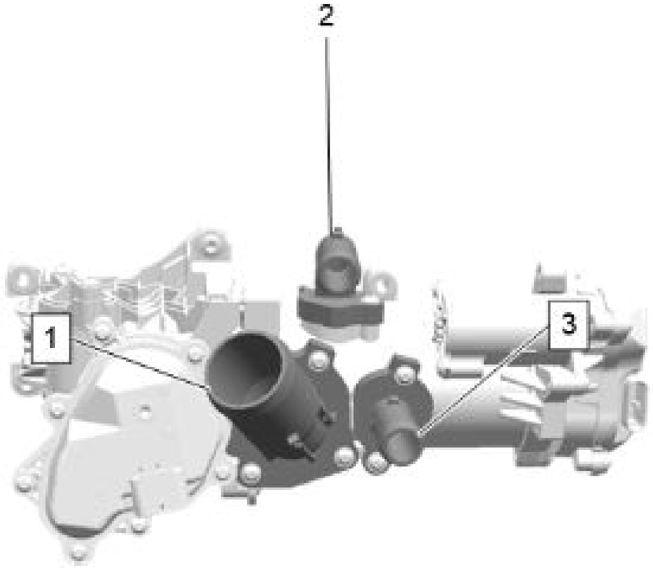
- The engine coolant flow control valve (1) contains two coolant valves. The flow control valve and the main rotary valve.
- The flow control valve is located on the left side of the assembly. The engine coolant flow control valve controls coolant flow through the engine by throttling the coolant pump flow. This is done to prevent excess flow through the engine when not needed to improve fuel economy.

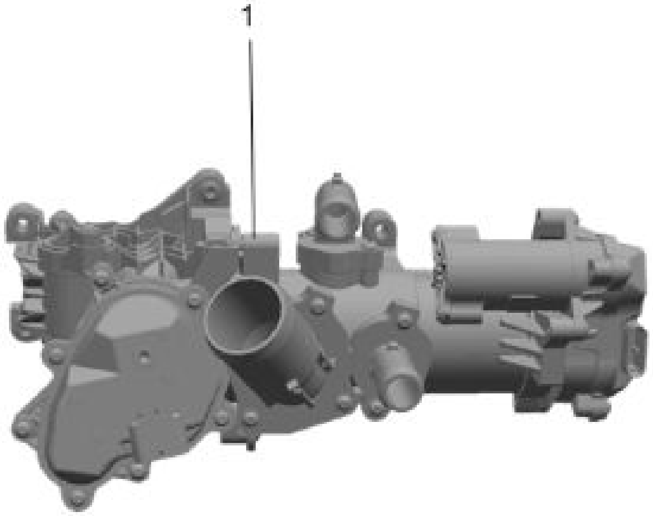
- **Engine Coolant Flow Control Valve (Coolant Flow Control Valve)**



6852802

- The coolant flow control valve controls coolant flow to the radiator as well as the engine and transmission oil heat exchangers eliminating the need for a conventional wax-operated thermostat and is controlled by the engine control module through sensor feedback. The large port on the left side of the valve (1) controls flow to the radiator. The small port on the top of the valve (2) is always open and flowing to the exhaust gas recirculation cooler, turbo and the heater core. The small port to the right side of the valve (3) allows flow to the engine oil and transmission oil heat exchangers

- **Engine Coolant Flow Control Valve (Main Rotary Coolant Valve)**



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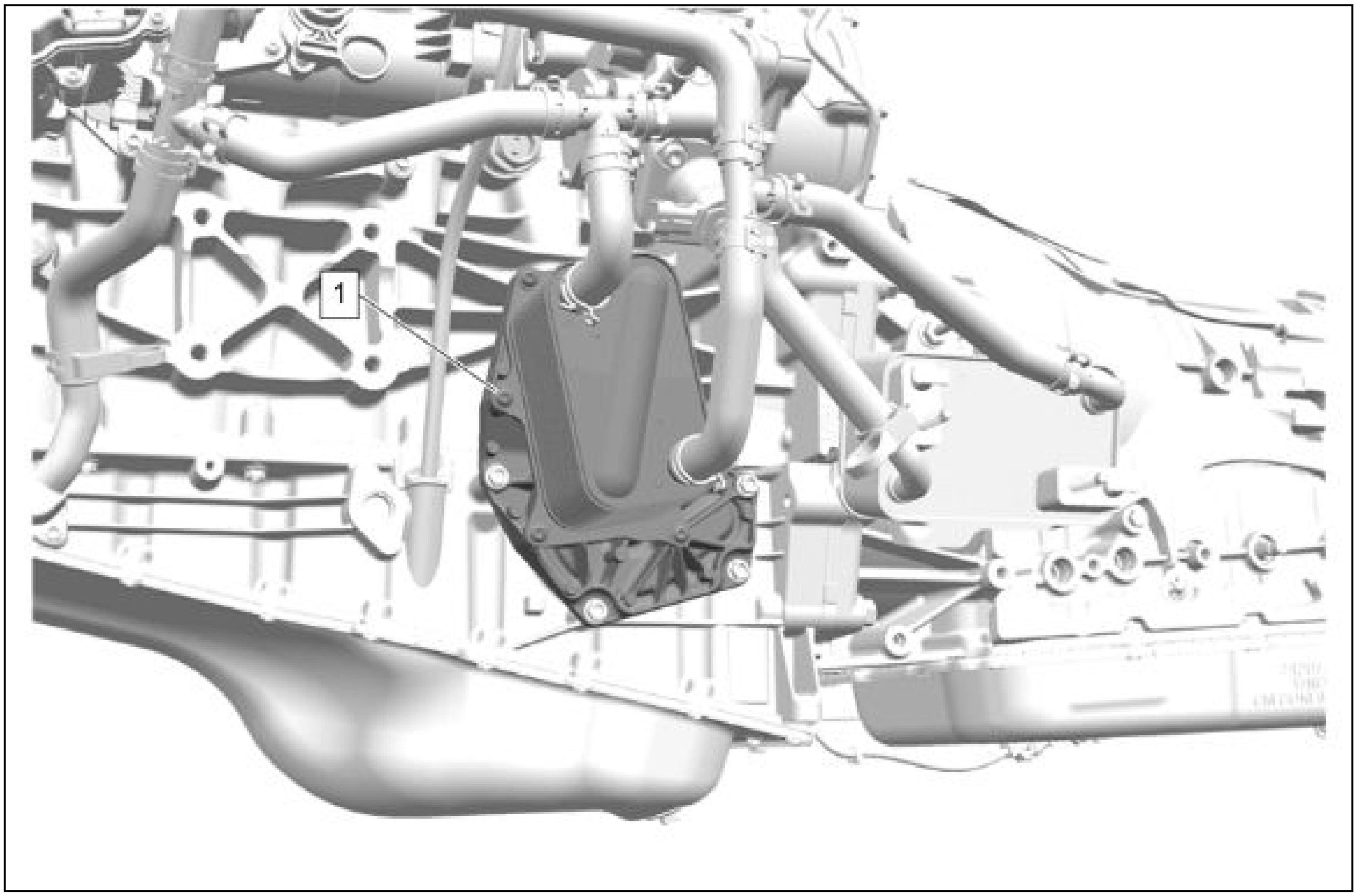
- The main rotary coolant valve is part of the engine coolant flow control valve and is located on the right side of the valve assembly (1). The main rotary valve controls coolant flow to the radiator, and oil heat exchangers.
- The combination of the engine coolant flow control valve and main rotary coolant valve is critical to achieving optimal combustion chamber temperatures as quickly as possible during engine warm up.

- **Engine Oil Cooler**



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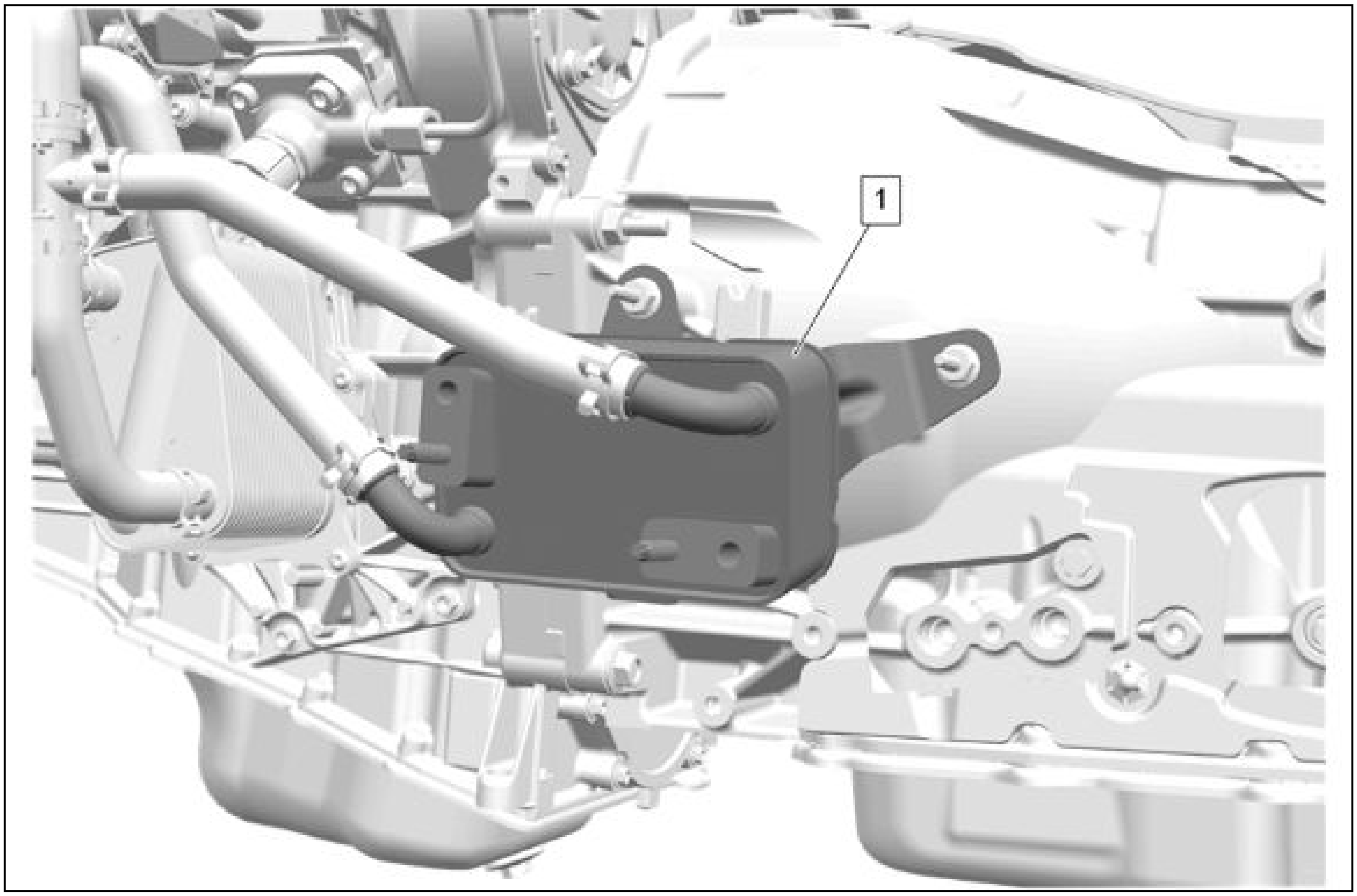
- The engine oil cooler (1) is a heat exchanger that is attached to the side of the engine and exchanges heat between the engine oil and engine coolant. The engine oil fluid cooling exchanger can flow no coolant, provide hot coolant for transmission oil heating (during engine warm-up) or provide cooled coolant for transmission oil cooling (under high thermal loads).

- **Automatic Transmission Fluid Cooling Exchanger**



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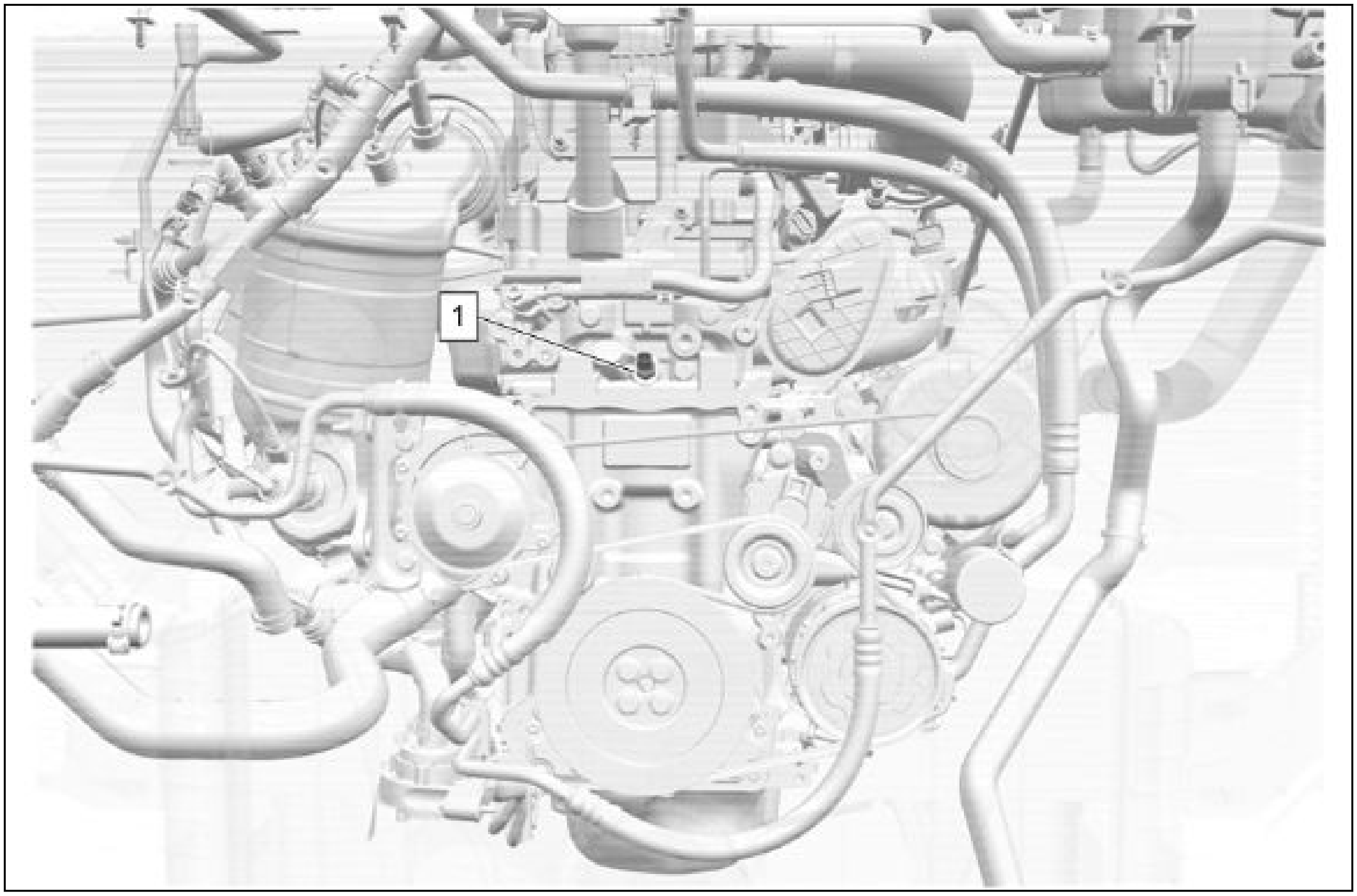
- The automatic transmission fluid cooling exchanger (1) is a heat exchanger that is attached to the front of the transmission and exchanges heat between the transmission oil and engine coolant. The automatic transmission fluid cooling exchanger can flow no coolant, provide hot coolant for transmission oil heating (during engine warm-up) or provide cooled coolant for transmission oil cooling (under high thermal loads).

- **Automatic Coolant Service Fill Description**
  - Active thermal management systems are more difficult to fill with coolant than traditional thermostat based systems. Therefore the vehicle is equipped with an automatic coolant service fill that can be activated via the scan tool or driver controls that will cycle the electric water pump and coolant valves to de-aerate the coolant system.

Component Locator - Engine View



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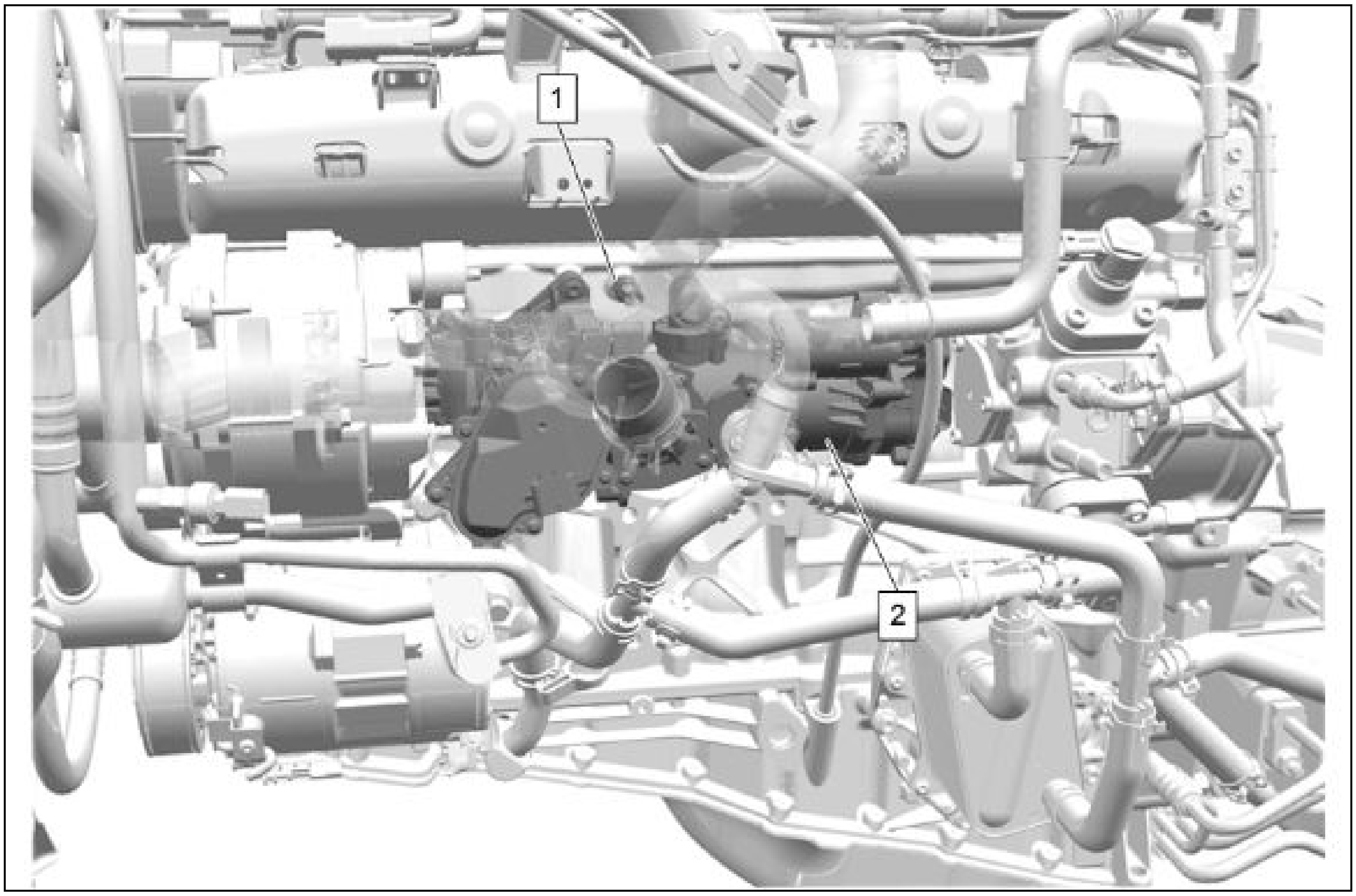
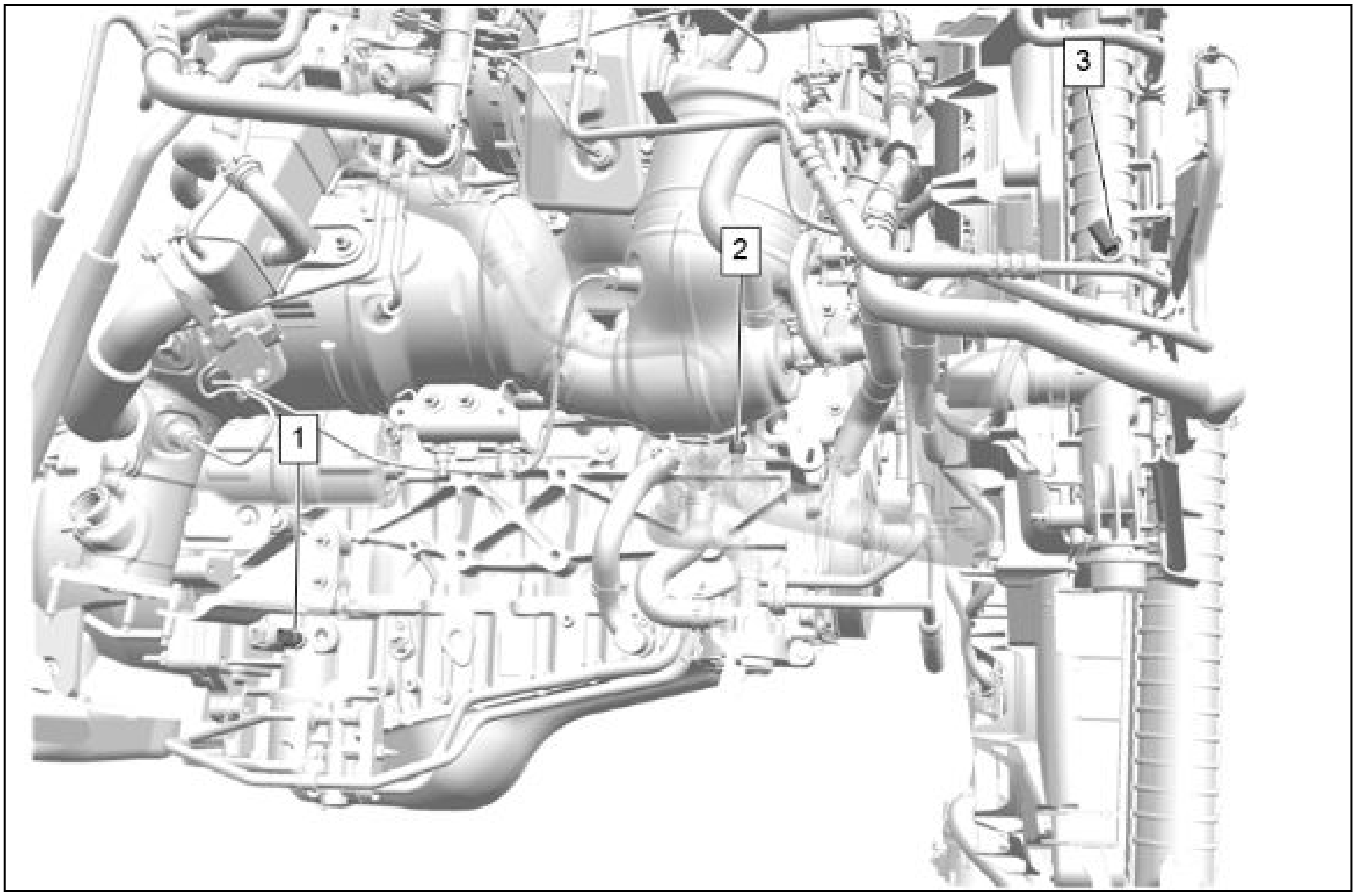
Front of engine view

Callout	Scan Tool Reference	Service Information Part Name or Electronic Part Catalog Name
1	Cylinder Head Temperature Sensor	Engine Cylinder Head Metal Temperature Sensor



Left side of engine view

Callout	Scan Tool Reference	Service Information Part Name or Electronic Part Catalog Name
1	Engine Coolant Temperature Sensor 2	Engine Outlet Coolant Temperature Sensor
2	Engine Coolant Control Valve Position Sensor	Part of Engine Coolant Flow Control Valve



Right side of engine view

Callout	Scan Tool Reference	Service Information Part Name or Electronic Part Catalog Name
1	Engine Oil Temperature Sensor and Engine Oil Temperature Sensor 2	Engine Oil Temperature Sensor
2	Engine Coolant Temperature Sensor 1	Engine Inlet Coolant Temperature Sensor
3	Radiator Coolant Temperature Sensor	Radiator Outlet Coolant Temperature Sensor
Internal to the transmission	Transmission Oil Temperature Sensor	Transmission Oil Temperature Sensor

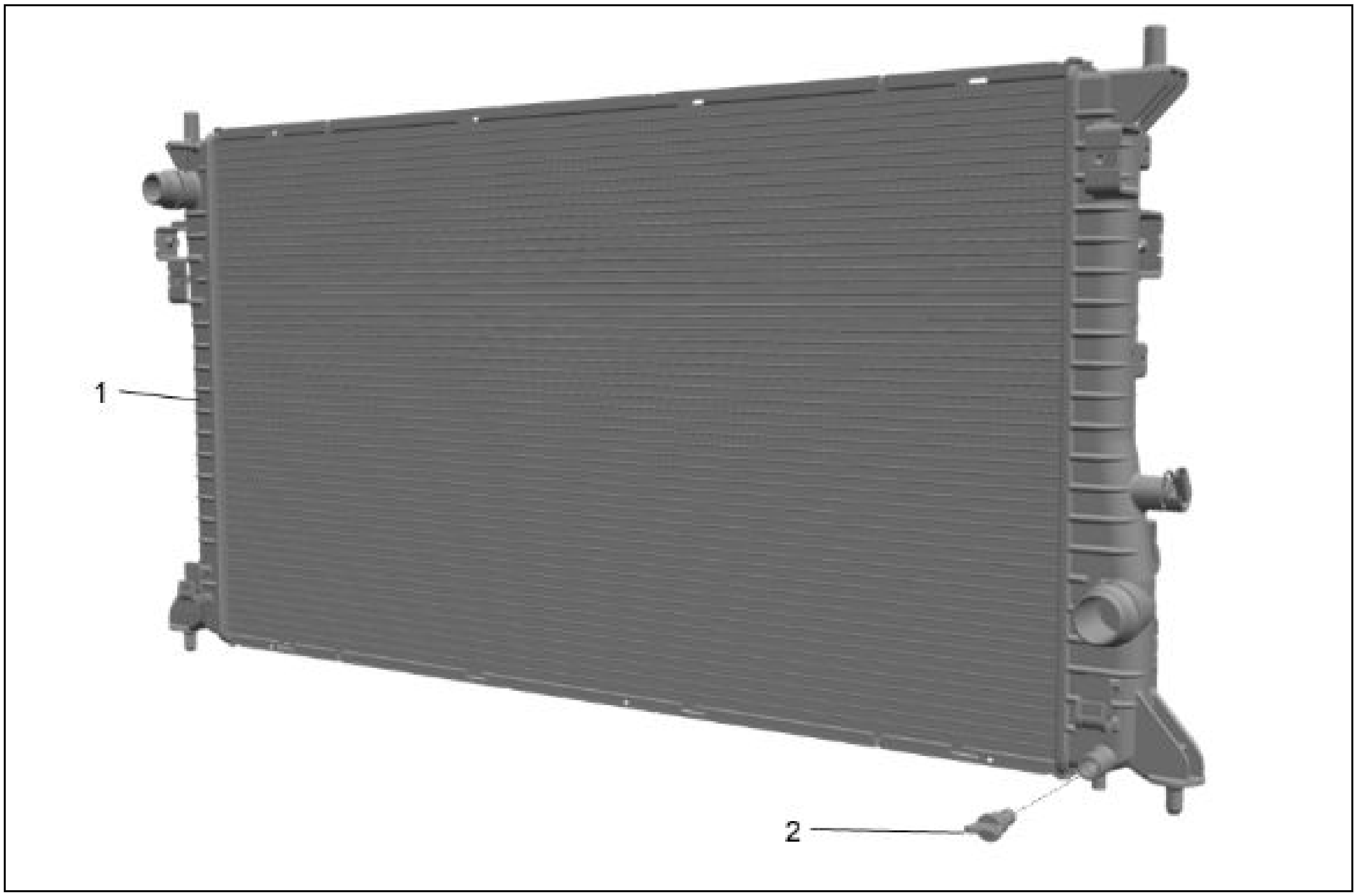
Cooling System Components

- Various temperature and position sensors provide data back to the engine control module.
- Active thermal management still uses many of the conventional cooling system features, including:
    - Coolant
    - Coolant Hoses
    - Radiator
    - Radiator Bypass Route
    - Radiator Surge Tank
    - Surge Tank Pressure Cap
    - Engine Coolant Indicators
    - Air Baffles/Guides and Seals
    - Cabin Heater Core Route, if equipped with Rear Cabin Heater

Coolant

The engine coolant is a solution made up of a 50-50 mixture of DEX-COOL® and suitable drinking water. The coolant solution transfers heat between the components of the engine heating/cooling system.

Radiator



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The radiator (1) is a heat exchanger. It consists of a core and two end tanks. The aluminum core is a tube and fin crossflow design that extends from the inlet tank to the outlet tank. Fins are placed around the outside of the tubes to improve heat transfer to the atmosphere. The inlet and outlet tanks are a molded high temperature nylon reinforced plastic material. A high temperature rubber gasket seals the tank flange edge to the aluminum core. The tanks are clamped to the core with clinch tabs. The tabs are part of the aluminum header at each end of the core. The fins on the core transfer heat from the coolant passing through the tubes. Air passing between the fins absorbs the heat and cools the coolant. Heat is removed from the coolant as the coolant passes through the radiator.

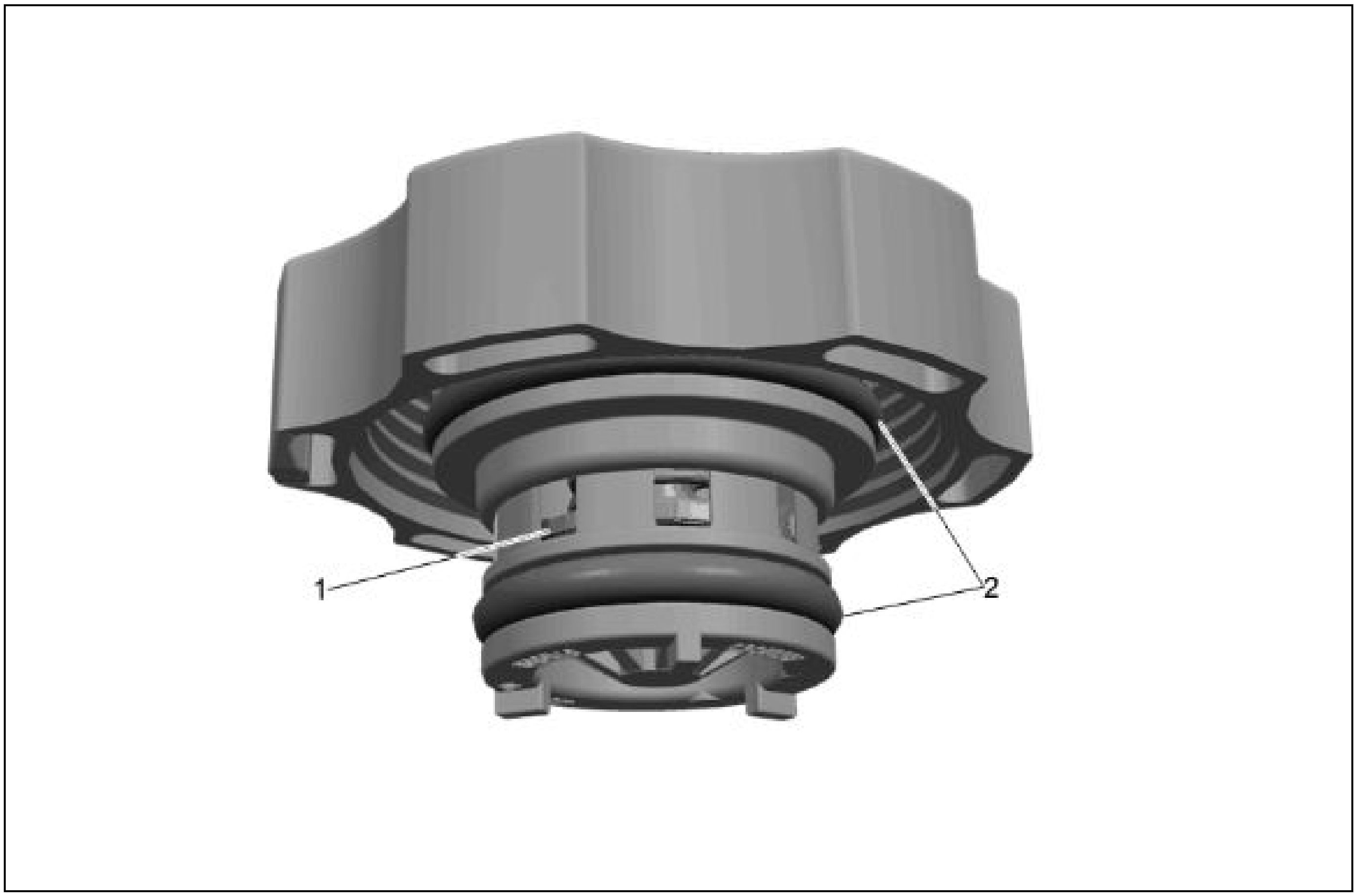
The radiator also has a drain cock (2) located in the bottom of the left or right side tank. The drain cock unit includes the drain cock and drain cock seal.

Radiator Surge Tank

6852834

The radiator surge tank (2) is a plastic tank with a pressure cap (1) mounted to it. The tank is mounted at a point higher than all other coolant passages. The surge tank provides an air space in the cooling system. The air space allows the coolant to expand and contract. The surge tank also provides a coolant fill point and a central air bleed location. During vehicle use, the coolant heats and expands. The coolant that is displaced by this expansion flows into the surge tank. As the coolant circulates, air is allowed to exit. This is an advantage to the cooling system. Coolant without air bubbles absorbs heat much better than coolant with air bubbles.

Radiator Surge Tank Cap



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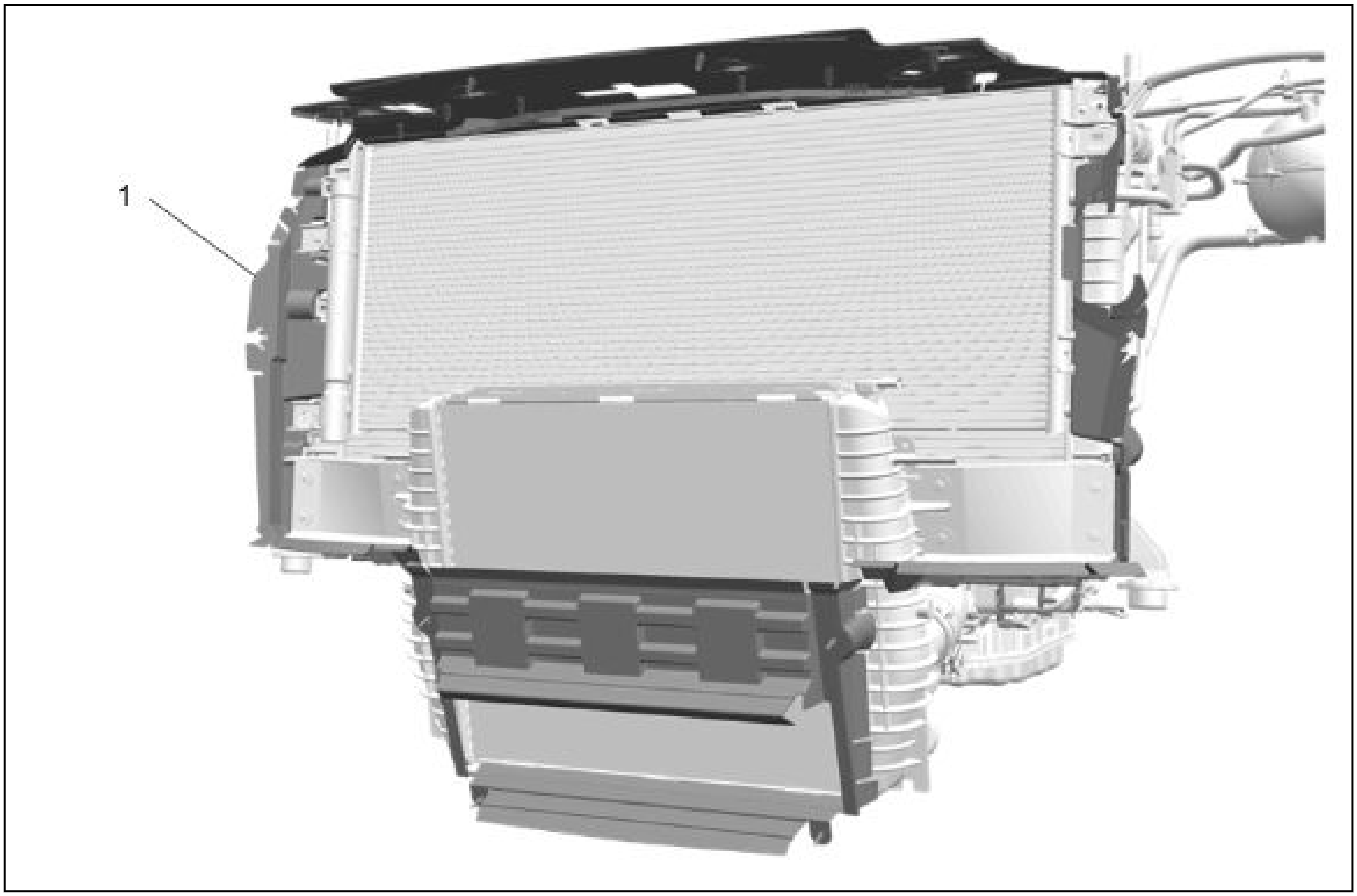
The radiator surge tank cap is a pressure cap that seals (2) and pressurizes the cooling system. It contains a blow-off or pressure valve (1) and a vacuum or atmospheric valve.

- The pressure valve is held against its seat by a spring and protects the radiator by relieving pressure if it exceeds 20 psi.
- The vacuum valve is held against its seat by a spring, which permits opening of the valve to relieve vacuum created in the cooling system as it cools off. The vacuum, if not relieved, could cause the radiator hoses to collapse.
- The pressure cap allows pressure in the cooling system to build up. As the pressure builds, the boiling point of the coolant goes up as well. Therefore, the coolant can be safely run at a temperature higher than the boiling point of the coolant at atmospheric pressure.
- The hotter the coolant is, the faster the heat moves from the radiator to the cooler passing air. However, if the pressure exceeds the strength of the spring, the pressure valve rises so that the excess pressure can escape.
- When the engine cools down, the temperature of the coolant drops and a vacuum is created in the cooling system. This vacuum causes the vacuum valve to open, allowing outside air into the cooling system. This equalizes the pressure in the cooling system with atmospheric pressure, thus preventing the radiator hoses from collapsing.

Air Baffles/Guides and Seals



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The cooling system uses deflectors, air baffles/guides and air seals to increase cooling system capability. Deflectors are installed under the vehicle to redirect airflow beneath the vehicle and through the radiator to increase engine cooling. Air baffles/guides are also used to direct airflow through the radiator and increase cooling capability. Air seals prevent air from bypassing the radiator and air conditioning condenser, and prevent recirculation of hot air for better hot weather cooling and air conditioning condenser performance.

Engine Coolant Indicators

The instrument panel cluster shows the engine temperature on the temperature gauge. The value is sent on the data communication line from engine control module. When the coolant temperature is hot, the instrument panel cluster receives a discrete input from engine control module requesting illumination.

The instrument panel cluster performs the display test at the start of each ignition cycle. The instrument panel cluster illuminates the TEMP indicator.

Coolant Heater (If Equipped)

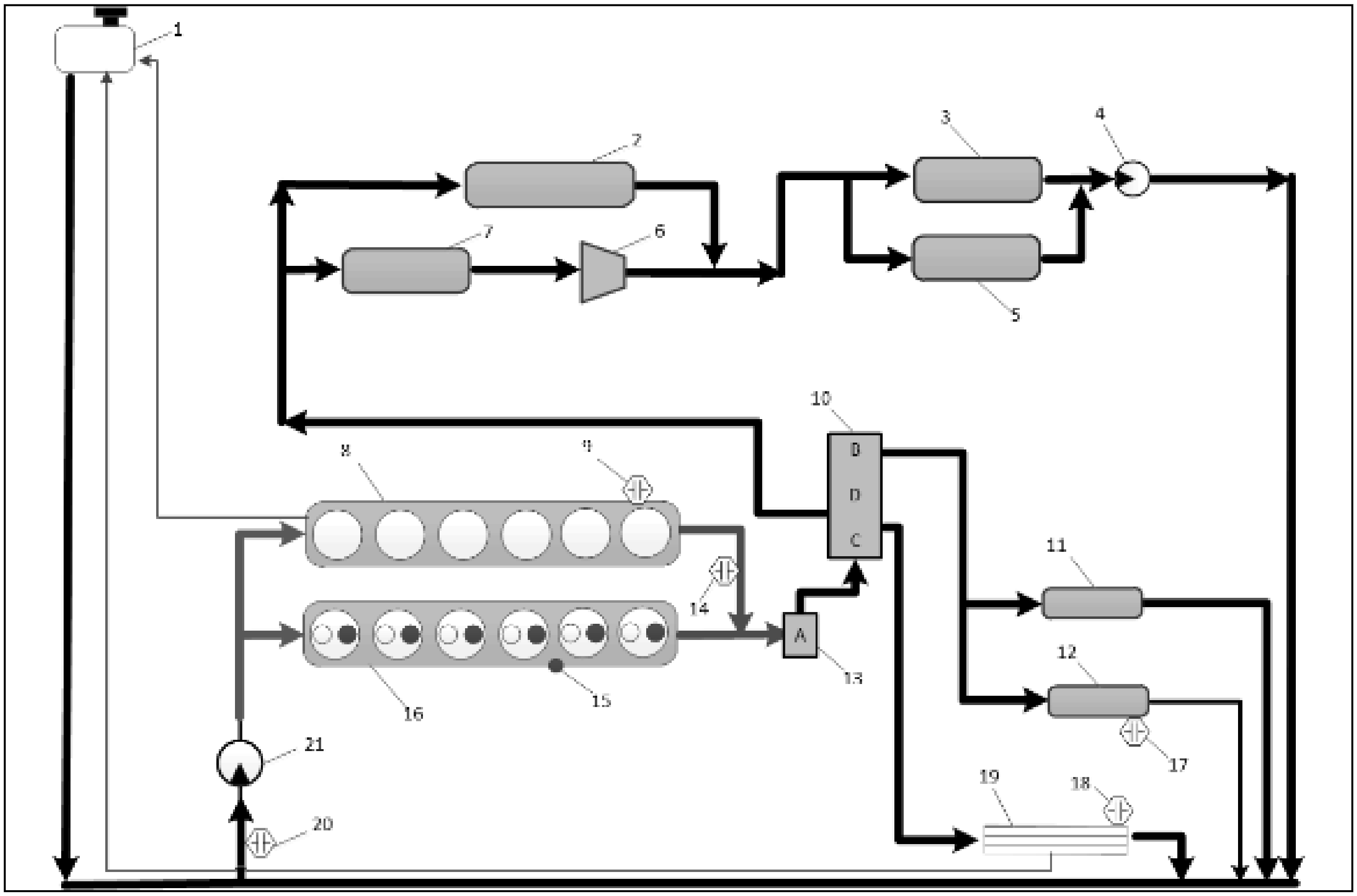
The optional coolant heater (RPO K05) operates using 110 V AC external power and is designed to warm the coolant in the engine block area for improved starting in very cold weather. The coolant heater also helps reduce fuel consumption when a cold engine is warming up. The unit is equipped with a detachable AC power cord. There is an internal thermal switch in the coolant heater cord that prevents operation above **-18°C (0°F)**. A weather shield on the cord is provided to protect the plug when not in use.

Cooling Cycle

Coolant flows from the electric water pump outlet and into the engine circuit and turbocharger cooling circuit. It also provides cooled coolant flow from the radiator to the engine coolant flow control valve to be used as necessary to manage transmission and engine oil temperature. In the engine, the coolant flow direction and volume is controlled by the engine coolant flow control valve and the block control valve to provide necessary flow for optimal engine block, cylinder head, and exhaust manifold cooling. The engine coolant flow control valve can also provide the transmission and engine oil circuits warmed coolant from the engine to optimize the oil temperatures. Excess heat is removed from the coolant in the radiator and the cooled coolant returns to the electric water pump.

Mode 1 (Low Flow):

Flow Diagram - Mode 1



6864586

(1) Surge Tank
(2) LP EGR
(3) Heater Core
(4) Heater Coolant Pump
(5) Auxiliary Heater Core (If Equipped)
(6) Turbocharger
(7) HP EGR
(8) Cylinder Head
(9) Engine Cylinder Head Metal Temperature Sensor
(10) Main Rotary Valve
(11) Automatic Transmission Fluid Cooling Exchanger
(12) Engine Oil Cooler
(13) Flow Control Valve
(14) Engine Outlet Coolant Temperature Sensor
(15) Block Heater
(16) Engine Block
(17) Engine Oil Temperature Sensor
(18) Radiator Outlet Coolant Temperature Sensor
(19) Radiator
(20) Engine Inlet Coolant Temperature Sensor
(21) Mechanical Water Pump

Valve Port A

Valve Port B

Valve Port C

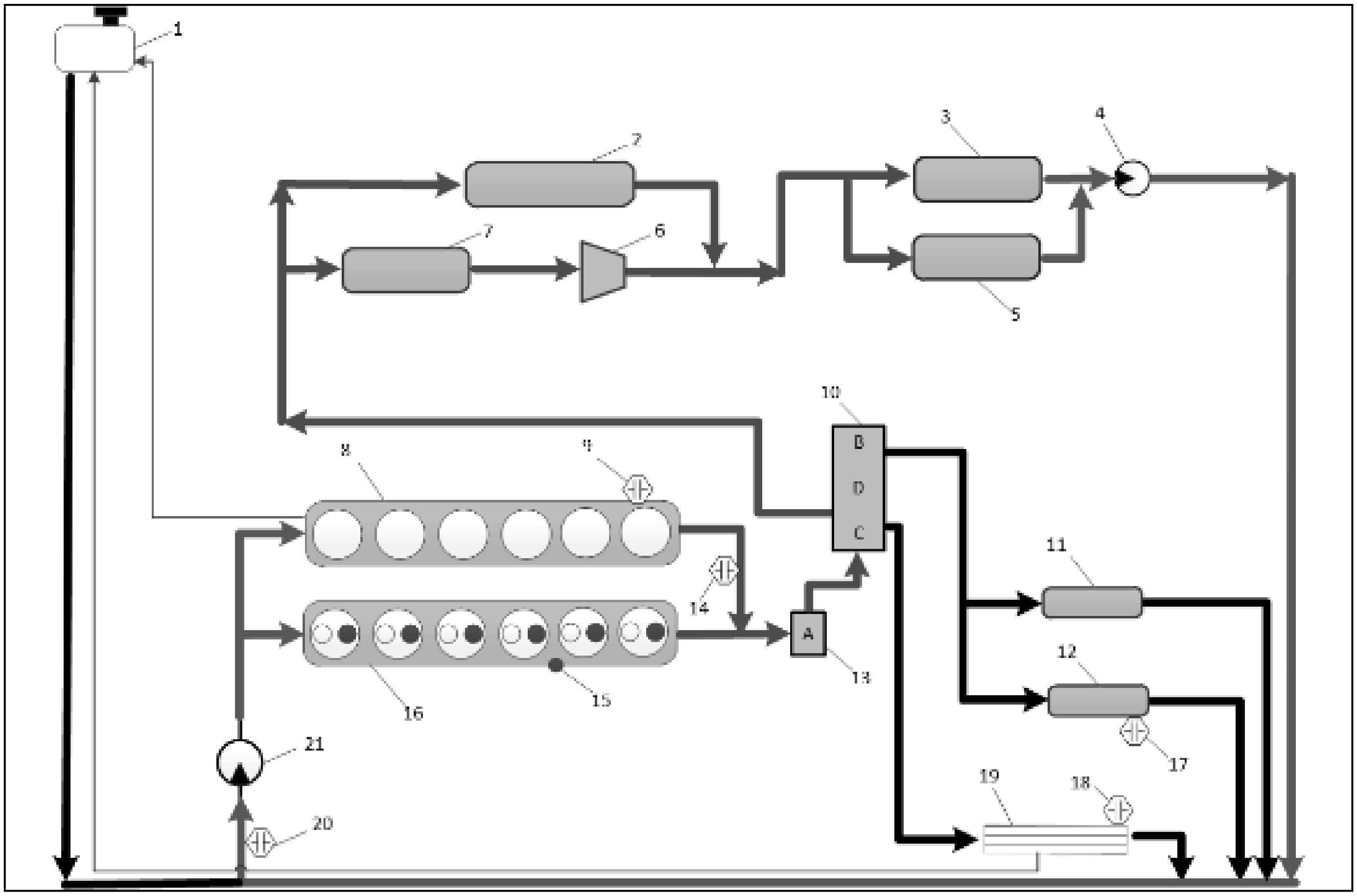
Valve Port D

If the engine is started cold, the system will go to low flow mode, which means the flow control valve allows just enough flow for the sensors to provide reliable information on the state of the system. As the engine warms up, the heat stays around the combustion chamber and is not taken away by coolant flow. Low flow mode is the fastest method for engine warm up. Low flow mode will not enable if the interior HVAC is turned on.

COMPONENT	CONDITION
Heater Coolant Pump	Low Speed, Low Flow
Main Rotary Coolant Valve	Low Speed, Low Flow
Block Rotary Coolant Control Valve	Low Speed, Low Flow

Mode 2 (Engine Warm Up With Cabin Heating Only):

Flow Diagram - Mode 2



(1) Surge Tank

(2) LP EGR

(3) Heater Core

(4) Heater Coolant Pump

(5) Auxiliary Heater Core (If Equipped)

(6) Turbocharger

(7) HP EGR

(8) Cylinder Head

(9) Engine Cylinder Head Metal Temperature Sensor

(10) Main Rotary Valve

(11) Automatic Transmission Fluid Cooling Exchanger

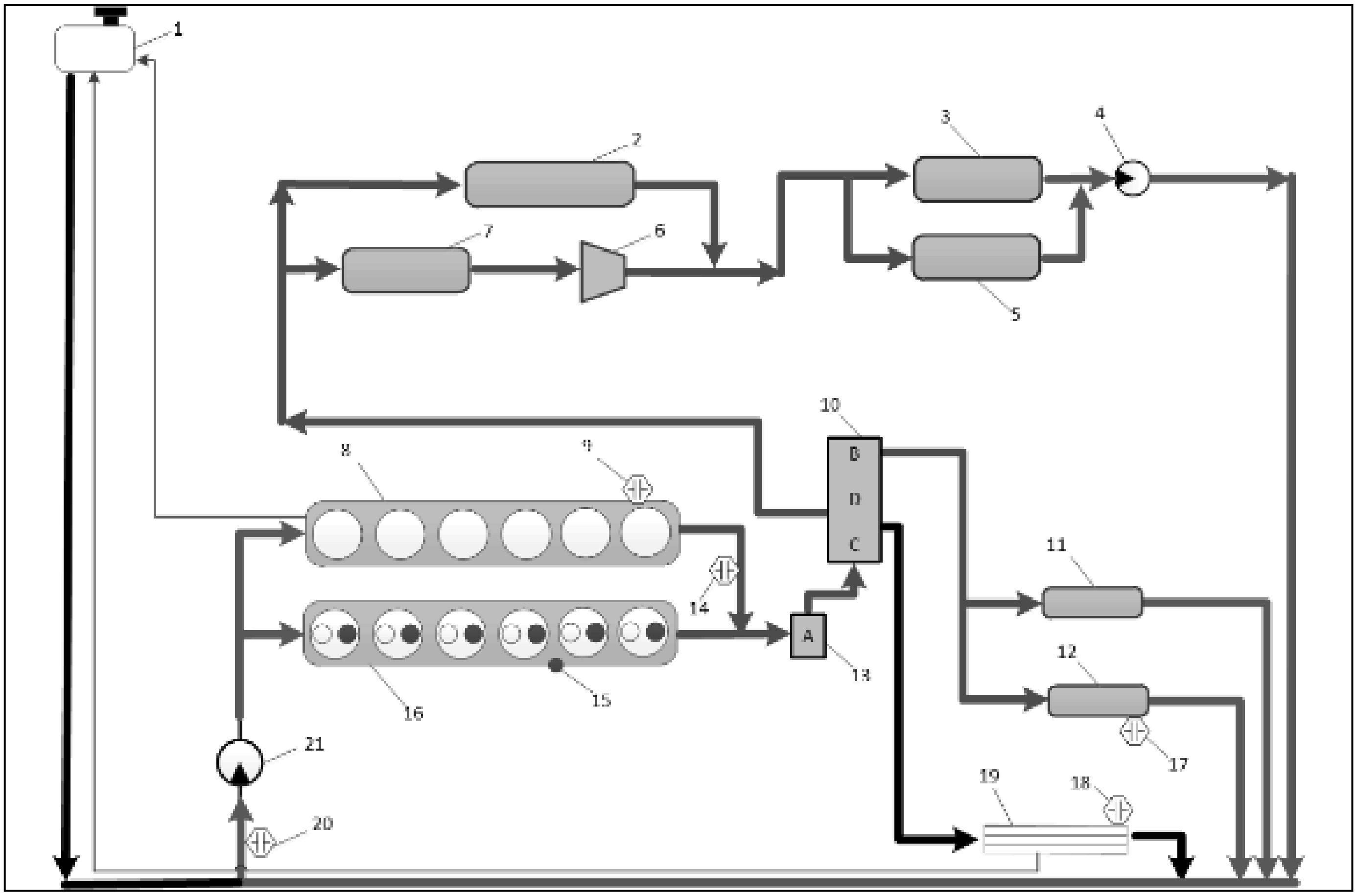
(12) Engine Oil Cooler
(13) Flow Control Valve
(14) Engine Outlet Coolant Temperature Sensor
(15) Block Heater
(16) Engine Block
(17) Engine Oil Temperature Sensor
(18) Radiator Outlet Coolant Temperature Sensor
(19) Radiator
(20) Engine Inlet Coolant Temperature Sensor
(21) Mechanical Water Pump
Valve Port A
Valve Port B
Valve Port C
Valve Port D

When the driver requests passenger compartment heat or windshield defrosting, coolant flow is controlled to maximize coolant heat transfer from engine to passenger compartment. This heater circuit is fed by a combination of warmed coolant from the cylinder head, high pressure EGR valve, and turbocharger. The engine coolant main rotary valve is closed to the radiator and oil heat exchanger at this time. The warmed coolant goes through the low pressure EGR cooler then to the passenger compartment heater core. Heater core flow returns to the mechanical water pump.

Flow Diagram - Mode 3

COMPONENT	CONDITION
Heater Coolant Pump	Low Speed or Speed-Controlled to Heater Core Demand
Main Rotary Coolant Valve	Low Speed, Low Flow
Block Rotary Control Valve	Low Speed, Low Flow

Mode 3 (Cabin Heating with Oil Warming):



6864983

(1) Surge Tank

(2) LP EGR

(3) Heater Core

(4) Heater Coolant Pump

(5) Auxiliary Heater Core (If Equipped)

(6) Turbocharger

(7) HP EGR

(8) Cylinder Head

(9) Engine Cylinder Head Metal Temperature Sensor

(10) Main Rotary Valve

(11) Automatic Transmission Fluid Cooling Exchanger

(12) Engine Oil Cooler

(13) Flow Control Valve

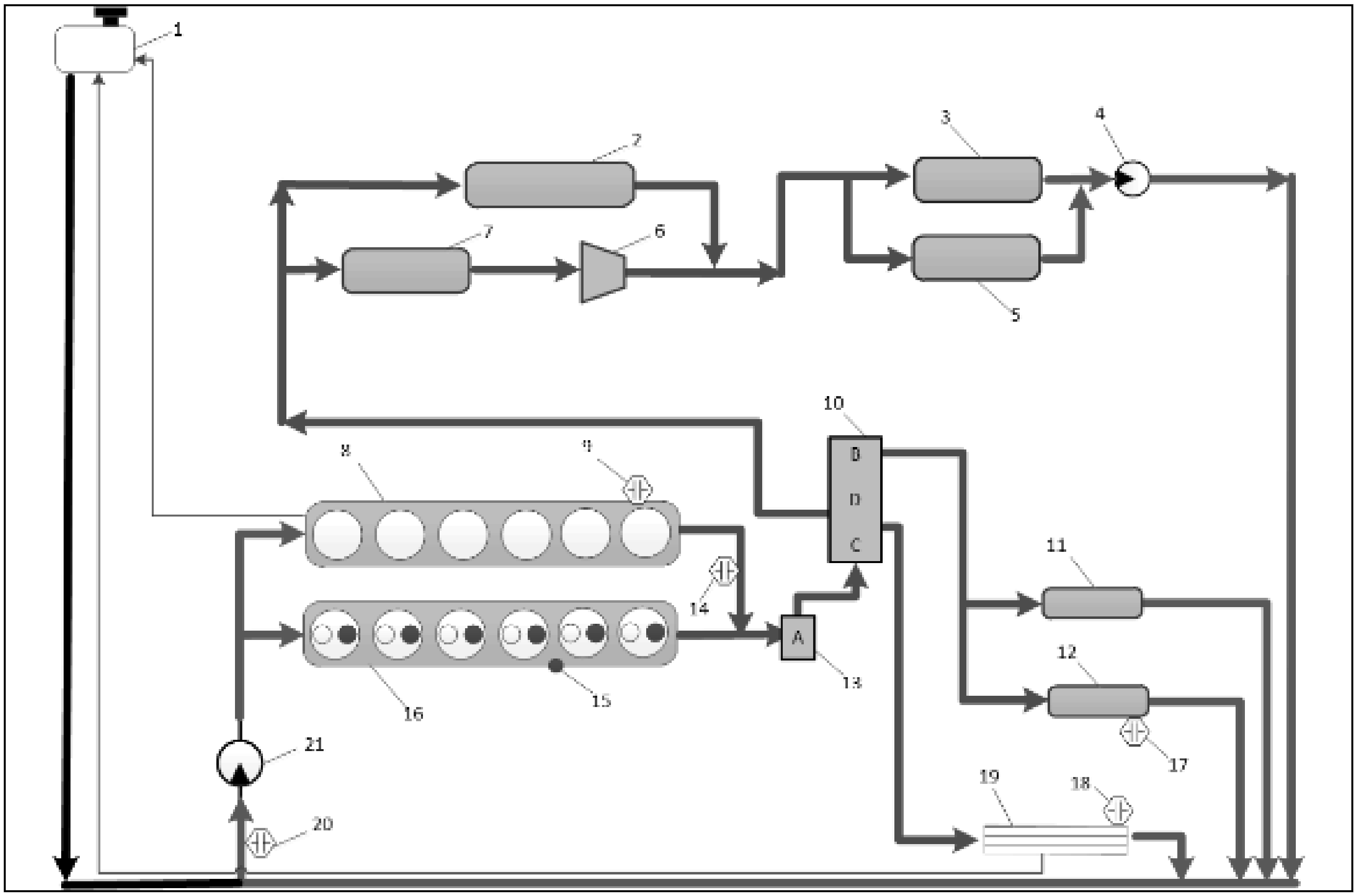
(14) Engine Outlet Coolant Temperature Sensor
(15) Block Heater
(16) Engine Block
(17) Engine Oil Temperature Sensor
(18) Radiator Outlet Coolant Temperature Sensor
(19) Radiator
(20) Engine Inlet Coolant Temperature Sensor
(21) Mechanical Water Pump
Valve Port A
Valve Port B
Valve Port C
Valve Port D

The cylinder head, turbocharger, and EGR cooler passages are still flowing and providing warmed coolant directly to the passenger compartment heater core, if requested. At this point, the combustion chamber temperature has reached a high enough temperature that some heat can be transferred to the engine or transmission oil. Based on engine temperature, the engine coolant main rotary valve will control flow through the oil heat exchanger in a ratio necessary to warm the oil. Coolant flow from the engine and heat exchangers returns to the mechanical water pump.

COMPONENT	CONDITION
Heater Coolant Pump	Speed-Controlled to Engine Demand
Main Rotary Coolant Valve	Bypass Radiator
Block Rotary Control Valve	Position-Controlled

Mode 4 (Engine-Demand Cooling With Cabin Heating And Oil Heating):

Flow Diagram - Mode 4



6864986

(1) Surge Tank

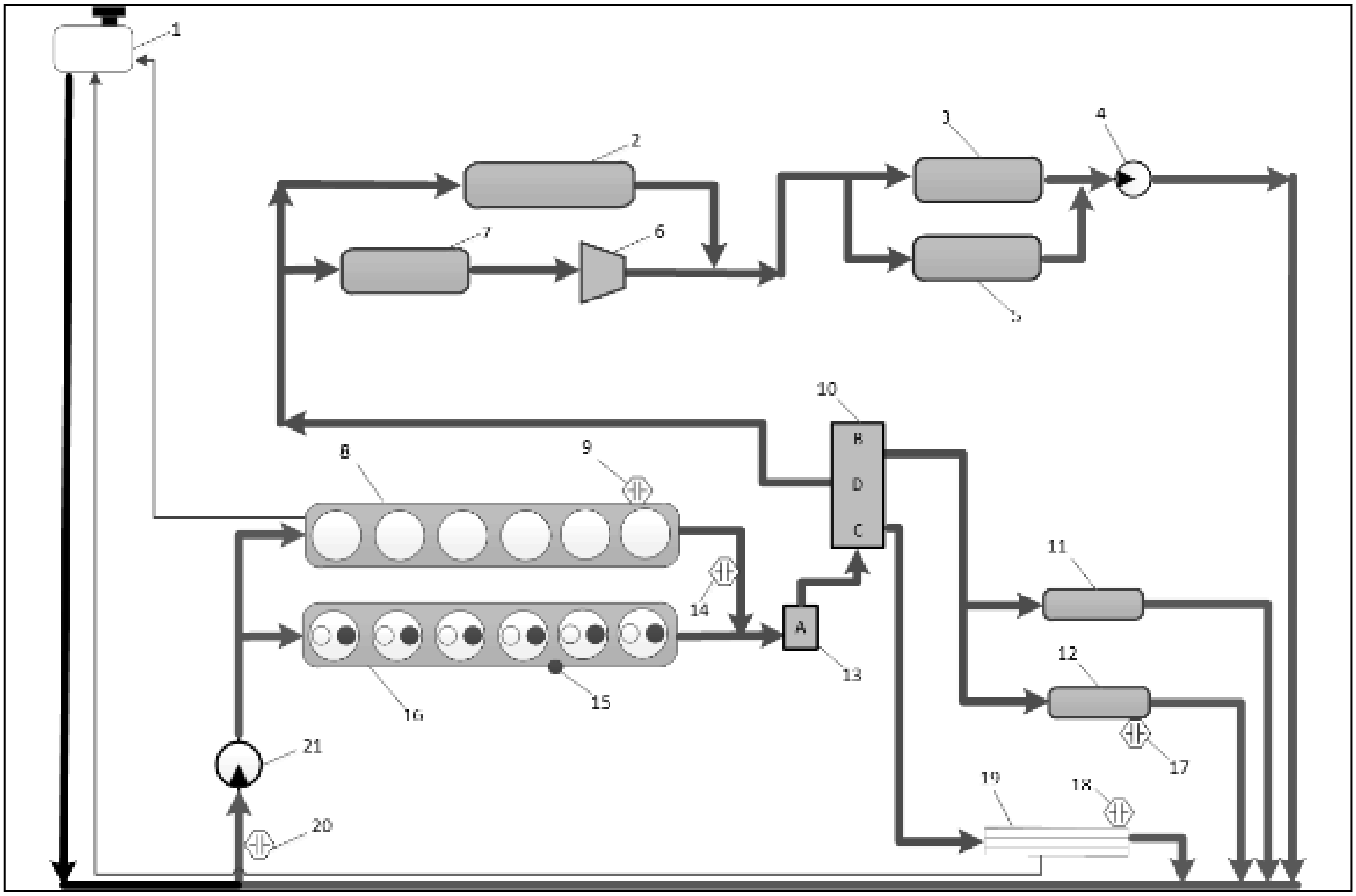
(2) LP EGR
(3) Heater Core
(4) Heater Coolant Pump
(5) Auxiliary Heater Core (If Equipped)
(6) Turbocharger
(7) HP EGR
(8) Cylinder Head
(9) Engine Cylinder Head Metal Temperature Sensor
(10) Main Rotary Valve
(11) Automatic Transmission Fluid Cooling Exchanger
(12) Engine Oil Cooler
(13) Flow Control Valve
(14) Engine Outlet Coolant Temperature Sensor
(15) Block Heater
(16) Engine Block
(17) Engine Oil Temperature Sensor
(18) Radiator Outlet Coolant Temperature Sensor
(19) Radiator
(20) Engine Inlet Coolant Temperature Sensor
(21) Mechanical Water Pump
Valve Port A
Valve Port B
Valve Port C
Valve Port D

The cylinder head, turbocharger, and EGR cooler passages are still flowing and providing warmed coolant directly to the passenger compartment heater core. At this point, the combustion chamber temperature has reached its optimal temperature and the engine needs to dissipate heat through the radiator. Based on engine temperature, the engine coolant main rotary valve will control flow to the radiator to maintain optimal engine temperatures. Additionally, coolant flow will continue to flow to the engine/transmission oil heat exchangers. Engine oil and transmission oil can take significantly longer time to reach optimal temperatures after the engine is already warmed. Coolant flow from the radiator and heat exchangers returns to the mechanical water pump.

COMPONENT	CONDITION
Heater Coolant Pump	Speed-Controlled to Engine Demand
Main Rotary Coolant Valve	Position-Controlled with Oil Heating
Block Control Valve	Position-Controlled

Mode 5 (After Run Cooling):

Flow Diagram - Mode 5



6864989

(1) Surge Tank

(2) LP EGR

(3) Heater Core

(4) Heater Coolant Pump

(5) Auxiliary Heater Core (If Equipped)

(6) Turbocharger

(7) HP EGR

(8) Cylinder Head

(9) Engine Cylinder Head Metal Temperature Sensor

(10) Main Rotary Valve

(11) Automatic Transmission Fluid Cooling Exchanger

(12) Engine Oil Cooler

(13) Flow Control Valve
(14) Engine Outlet Coolant Temperature Sensor
(15) Block Heater
(16) Engine Block
(17) Engine Oil Temperature Sensor
(18) Radiator Outlet Coolant Temperature Sensor
(19) Radiator
(20) Engine Inlet Coolant Temperature Sensor
(21) Mechanical Water Pump
Valve Port A
Valve Port B
Valve Port C
Valve Port D

The after run mode is after key off and is needed only after extreme hot conditions with high engine, oil and coolant temperatures. For after run mode, the same valve positions are used as in engine demand cooling with cabin heating and the auxiliary water pump is used to provide flow to continue cooling.

COMPONENT	CONDITION
Heater Coolant Pump	Low Speed
Main Rotary Coolant Valve	Max Cooling
Block Control Valve	Open

SHUT DOWN

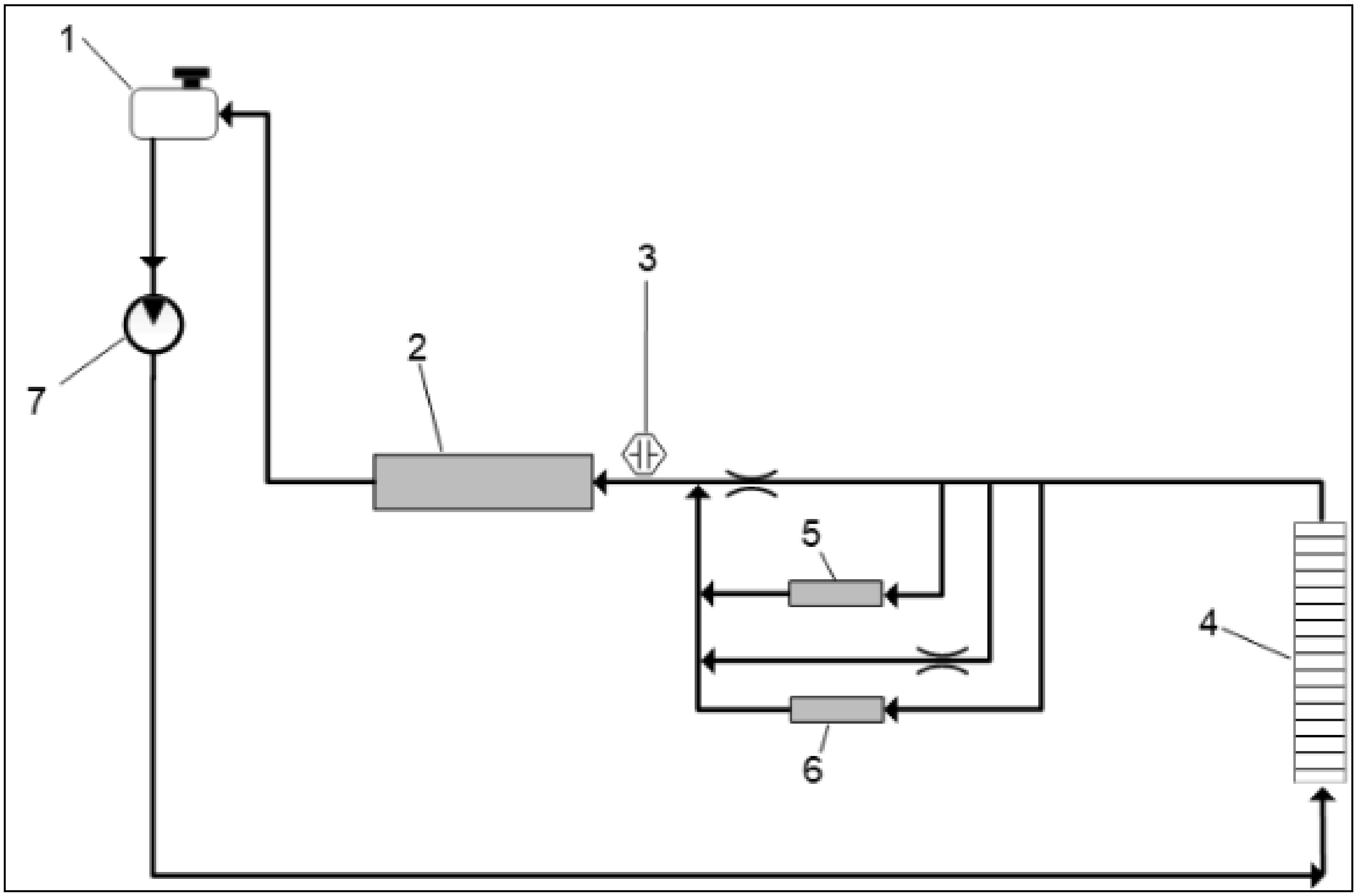
At engine shutdown, the control valves remain open to permit radiator flow and allow coolant service fill by gravity alone. Both control valves also undergo a diagnostic check after engine shutdown, which is sometimes audible.

Cooling System Description and Operation (Low Temperature Coolant Loop)

Secondary Low Temperature Coolant Loop

This vehicle utilizes a secondary coolant loop which circulates coolant to the water charge air cooler, fuel cooler, and the diesel exhaust fluid injector via an auxiliary low temperature radiator and chassis mounted electric coolant pump. Coolant flows from the low temperature auxiliary electric coolant pump to the low temperature radiator and then to the fuel cooler and diesel exhaust fluid injectors prior to entering the water charge air cooler. Coolant exiting the water charge air cooler flows to the low temperature surge tank and the then back to the low temperature auxiliary electric coolant pump. There is a coolant temperature sensor located near the inlet to the water charge air cooler.

Low Temperature Coolant Loop

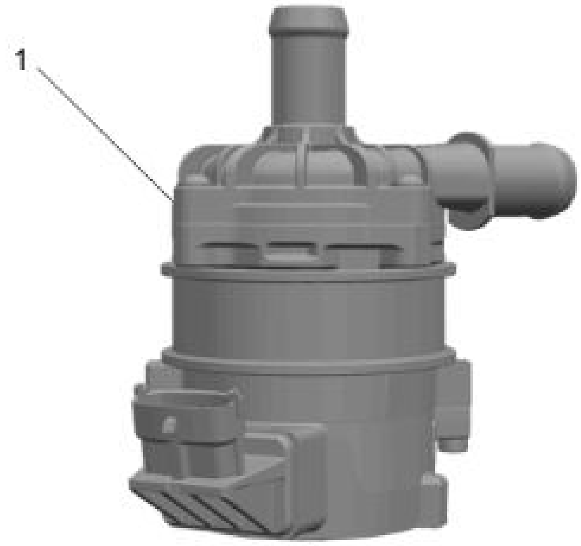


6890641

(1) Charge Air Cooler Surge Tank
(2) WCAC
(3) Engine Coolant Temperature Sensor
(4) Engine Auxiliary Radiator
(5) Reductant Fluid Injector (DEF Injector 1)
(6) Emission Reduction Fluid Secondary Injector (DEF Injector 2)
(7) Charge Air Cooler Coolant Pump

The key features of the Secondary Low Temperature Coolant Loop include:

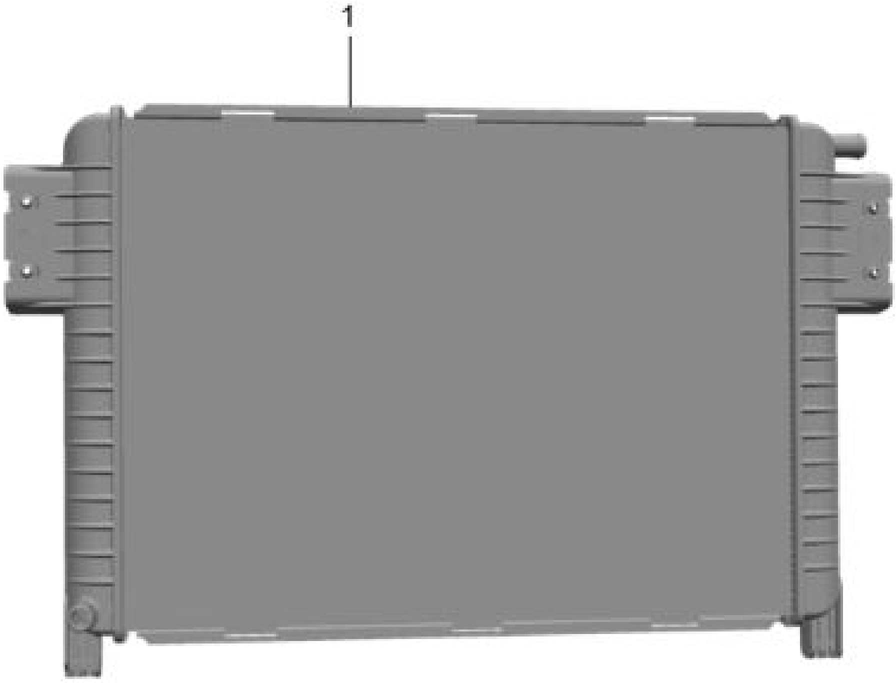
- **Low Temperature Auxiliary Coolant Pump**



6890642

- The charge air cooler coolant pump (1) provides coolant flow from the charge air cooler surge tank through the engine auxiliary radiator and on to the fuel cooler, diesel exhaust fluid injectors and water charge air cooler before returning to the charge air cooler surge tank.

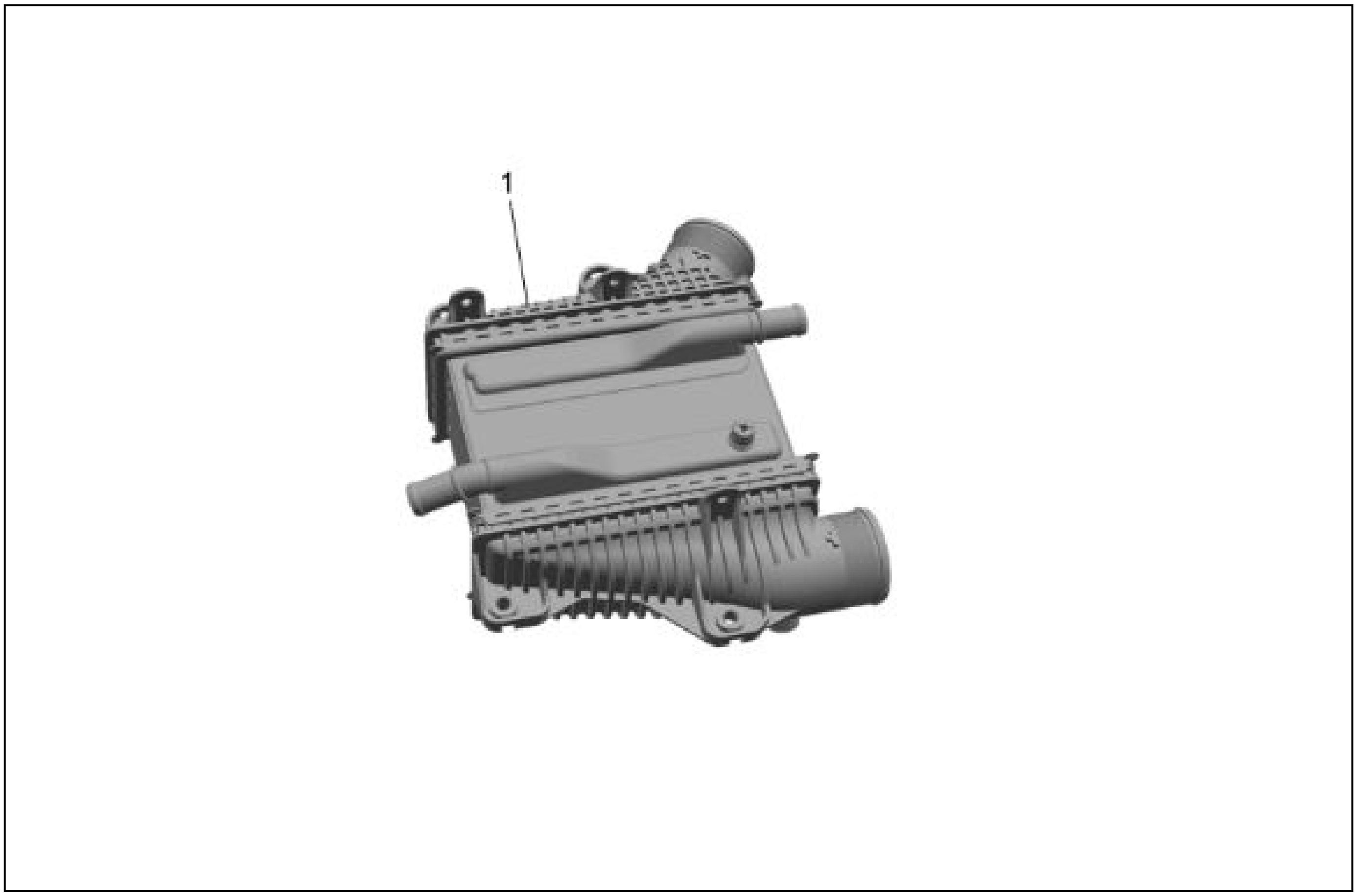
- **Low Temperature Radiator**



6890643

− The engine auxiliary radiator (1) is a heat exchanger. It consists of a core and two end tanks. The aluminum core is a tube and fin crossflow design that extends from the inlet tank to the outlet tank. Fins are placed around the outside of these tubes to improve heat transfer to the atmosphere. The inlet and outlet tanks are a molded high temperature nylon reinforced plastic material. A high temperature rubber gasket seals the tank flange edge to the aluminum core. The tanks are clamped to the core with clinch tabs. The tabs are part of the aluminum header at each end of the core.

- **Water Charge Air Cooler**



6890644

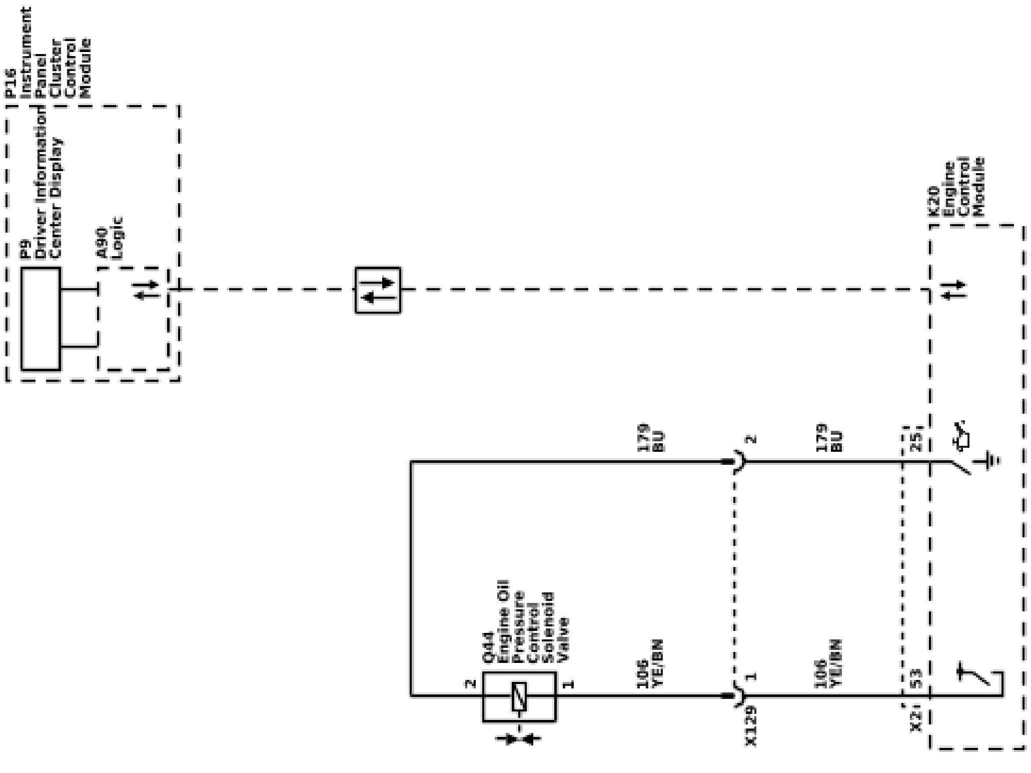
- The water charge air cooler (1) is a heat exchanger that uses coolant flowing through tubes to cool the air passing outside of those tubes. The air is cooled in the water charge air cooler after exiting the turbocharger before entering the intake manifold.

Engine Mechanical - 3.0L Diesel

Schematic and Routing Diagrams

Engine Mechanical Schematics (LZ0) (Engine Oil Pressure Control)

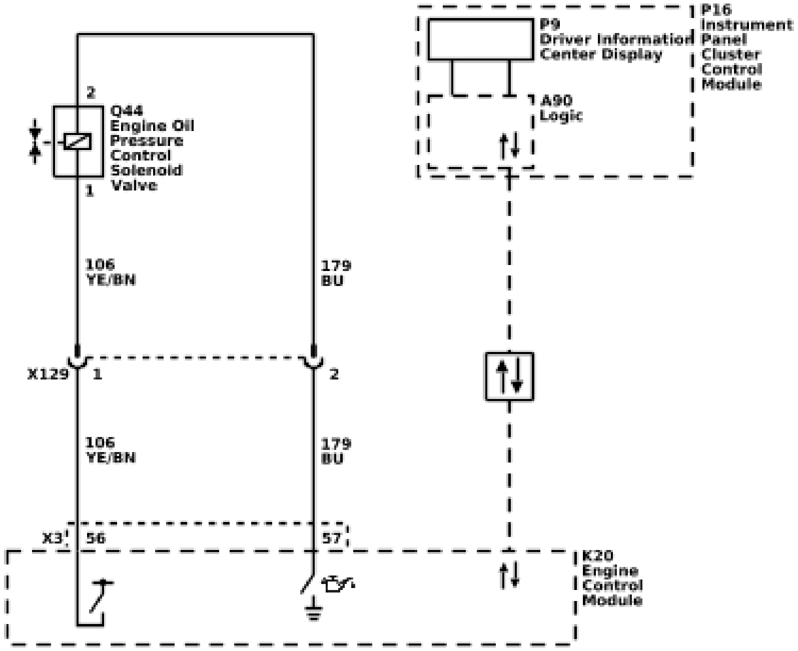
6847006


P16
Instrument Panel Cluster Control Module
P9
Driver Information Center Display
A90
Logic
K20
Engine Control Module
179
BU
2
179
BU
25
Q44
Engine Oil Pressure Control Solenoid Valve
2
1
106
YE/BN
1
X129
106
YE/BN
53
X2

Engine Mechanical - 2.7L

Schematic and Routing Diagrams

Engine Mechanical Schematics (L3B) (Engine Oil Pressure Control)

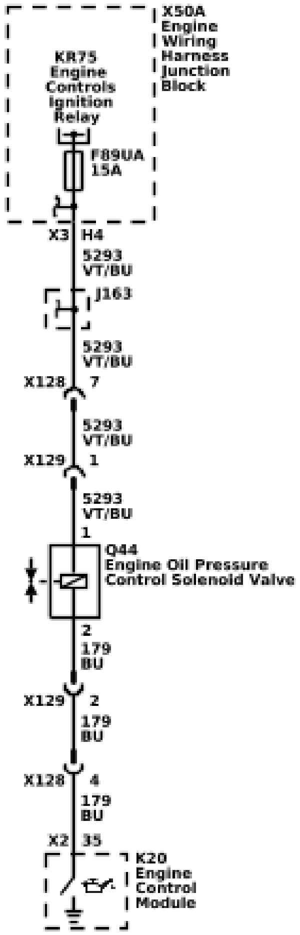

P16
Instrument
Panel
Cluster
Control
Module
P9
Driver Information
Center Display
A90
Logic
Q44
Engine Oil
Pressure
Control
Solenoid
Valve
2
1
106
YE/BN
179
BU
X129
1
2
106
YE/BN
179
BU
X3
56
57
K20
Engine
Control
Module

6847007

Engine Mechanical - 5.3L, 6.2L

Schematic and Routing Diagrams

Engine Mechanical Schematics (L84 / L87) (Engine Oil Pressure Control)

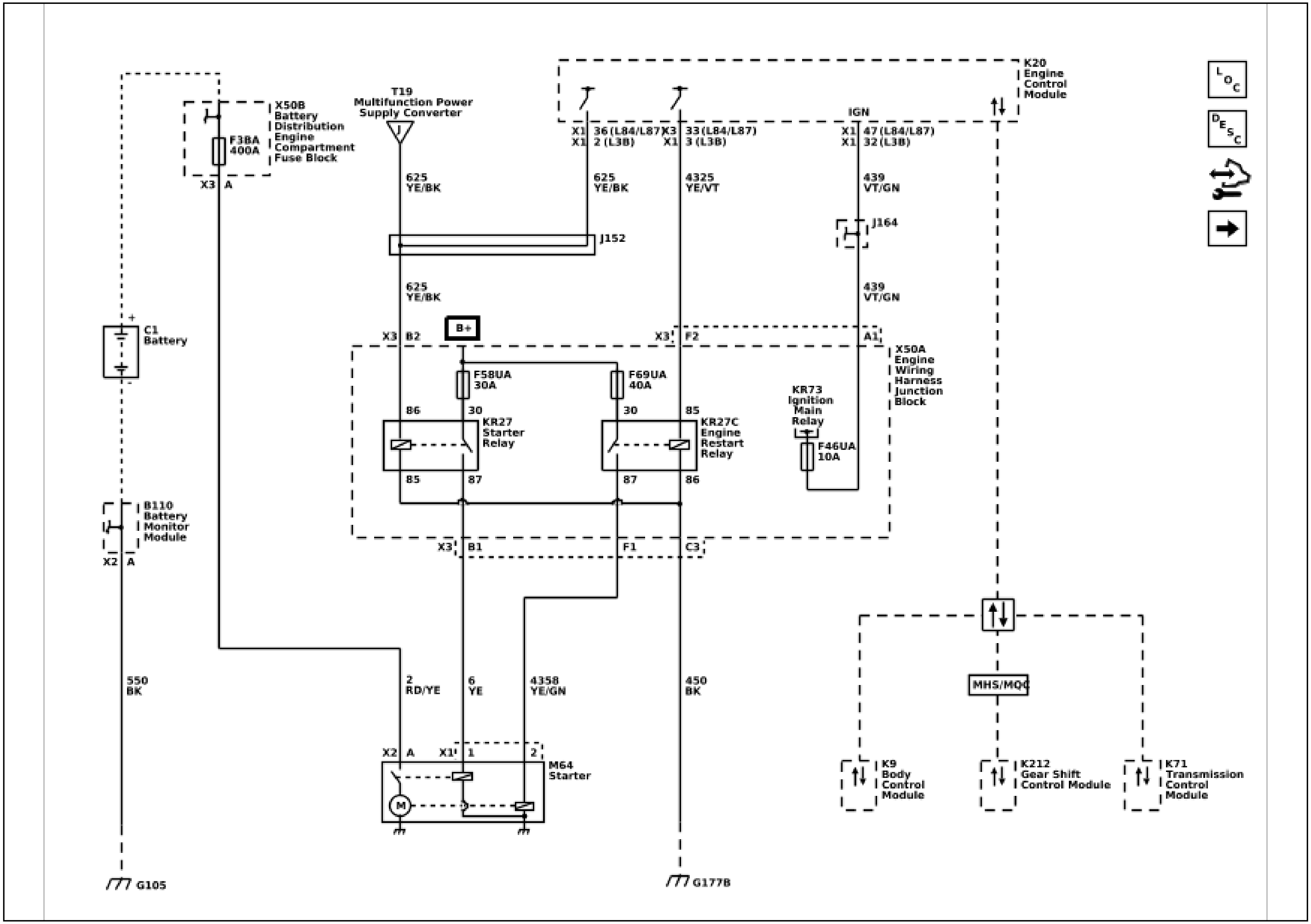

X50A
Engine
Wiring
Harness
Junction
Block
KR75
Engine
Controls
Ignition
Relay
F89UA
15A
X3
H4
5293
VT/BU
J163
5293
VT/BU
X128
7
5293
VT/BU
X129
1
5293
VT/BU
1
Q44
Engine Oil Pressure
Control Solenoid Valve
2
179
BU
X129
2
179
BU
X128
4
179
BU
X2
35
K20
Engine
Control
Module

6847008

Starting, Charging, and Low Voltage Energy Storage

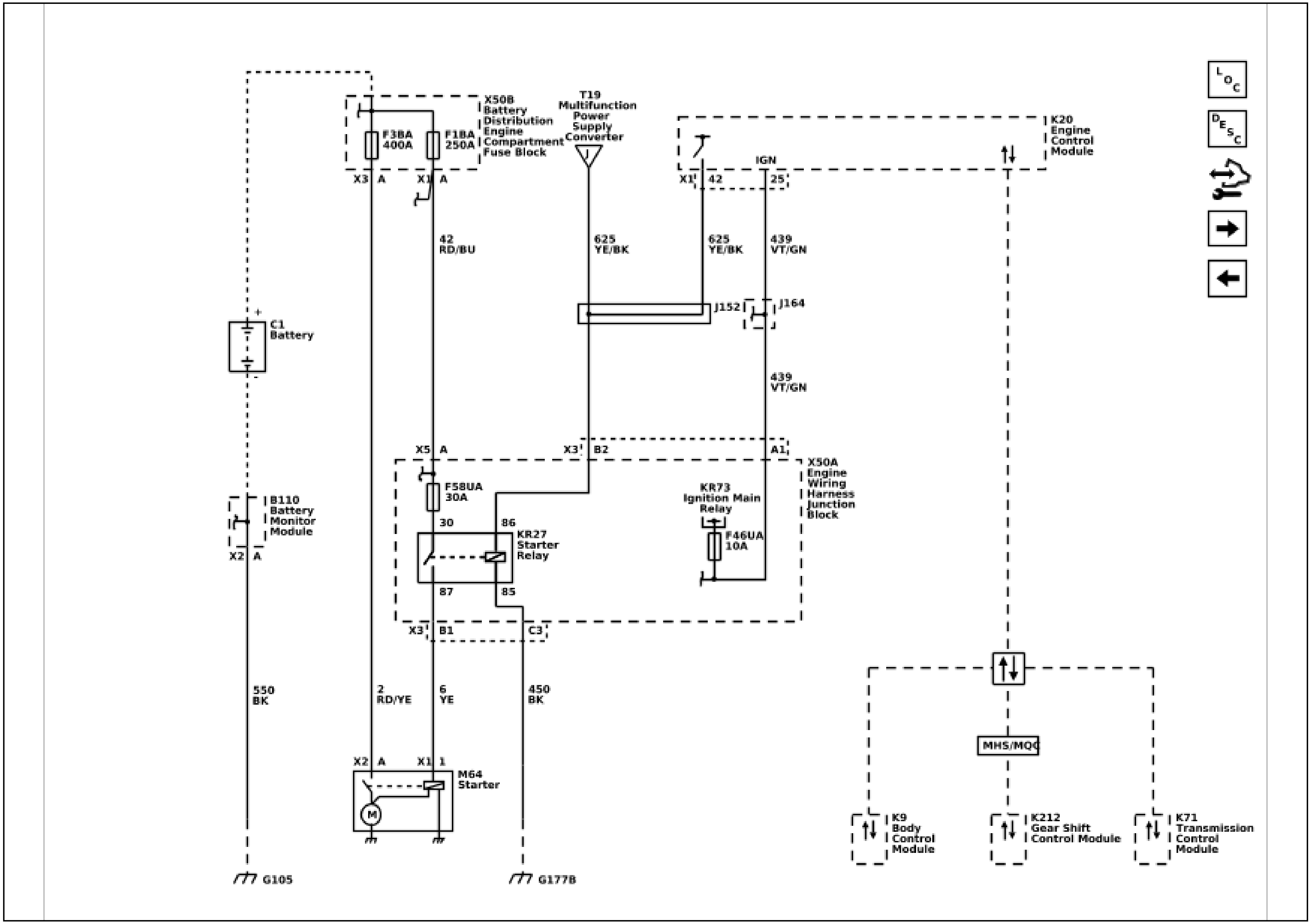
Schematic and Routing Diagrams

Starting and Charging Schematics (Starting (L3B / L84 / L87))


K20 Engine Control Module
IGN
X1 36 (L84/L87)
X1 2 (L3B)
X3 33 (L84/L87)
X1 3 (L3B)
X1 47 (L84/L87)
X1 32 (L3B)
T19 Multifunction Power Supply Converter
X50B Battery Distribution Engine Compartment Fuse Block
F38A 400A
X3 A
625 YE/BK
625 YE/BK
4325 YE/VT
439 VT/GN
J164
J152
625 YE/BK
439 VT/GN
C1 Battery
+
-
B+
X3 B2
X3 F2
A1
X50A Engine Wiring Harness Junction Block
F58UA 30A
F69UA 40A
KR73 Ignition Main Relay
86
30
30
85
KR27 Starter Relay
KR27C Engine Restart Relay
F46UA 10A
85
87
87
86
B110 Battery Monitor Module
X2 A
X3 B1
F1
C3
550 BK
2 RD/YE
6 YE
4358 YE/GN
450 BK
MHS/MQC
X2 A
X1 1
2
M64 Starter
M
K9 Body Control Module
K212 Gear Shift Control Module
K71 Transmission Control Module
G105
G177B

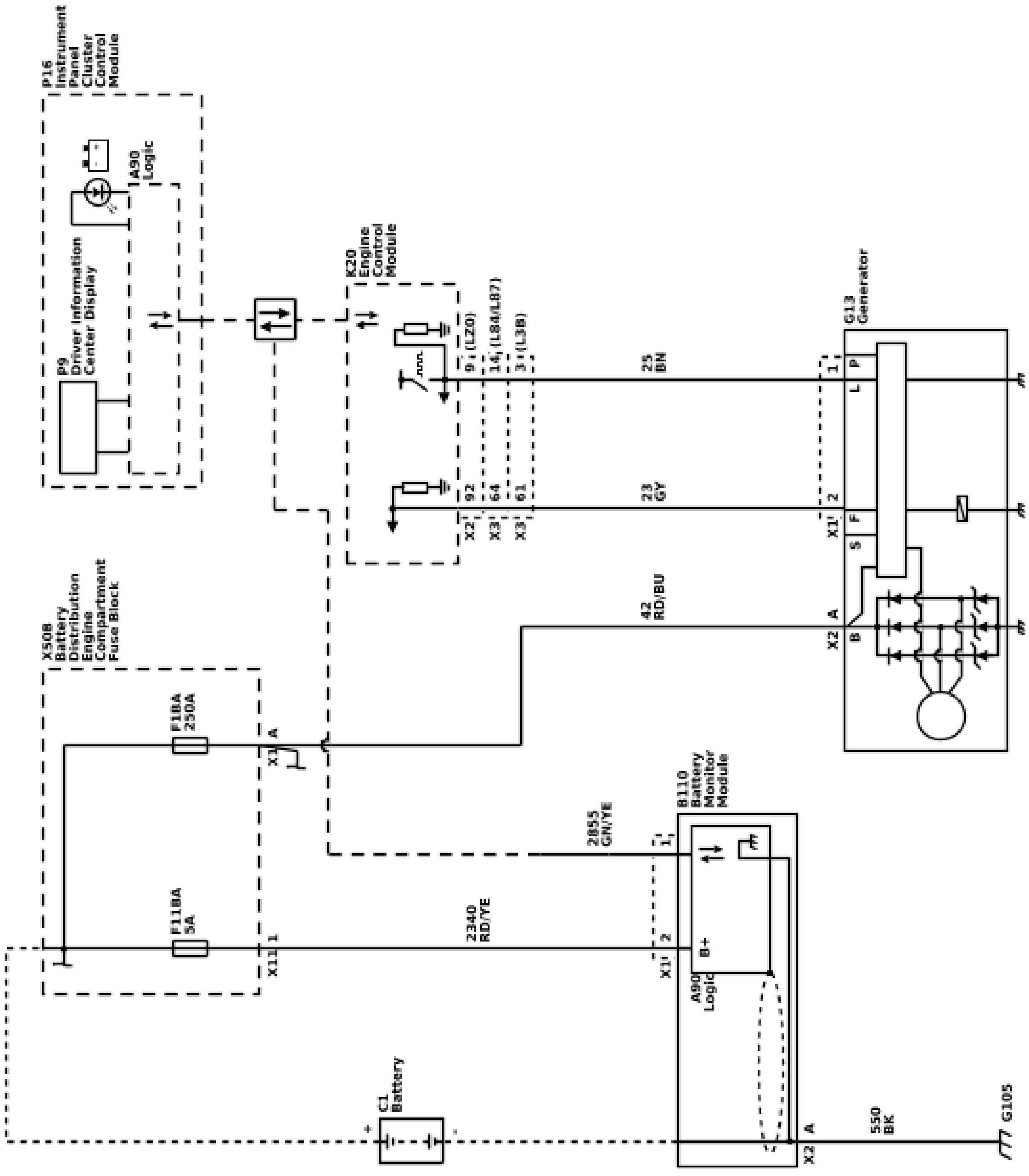
6847010

Starting and Charging Schematics (Starting (LZ0))


X50B Battery Distribution Engine Compartment Fuse Block
F38A 400A
F18A 250A
X3 A
X1 A
T19 Multifunction Power Supply Converter
K20 Engine Control Module
IGN
X1 42
25
42 RD/BU
625 YE/BK
625 YE/BK
439 VT/GN
J152
J164
439 VT/GN
C1 Battery
+
-
X5 A
X3 B2
A1
X50A Engine Wiring Harness Junction Block
F58UA 30A
30
86
KR27 Starter Relay
87
85
KR73 Ignition Main Relay
F46UA 10A
B110 Battery Monitor Module
X2 A
X3 B1
C3
550 BK
2 RD/YE
6 YE
450 BK
X2 A
X1 1
M64 Starter
M
G105
G177B
MHS/MQC
K9 Body Control Module
K212 Gear Shift Control Module
K71 Transmission Control Module
6847011

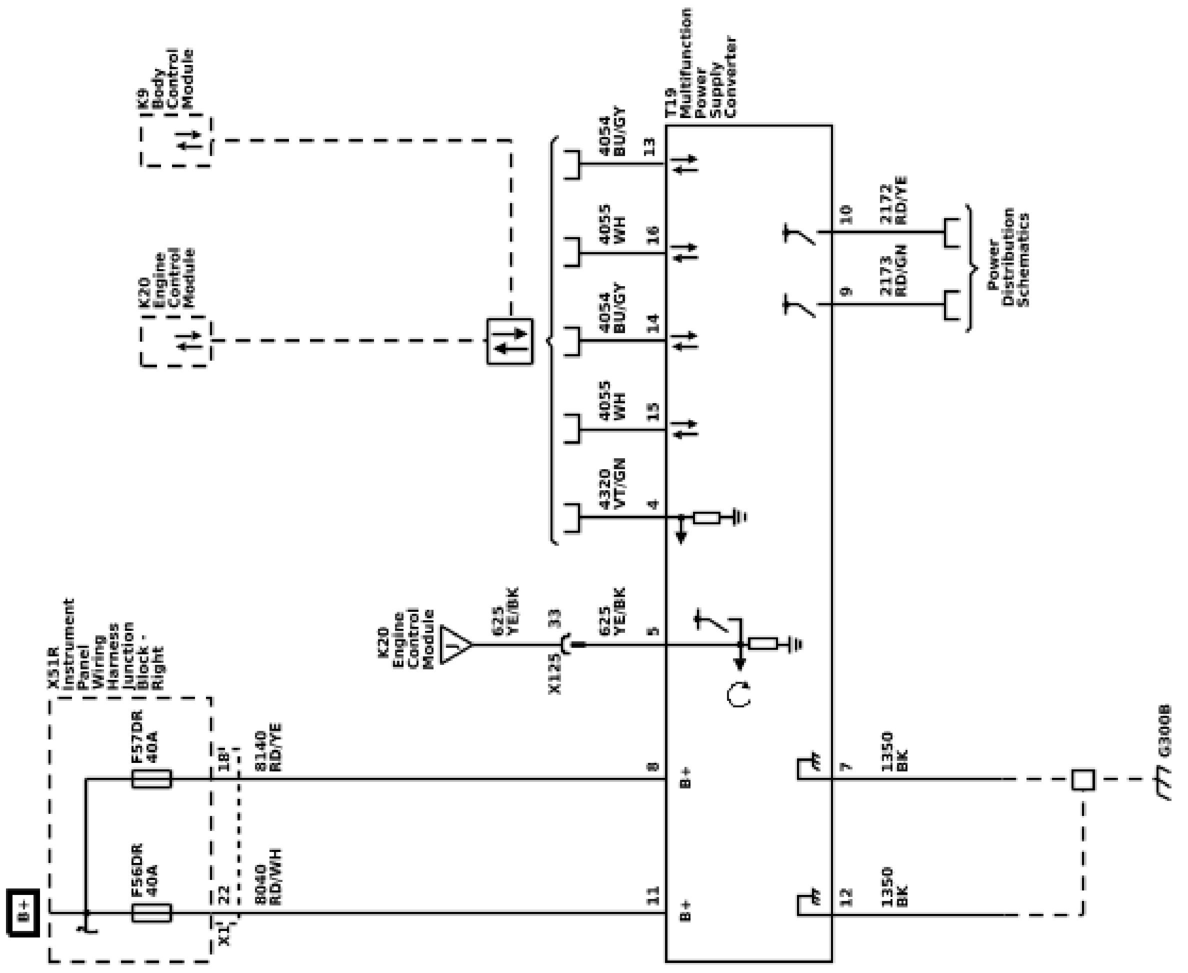
6847012

Starting and Charging Schematics (Charging)

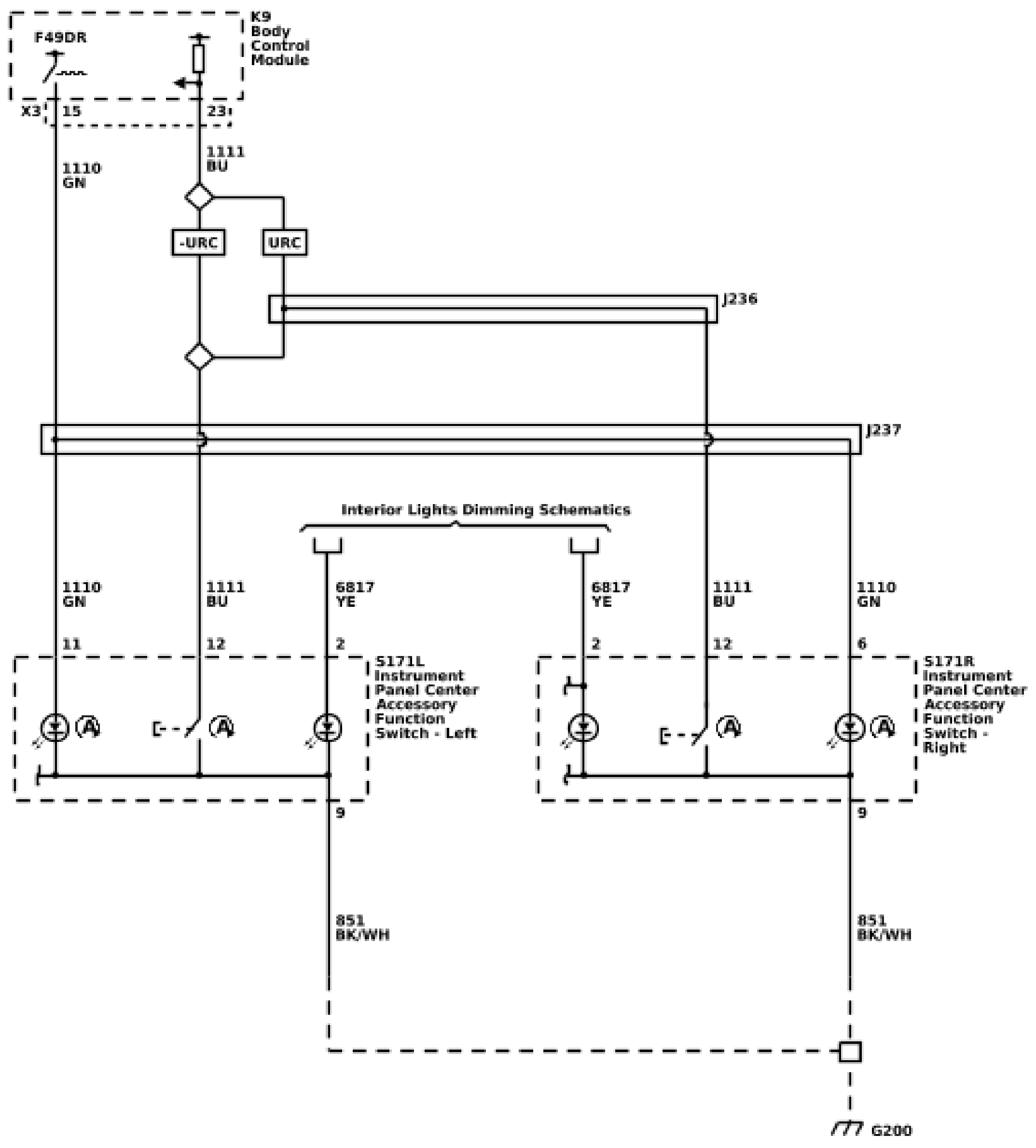

P16 Instrument Panel Cluster Control Module
A90 Logic
P9 Driver Information Center Display
K20 Engine Control Module
9 (LZ0)
14 (L84/L87)
3 (L3B)
X2 92
X3 64
X3 61
25 BN
23 GY
X1 1
X1 2
L
P
F
S
G13 Generator
42 RD/BU
X2 A
B
X50B Battery Distribution Engine Compartment Fuse Block
F18A 250A
X1 A
F118A 5A
X11 1
2340 RD/YE
2855 GN/YE
B110 Battery Monitor Module
1
X1 2
B+
A90 Logic
C1 Battery
+
-
X2 A
550 BK
G105

Starting and Charging Schematics (Power Supply Transformer Power, Ground, Serial Data, and Subsystem References (KL9))

6847013


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F56DR 40A
F57DR 40A
X1
22
18
8040 RD/WH
8140 RD/YE
K20 Engine Control Module
625 YE/BK
33
X125
625 YE/BK
5
K20 Engine Control Module
K9 Body Control Module
4320 VT/GN
4
4055 WH
15
4054 BU/GY
14
4055 WH
16
4054 BU/GY
13
T19 Multifunction Power Supply Converter
11
B+
8
B+
12
7
1350 BK
1350 BK
G300B
9
10
2173 RD/GN
2172 RD/YE
Power Distribution Schematics

Starting and Charging Schematics (Stop/Start Controls (KL9))


K9
Body
Control
Module
F49DR
X3
15
23
1110
GN
1111
BU
-URC
URC
J236
J237
Interior Lights Dimming Schematics
1110
GN
1111
BU
6817
YE
6817
YE
1111
BU
1110
GN
11
12
2
2
12
6
S171L
Instrument
Panel Center
Accessory
Function
Switch - Left
S171R
Instrument
Panel Center
Accessory
Function
Switch -
Right
9
9
851
BK/WH
851
BK/WH
G200

6847014

Description and Operation

Battery Description and Operation

Warning: Batteries produce explosive gases, contain corrosive acid, and supply levels of electrical current high enough to cause burns. Therefore, to reduce the risk of personal injury when working near a battery:

- ***Always shield your eyes and avoid leaning over the battery whenever possible.***
- ***Do not expose the battery to open flames or sparks.***
- ***Do not allow the battery electrolyte to contact the eyes or the skin. Flush immediately and thoroughly any contacted areas with water and get medical help.***
- ***Follow each step of the jump starting procedure in order.***
- ***Treat both the booster and the discharged batteries carefully when using the jumper cables.***

Batteries that are no longer wanted must be disposed of by an approved battery recycler and must never be thrown in the trash or sent to a landfill.

Batteries that are not part of the vehicle itself, not the battery under the hood, must only be transported on public streets for business purposes via approved hazardous material transportation procedures.

Battery storage, charging and testing facilities in repair shops must meet various requirements for ventilation, safety equipment, material segregation, etc.

The maintenance free battery is standard. There are no vent plugs in the cover. The battery is completely sealed except for 2 small vent holes in the side. These vent holes allow the small amount of gas that is produced in the battery to escape.

The battery has 3 functions as a major source of energy:

- Engine cranking
- Voltage stabilizer
- Alternate source of energy with generator overload

Battery Low Start Vehicle Message

The body control module (BCM) monitors battery positive voltage to determine battery state of charge. If one or more of the BCM battery positive voltage terminals measure less than approximately 11.6V compared to the BCM ground circuits, this message will display and four chimes may sound. Start the vehicle immediately. If the vehicle is not started and the battery continues to discharge, the climate controls, heated seats, and audio systems will shut off and the vehicle may require a jump start. These systems will function again after the vehicle is started.

Battery Ratings

A battery has 2 ratings:

- Cold cranking amperage
- Amperage hours

When a battery is replaced use a battery with similar ratings. See battery specification label on the original battery.

Amperage Hours

The amperage hour rating tells you how much amperage is available when discharged evenly over a 20 hour period. The amperage hour rating is cumulative, so in order to know how much constant amperage the battery will output for 20 h, you have to divide the amperage hour rating by 20. Example: If a battery has an amperage hour rating of 74, dividing by 20 = 3.75. Such a battery can carry a 3.75 A load for 20 hours before dropping to 10.5 V. (10.5 V is the fully discharged level, at which point the battery needs to be recharged). A battery with an amperage hour rating of 55 will carry a 2.75 A load for 20 hours before dropping to 10.5 V.

Cold Cranking Amperage

The cold cranking amperage is an indication of the ability of the battery to crank the engine at cold temperatures. The cold cranking amperage rating is the minimum amperage the battery must maintain for 30 seconds at −18°C (0°F) while maintaining at least 7.2 V. See battery label for the cold cranking amperage rating of this battery.

Charging System Description and Operation

Electrical Power Management Overview

The electrical power management system is designed to monitor and control the charging system and send diagnostic messages to alert the driver of possible problems with the battery and generator. This electrical power management system primarily utilizes existing on-board computer capability to maximize the effectiveness of the generator, to manage the load, improve battery state-of-charge and life, and minimize the system's impact on fuel economy. The electrical power management system performs 3 functions:

- Monitor the battery voltage and estimate the battery condition
- Take corrective actions by boosting idle speeds, and adjusting the regulated voltage
- Perform diagnostics and driver notification

The battery condition is estimated during ignition/vehicle off and during ignition/vehicle on. During ignition/vehicle off the state-of-charge of the battery is determined by measuring the open-circuit voltage. The state-of-charge is a function of the acid concentration and the internal resistance of the battery, and is estimated by reading the battery open circuit voltage when the battery has been at rest for several hours.

Any time the ignition/vehicle is on, the vehicle algorithm continuously estimates battery state-of-charge based on adjusted net amp hours, battery capacity, initial state-of-charge, and calculated temperature.

While the engine is running, the battery degree of discharge is primarily determined by the integrated battery current sensor, to obtain net amp hours.

In addition, the electrical power management function is designed to perform regulated voltage control to improve battery state-of-charge, battery life, and fuel economy. This is accomplished by using knowledge of the battery state-of-charge and temperature to set the charging voltage to an optimum battery voltage level for recharging without detriment to battery life.

Charging System Components

G13 Generator
The engine drive belt drives the generator. When the rotor is spun, it induces an alternating current (AC) into the stator windings. The AC voltage is then sent through a series of diodes for rectification. The rectified voltage has been converted into a direct current (DC) for use by the vehicles electrical system to maintain electrical loads and the battery charge.
The voltage regulator integral to the generator controls the output of the generator; It is not serviceable.
The voltage regulator controls the amount of current provided to the rotor. If the generator has field control circuit fault, the generator defaults to an output voltage of 13.8 V.

The generator is serviced as a complete assembly. If there is a diagnosed fault in the generator, it must be replaced as an assembly.

Generator Pulley
The pulley drives the Generator via the engine drive belt. There are 2 types of pulleys:

1. Conventional solid Pulley which is bolted to the Generator stator shaft. This Pulley can be serviced separately.

2. One Way Clutch Pulley or Overrunning Alternator Decoupler Pulley allows the Generator to spin freely when the engine rapidly slows down on sudden deceleration. This part is not serviceable and the Generator needs to be replaced as an assembly.

K9 Body Control Module (BCM)
The K9 Body Control Module communicates with the K20 Engine Control Module and the instrument cluster for electrical power management operation. The BCM determines the output of the generator and sends the information to the ECM for control of the generator turn on signal circuit. It monitors the generator field duty cycle signal circuit information sent from the ECM for control of the generator. It monitors the battery current sensor, the battery positive voltage circuit, and estimates battery temperature to determine battery state of charge. The BCM also performs idle boost.

B110 Battery Monitor Module
The Battery Monitor Module communicates to the BCM via LIN. The BCM shares this information with the ECM. The purpose of the battery sensor module is to transmit battery information that the BCM/ECM can use to make decisions regarding stop/start, battery saver mode, and load shedding.

K20 Engine Control Module (ECM)
When the engine is running, the generator turn-on signal is sent to the generator from the ECM, turning on the regulator. The generator's voltage regulator controls current to the rotor, thereby controlling the output voltage. The rotor current is proportional to the electrical pulse width supplied by the regulator. When the engine is started, the regulator senses generator rotation by detecting AC voltage at the stator through an internal wire. Once the engine is running, the regulator varies the field current by controlling the pulse width. This regulates the generator output voltage for proper battery charging and electrical system operation. The generator field duty terminal is connected internally to the voltage regulator and externally to the ECM. When the voltage regulator detects a charging system problem, it grounds this circuit to signal the ECM that a problem exists. The ECM monitors the generator field duty cycle signal circuit,

and receives control decisions based on information from the BCM.

P16 Instrument Cluster
As a means of displaying the charging system functions, some vehicles may be equipped with a voltmeter gauge on the instrument cluster and/or a system voltage display in the driver information center. These will indicate the current vehicle system voltage.

The instrument cluster also provides customer notification if there is a concern with the charging system. There are two means of notification: a charge indicator on the instrument cluster and/or a service system message displayed on the Driver Information Center (DIC) if equipped.

Charging System Operation

The purpose of the charging system is to maintain the battery charge and vehicle loads. There are 6 modes of operation and they include:

- Battery Sulfation Mode
- Charge Mode
- Fuel Economy Mode
- Head lamp Mode
- Start Up Mode
- Voltage Reduction Mode

The ECM Controls the Generator through the generator turn–on signal circuit, also known as the Generator L-terminal. The ECM monitors the generator performance though the Generator field duty cycle signal circuit, also known as the generator F-terminal.

The Generator turn–on signal (Generator L-terminal) is a Pulse Width Modulation (PWM) signal of 128 Hz with a duty cycle of 0–100%. Normal duty cycle is between 5–95%. 0–5% and 95–100% are for diagnostic purposes, with 0–5% monitoring for an open circuit and 95–100% monitoring for a short to ground at a fixed 13.8 V. The following table shows the commanded duty cycle and output voltage of the Generator:

Commanded Duty Cycle	Generator Output Voltage (+/- .25 V)
0–5%	13.8 V
10%	11 V
20%	11.56 V
30%	12.13 V
40%	12.69 V
50%	13.25 V
60%	13.81 V
70%	14.38 V
80%	14.94 V
90%	15.5 V
95–100%	13.8 V

The Generator provides a PWM feedback signal of the Generator voltage output through the Generator field duty cycle signal circuit to the ECM. This information is sent to the Body Control Module (BCM). The Generator field duty cycle signal (Generator F-terminal) is a PWM signal of 60–460 Hz with a duty cycle of 0–100%. Normal duty cycle is between 5–100%. 0–5% is reserved for diagnostic purposes.

As the charging systems works to maintain the battery charge and manage vehicle electrical loads, it is normal for the voltmeter gauge on the instrument cluster or the system voltage displayed in the DIC to fluctuate or change. This does not indicate a malfunction. Depending on the battery state of charge and the vehicle electrical load, these values may be anywhere from 12.5 V to 15.5 V.

Charging System Modes

Battery Sulfation Mode

The BCM will enter this mode when the interpreted Generator output voltage is less than 13.2 V for 45 minutes. When this condition exists the BCM will enter Charge Mode for 2–3 minutes. The BCM will then determine which mode to enter depending on voltage requirements.

Charge Mode

The BCM will enter Charge Mode when ever one of the following conditions are met:

- Windshield wipers are ON for more than 3 s.
- Climate Control Voltage Boost Mode Request is true, as sensed by the HVAC control module via serial data. High speed cooling fan, rear defogger, and HVAC high speed blower operation can cause the BCM to enter the Charge Mode.
- The estimated battery temperature is less than 0°C (32°F).
- Battery State of Charge is less than 80%.
- Vehicle speed is greater than 145 km/h (90 mph)
- A current sensor malfunction exists.
- System voltage is determined to be below 12.56 V

When any one of these conditions is met, the system will set targeted generator output voltage to a charging voltage between 13.9–15.5 V, depending on the battery state of charge and estimated battery temperature.

Fuel Economy Mode

The BCM will enter Fuel Economy Mode when the estimated battery temperature is at least 0°C (32°F) but less than or equal to 80°C (176°F), the calculated battery current is less than 15 A and greater than −8 A, and the battery state-of-charge is greater than or equal to 80%. Its targeted generator output voltage is the open circuit voltage of the battery and can be between 12.5–13.1 V. When fuel economy mode is active, the generator is not charging, only maintaining open circuit battery voltage. The BCM will exit this mode and enter Charge Mode when any of the conditions described above are present.

Headlamp Mode

The BCM will enter Headlamp Mode when ever the head lamps are ON (high or low beams). Voltage will be regulated between 13.9–14.5 V.

Start Up Mode

When the engine is started the BCM sets a targeted generator output voltage of 14.5 V for 30 s.

Tow/Haul Mode (if applicable)

Pressing the Tow/Haul Mode button located on the center stack, the vehicle system voltage is raised and the remote (non-vehicle) battery will be charged. Having the headlamps on will raise the system voltage and if the Tow/Haul button is applied it will not serve any purpose. The voltage is regulated between 13.9-14.5 V.

Instrument Cluster Operation

Charge Indicator Operation

The instrument cluster illuminates the charge indicator and displays a warning message in the driver information center if equipped, when the one or more of the following occurs:

- The ECM detects that the generator output is less than 11 V or greater than 16 V. The instrument cluster receives a serial data message from the ECM requesting illumination.
- The instrument cluster determines that the system voltage is less than 11 V or greater than 16 V for more than 30 s. The instrument cluster receives a serial data message from the BCM indicating there is a system voltage range concern.
- The instrument cluster performs the displays test at the start of each ignition cycle. The indicator illuminates for approximately 3 s.

Driver Information Center Message: BATTERY NOT CHARGING SERVICE CHARGING SYSTEM or SERVICE BATTERY CHARGING SYSTEM

The BCM and the ECM will send a serial data message to the driver information center for the BATTERY NOT CHARGING SERVICE CHARGING SYSTEM or SERVICE BATTERY CHARGING SYSTEM message to be displayed. It is displayed when a charging system DTC is a current DTC. The message is turned off when the conditions for clearing the DTC have been met.

Voltmeter Gauge and/or System Voltage Display (if equipped)

As a means of displaying the charging system functions, some vehicles may be equipped with a voltmeter gauge on the instrument cluster and/or a system voltage display in the driver information center. These will indicate the current vehicle system voltage.

As the charging systems works to maintain the battery charge and manage vehicle electrical loads, it is normal for the voltmeter gauge on the instrument cluster or the system voltage display in the driver information center to fluctuate or change. This does not indicate a malfunction. Depending on the battery state of charge and the vehicle electrical load, these values may be anywhere from 12.5 V to 15.5 V.

Electrical Power Management Description and Operation

Electrical Power Management

The electrical power management is used to monitor and control the charging system and alert the driver of possible problems within the charging system. The electrical power management system makes the most efficient use of the generator output, improves the battery state-of-charge, extends battery life, and manages system electrical loads.

The load shed operation is a means of reducing electrical loads during a low voltage or low battery state-of-charge condition.

The idle boost operation is a means of improving generator performance during a low voltage or low battery state-of-charge condition.

Each electrical power management function, either idle boost or load shed, is activated in incremental steps. For example, idle boost 1 must be active before idle boost 2 can be active. The criteria used by the body control module (BCM) to regulate electrical power management are outlined below:

Idle Boost and Load Shed With Current Sensor

Function	Battery Temperature Calculation	Battery Voltage Calculation	Amp-Hour Calculation	Action Taken
Idle Boost 1 Start	Less Than −15°C (5°F)	Less Than 13 V	—	First level Idle boost requested
Idle Boost 1 Start	—	—	Battery has a net loss greater than 0.6 Ah	First level Idle boost requested
Idle Boost 1 Start	—	Less Than 11 V	—	First level Idle boost requested
Idle Boost 1 End	Greater Than −10°C (14°F)	Greater Than 12 V	Battery has a net loss less than 0.2 Ah	First level Idle boost request cancelled
Idle Boost 2 Start	—	—	Battery has a net loss greater than 1.6 Ah	Second level Idle boost requested
Idle Boost 2 Start	—	Less Than 11 V	—	Second level Idle boost requested
Idle Boost 2 End	—	Greater Than 12 V	Battery has a net loss less than 0.8 Ah	Second level Idle boost request cancelled
Load Shed 1 Start	—	—	Battery has a net loss of 4 Ah	Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 20% of their cycle
Load Shed 1 Start	—	Less Than 11 V	—	Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 20% of their cycle
Load Shed 1 End	—	Greater Than 12 V	Battery has a net loss of less than 2 Ah	Clear Load Shed 1
Idle Boost 3 Start	—	—	Battery has a net loss of 10 Ah	Third level Idle boost requested
Idle Boost 3 Start	—	Less Than 11 V	—	Third level Idle boost requested
Idle Boost 3 End	—	Greater Than 12 V	Battery has a net loss of less than 6.0 Ah	Third level Idle boost request cancelled
Load Shed 2 Start	—	—	Battery has a net loss greater than 12 Ah	Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 50% of their cycle. The BATTERY SAVER ACTIVE message will be displayed on the DIC
Load Shed 2 Start	—	Less Than 11 V	—	Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 50% of their cycle. The BATTERY SAVER ACTIVE message will be displayed on the DIC
Load Shed 2 End	—	Greater Than 12 V	Battery has a net loss of less than 8 Ah	Clear Load Shed 2
Load Shed 3 Start	—	Less Than 11.9 V	Battery has a net loss greater than 20 Ah	Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 100% of their cycle. The BATTERY SAVER ACTIVE message will be displayed on the DIC

Function	Battery Temperature Calculation	Battery Voltage Calculation	Amp-Hour Calculation	Action Taken
Load Shed 3 Start	—	Less Than 11 V	—	Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 100% of their cycle. The BATTERY SAVER ACTIVE message will be displayed on the DIC
Load Shed 3 End	—	Greater Than 12.6 V	Battery has a net loss of less than 13 Ah	Clear Load Shed 3

Idle Boost and Load Shed Without Current Sensor (based on battery voltage)

Function	Battery Temperature Calculation	Battery Voltage Calculation	Action Taken
Idle Boost 1 Start	Less Than −15°C (5°F)	Less Than 13 V	First level Idle boost requested
Idle Boost 1 Start	—	Less Than 12.6 V	First level Idle boost requested
Idle Boost 1 End	Greater Than −15°C (5°F)	—	First level Idle boost request cancelled
Idle Boost 1 End	—	Greater Than 13 V	First level Idle boost request cancelled
Idle Boost 2 Start	—	Less Than 12.4 V	Second level Idle boost requested
Idle Boost 2 End	—	Greater Than 12.5 V	Second level Idle boost request cancelled
Load Shed 1 Start	—	Less Than 12.3 V	Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 20% of their cycle
Load Shed 1 End	—	Greater Than 12.4 V	Clear Load Shed 1
Idle Boost 3 Start	—	Less Than 10 V	Third level Idle boost requested
Idle Boost 3 End	—	Greater Than 12.3 V	Third level Idle boost request cancelled
Load Shed 2 Start	—	Less Than 12.1 V	Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 50% of their cycle. The BATTERY SAVER ACTIVE message will be displayed on the DIC
Load Shed 2 End	—	Greater Than 12.2 V	Clear Load Shed 2
Load Shed 3 Start	—	Less Than 11.9 V	Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 100% of their cycle. The BATTERY SAVER ACTIVE message will be displayed on the DIC
Load Shed 3 End	—	Greater Than 12.0 V	Clear Load Shed 3

Starting System Description and Operation

Starter Motor Operation (Without KL9)

The starter motors are non-repairable. They have pole pieces that are arranged around the armature. Both solenoid windings are energized. The pull-in winding circuit is completed to the ground through the starter motor. The windings work together magnetically to pull and hold in the plunger. The plunger moves the shift lever. This action causes the starter drive assembly to rotate on the armature shaft spline as it engages with the flywheel ring gear on the engine. Moving at the same time, the plunger also closes the solenoid switch contacts in the starter solenoid. Full battery voltage is applied directly to the starter motor and it cranks the engine.

As soon as the solenoid switch contacts close, current stops flowing thorough the pull-in winding because battery voltage is applied to both ends of the windings. The hold-in winding remains energized. Its magnetic field is strong enough to hold the plunger, shift lever, starter drive assembly, and solenoid switch contacts in place to continue cranking the engine. When the engine starts, pinion overrun protects the armature from excessive speed until the switch is opened.

When the crank signal is removed, the starter relay opens and battery voltage is removed from the starter solenoid S terminal. Current flows from the motor contacts through both windings to the ground at the end of the hold-in winding. However, the direction of the current flow through the pull-in winding is now opposite the direction of the current flow when the winding was first energized.

The magnetic fields of the pull-in and hold-in windings now oppose one another. This action of the windings, along with the help of the return spring, causes the starter drive assembly to disengage and the solenoid switch contacts to open simultaneously. As soon as the contacts open, the starter circuit is turned off.

Enhanced Starter Motor Operation (KL9)

The Engine Stop/Start system in GM vehicles automatically turns off the engine when the vehicle comes to a stop under certain driving conditions, and can quickly restart the engine in about 0.3 seconds when commanded to do so.

In order to smoothly restart the engine as quickly as possible while managing the greater number of engine starts, the Stop/Start system uses an enhanced starter motor that operates differently from a conventional starter motor. It has a high performance electric motor and a stronger pinion engagement mechanism than a conventional starter. It also has independent control of the pinion and motor.

The enhanced starter motor continues using the typical pinion engagement mechanism with a starter solenoid that drives the pinion gear to engage or disengage the flywheel of the engine. When engaged, the starter motor can rotate the engine flywheel and, in turn, the crankshaft.

On the enhanced starter of a Stop/Start system the operation is done in two separate functions inside the solenoid, Starter Motor and Pinion Actuator. Each function controlled individually by the ECM. There are two separate relays to control the two separate parts of the enhanced solenoid:

- KR27 Starter Motor Relay
- KR27C Starter Pinion Actuator Relay

The two individually-controlled relays allow for smooth engagement of the pinion gear into the flywheel with minimum noise and wear.

When the vehicle is coming to a stop, just before the engine stops rotating (at approximately 50 RPM) during stop/start operation, the ECM energizes the Starter Pinion Solenoid Actuator Relay to easily push the pinion gear into the flywheel gear without gear clash. (Fig. 8) When the engine stops rotating during Stop/ Start operation (Auto Stop mode), the starter pinion gear is fully engaged, ready for the starter motor to become energized to quickly start the engine again.

A secondary need for the starter pinion to be driven into the flywheel gear before the engine stops rotating is to address quickly changing demands on the engine. For example, when a driver is slowing nearly to a stop — and the Stop/Start system is preparing for Auto Stop mode — but suddenly decides to release the brake and accelerate

In this situation, the engine has already stopped rotating, or nearly so. A conventional starter cannot restart the engine until the engine has completely stopped. However, with the enhanced starter, the starter pinion gear is fully engaged and ready to begin rotating the engine even before it fully stops turning. Otherwise, the engine would actually have to stop rotating before the pinion can engage smoothly to begin a restart.

To prevent a lag in engine operation, the ECM uses predictive speed matching of the flywheel gear speed and the pinion gear speed to engage the pinion gear into the flywheel gear without gear clash before the engine fully stops. By predicting how long it takes the starter motor to spin up using an algorithm, the pinion gear speed can be matched to the flywheel gear speed. The result is an almost instant restart that is possible at extremely low engine speeds.

Ignition Switch

Keyless Start

When the Ignition mode switch is placed in the crank position, a discrete signal is supplied to the body control module (BCM) notifying it that the ignition is in the crank position. The BCM then sends a serial data message to the engine control module (ECM) that crank has been requested. The ECM then verifies that the brake pedal is applied and for manual transmission the clutch is fully depressed or for automatic transmission is in Park/Neutral. If it is, the ECM then supplies 12 V to the control circuit of the starter relay. When this occurs, battery positive voltage is supplied through the switch side of the crank relay to the S terminal of the starter solenoid.

Key Start

When the ignition switch is placed in the Start position, a discrete signal is supplied to the body control module (BCM) notifying it that the ignition is in the Start position. The BCM then sends a message to the engine control module (ECM) notifying it that CRANK has been requested. The ECM verifies that the transmission is in Park or Neutral. If it is, the ECM then supplies 12 V to the control circuit of the crank relay. When this occurs, battery positive voltage is supplied through the switch side of the crank relay to the S terminal of the starter solenoid.

Stop/Start System Description and Operation

The Stop/Start System is used to improve fuel efficiency in stop/start driving. The vehicle automatically shuts down the engine in appropriate conditions at a traffic light, for example, resulting in zero tail pipe emissions and saving fuel which otherwise is used idling the engine when stationary. The engine instantly restarts when the driver is ready to move away.

As soon as the driver prepares to move away (by releasing the brake pedal and/or depressing the accelerator pedal), the engine will start; it only takes the system around 0.3 s to start the engine.

To support the increased number of engine starts, the starter motor is upgraded with a high performance electric motor and a stronger pinion engagement mechanism with reduced noise levels.

Along with the upgraded starter motor, advanced battery technology is required to ensure the vehicles battery can handle the frequent charge and discharge cycles common with stop/start operation. There is battery sensor module connected to the battery which continually monitors the battery charge and healthy state. The Engine Control Module (ECM) uses this information from the battery sensor module to determine if the battery charge and health is sufficient for an Stop/Start condition.

The Stop/Start system can reduce fuel consumption and carbon dioxide (CO2) emissions by up to 5% in mixed driving conditions. In an urban environment and in heavy traffic with frequent stops the savings may increase to as much as 10%.

There are also sophisticated controls in place to help ensure the Stop/Start System does not compromise the needs of either the driver or vehicle. For the engine to shutdown, the vehicle must be below 5 km/h (3 MPH), the selector lever in position D, and brake pedal depressed. To restart, the driver simply releases the brake pedal and the enhanced starter motor engages the engine. When the engine has been shut down by the Stop/Start System, a control indicator will be illuminated in the Driver Information Center (DIC). When the engine is restarted, the control indicator in the DIC extinguishes.

To ensure neither the needs of the driver or vehicle are compromised the engine will not shut down in the following circumstances:

- Ambient and coolant temperature correlation does not match specified values.
- Ambient temperature is less than −10°C (14°F)
- Battery temperature is less than 0°C (32°F) or greater than 55°C (131°F)
- Driver seat belt is not fastened and the drivers door is not fully closed (not applicable to vehicles in North America)
- HVAC system demand is high
- HVAC defrost has been selected
- Battery charge is low

Likewise the engine will automatically restart if:

- Driver door opened and driver seat belt unbuckled (not applicable to vehicles in North America)
- Engine hood opened
- Battery charge is low
- HVAC demand increases
- Vehicle speed increases
- Brake booster vacuum has been reduced
- Engine coolant temperature is greater than 125°C (257°F)
- Economy mode turned OFF by driver
- Autostop time exceeded 2 min

When the Stop/Start System has shut down the engine, and the ambient temperature is below 15°C (59°F), the ECM will activate the Stop/Start auxiliary relay which controls the electric engine coolant pump motor to continually circulate the engine coolant through the engine while the engine is off. This is to ensure the engine and passenger compartment temperature is maintained while off. Once the Stop/Start System has restarted the engine, the ECM will turn off the electric coolant pump motor, thus allowing the engines internal coolant pump to circulate the engine coolant. The Stop/Start System is automatically activated each time the ignition switch is turned on.

Through the climate control system, the vehicle can be cycled between off, comfort, and eco air conditioning modes (if equipped). In comfort mode, the priority for Stop/Start operation is on customer comfort. Depending on ambient temp, humidity, cabin temperature and cabin temperature setpoint, the least amount of autostops occur in this mode. In eco mode, the priority is on fuel economy. There are more frequent autostops with some sacrificing of cabin temperature control. With the HVAC turned off, the maximum autostops occur since there will be no A/C compressor requests.

Autostop Criteria

The ECM will send an Autostop state message to the body control module (BCM) and shut down the engine when all of the following criteria is met. The BCM will transmit the Autostop state message to the instrument cluster which will display the Autostop indicator in the tachometer display.

- Initial minimum vehicle speed during drive cycle must be 19 km/h (12 MPH) or greater. Subsequent autostop minimum speed may vary from 2-10 km/h (1-6 MPH), depending on vehicle
- Ambient and engine coolant temperature correlation meets specified values.
- Ambient and transmission fluid temperature correlation meets specified values.
- Hood switch status is closed
- Driver door status is closed
- Driver seat belt status is buckled
- Brake booster vacuum is greater than 45 kPa (7 PSI)
- Transmission gear selector is in the Drive position
- Vehicle speed is less than 5 km/h (3 MPH)
- Engine speed is below 1,500 RPM
- Engine coolant temperature is less than 120°C (248°F)
- Ambient temperature is greater than −10°C (14°F)
- No A/C compressor request from HVAC (A/C or Defrost modes)
- Battery voltage greater than 12 V
- Battery state of charge greater than 75% (changes with state of health)

Autostop Enable Ambient and Engine Coolant Temperature Table

Ambient Temperature	inimum Coolant Temperature	Autostop Enable
−10°C (14°F)	60°C (140°F)	Yes
0°C (32°F)	50°C (122°F)	Yes
6°C (43°F)	40°C (104°F)	Yes
12°C (54°F)	30°C (86°F)	Yes
20°C (68°F)	18°C (64°F)	Yes
30°C (86°F)	18°C (64°F)	Yes

Autostart Criteria

The ECM will send an Autostart state message to the BCM. If all of the following conditions are true the ECM and BCM will restart the vehicle.

Driver Enabled Conditions that will engage Autostart:

- Driver removes pressure from the brake or depresses the accelerator pedal while the vehicle is in the forward Drive gear

System Enabled Conditions that will engage Autostart

Note: If one or more of the following conditions occur, the system will force the engine to restart.

- Brake booster vacuum is less than 40 kPa (6 PSI)
- A/C compressor request from HVAC (A/C or Defrost modes)
- Battery voltage less than 11 V,
- Battery state of charge is less than 73% (changes with state of health)

- Driver door status changes to open and driver seat belt status changes to unbuckled (not applicable to vehicles in North America)
- Hood switch status changes to open
- Autostop time exceeded 2 min

If the crank time exceeds 2 s, a manual ignition switch restart will be necessary.

System Components

Engine Control Module (ECM)
The ECM monitors the inputs from the Engine Coolant Temperature (ECT) sensor, Vehicle Speed Sensor (VSS), Battery Sensor Module, hood ajar switch, brake booster vacuum sensor, and engine speed to determine Autostart and Autostop conditions. The ECM also controls the auxiliary coolant pump motor (if equipped).

Transmission Control Module (TCM)
The TCM monitors the inputs from the transmission neutral safety switch to determine the driver selected gear. This information is transmitted to the ECM via serial data to support the Auto Stop Start algorithm.

Engine Coolant Temperature sensor (ECT)
The ECT sensor is used to determine engine operating temperature.

Intake Air Temperature Sensor (IAT)
The ECM uses this sensor to monitor ambient air temperature. If too cold, the Autostop will not occur.

Inside air temperature sensor
The HVAC control module monitors the passenger compartment temperature sensor to determine the temperature inside the passenger compartment. The HVAC control module sends this temperature reading to the ECM on the data communication circuit. The ECM uses this temperature values to determine if a restart is requires based on the temperature inside the passenger compartment.

Vehicle speed sensor
The vehicle speed sensor is used to determine vehicle speed. If vehicle speed is detected above a calculated value during an Autostop condition, the ECM will start the engine.

Hood Ajar Switch
If the hood switch is in the open position, the vehicle will not Autostop. If the hood is opened during Autostop, the vehicle will automatically restart.

Brake Booster Vacuum Sensor
The ECM monitors vacuum in order to ensure proper power assist for the brake pedal. If the ECM determines vacuum is too low, it will restart the engine.

Brake Pedal Position Sensor (BPPS) & Accelerator Pedal Position Sensor (APP)
The ECM monitors both the brake pedal position sensor and the accelerator pedal position sensor to determine the level of activation for each. While the accelerator pedal is in it’s at rest position with no pressure applied by the operator, a partially depressed Brake pedal will cause the ECM to prepare the engine for an Autostop event. When the vehicle is in an auto stop event and the status of the brake pedal position sensor changes from meeting the autostop criteria to not meeting this criteria the engine will be restarted provided all of the other conditions to allow an autostart are met. If the Accelerator pedal is moved from its at rest position the vehicle will also enter an auto start event if all other conditions to support an autostart event, except for the brake pedal position, are met.

Transmission Gear Shift Position Switch
The transmission gear shift position switch is used to determine if the transmission is in the proper state to allow an auto stop/start event. The ECM will not allow Autostop until the brake is engaged, the transmission is in the forward gear position and then the vehicle slows to below the minimum speed required to allow and autostop while meeting all of the other minimum criteria to support an autostop event.

Coolant Pump Motor
The ECM will turn on the auxiliary coolant pump motor during Autostop to maintain engine operating temperature and HVAC temperature. Once the engine is running, the ECM will turn off the coolant pump motor.

Body Control Module (BCM)
The Body Control Module (BCM) monitors the Autostop Disable switch in order to enable or disable the system. It sends the appropriate messages to the ECM Via serial data to enable or disable the system.

Battery Sensor Module
The Battery Sensor Module monitors the battery current load, state of health, and state of charge, the information is sent to the BCM Via LIN then to the ECM Via Serial Data. If the module detects high current load, the battery is in a poor state of health or a low charge condition, the ECM will not allow Autostop to occur.

Autostop Disable Switch
The disable switch is an input to the BCM, it allows the customer to disable or re-enable the Autostop system. After the vehicle is turned off the Autostop system will turn back on the next time the vehicle is started.

Power Supply Transformer
The DC to DC converter monitors battery voltage and will maintain operating voltage to the radio, instrument cluster and instrument panel displays. The DC to DC converter will provide a boosted voltage to sensitive

loads during Autostart to ensure proper operation of the driver informational displays.

Instrument Cluster

In order to differentiate between a normal engine shut down (engine speed 0 RPM) and when the engine has been shut down by the Stop/Start System, the tachometer needle will rest at the Autostop indicator icon (500 RPM point) indicating the engine has been shut down by the Stop/Start System. Once the engine is restarted, or the ECO button has disengaged Autostop, the tachometer will function normally.

Section 7

HVAC

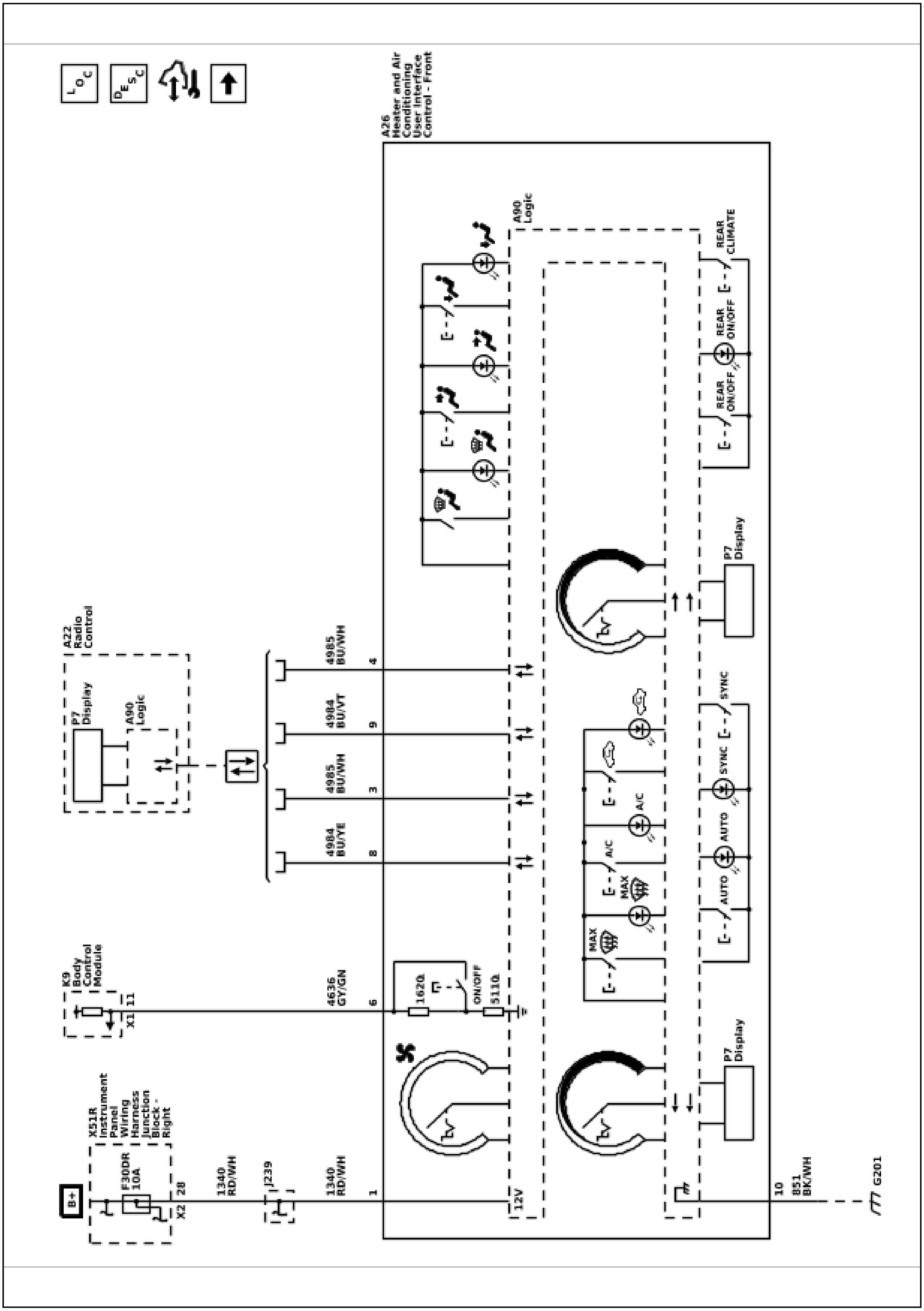
HVAC - Automatic 7-2
Schematic and Routing Diagrams 7-2
HVAC Schematics (CJ2) 7-3
Description and Operation 7-9
Automatic HVAC Description and Operation 7-9
HVAC - Manual 7-13
Schematic and Routing Diagrams 7-13
HVAC Schematics (C67) 7-14
Description and Operation 7-20
Manual HVAC Description and Operation 7-20

HVAC

HVAC - Automatic

Schematic and Routing Diagrams

HVAC Schematics (CJ2) (HVAC Controls)


6847015
A26
Heater and Air Conditioning User Interface Control - Front
A90
Logic
REAR CLIMATE
REAR ON/OFF
REAR ON/OFF
P7
Display
SYNC
SYNC
AUTO
AUTO
A/C
A/C
MAX
MAX
P7
Display
A22
Radio Control
P7
Display
A90
Logic
4985
BU/WH
4
4984
BU/VT
9
4985
BU/WH
3
4984
BU/YE
8
K9
Body Control Module
X1
11
4636
GY/GN
6
1620Ω
ON/OFF
5110Ω
X51R
Instrument Panel Wiring Harness Junction Block - Right
B+
F30DR
10A
X2
28
1340
RD/WH
J239
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RD/WH
1
12V
10
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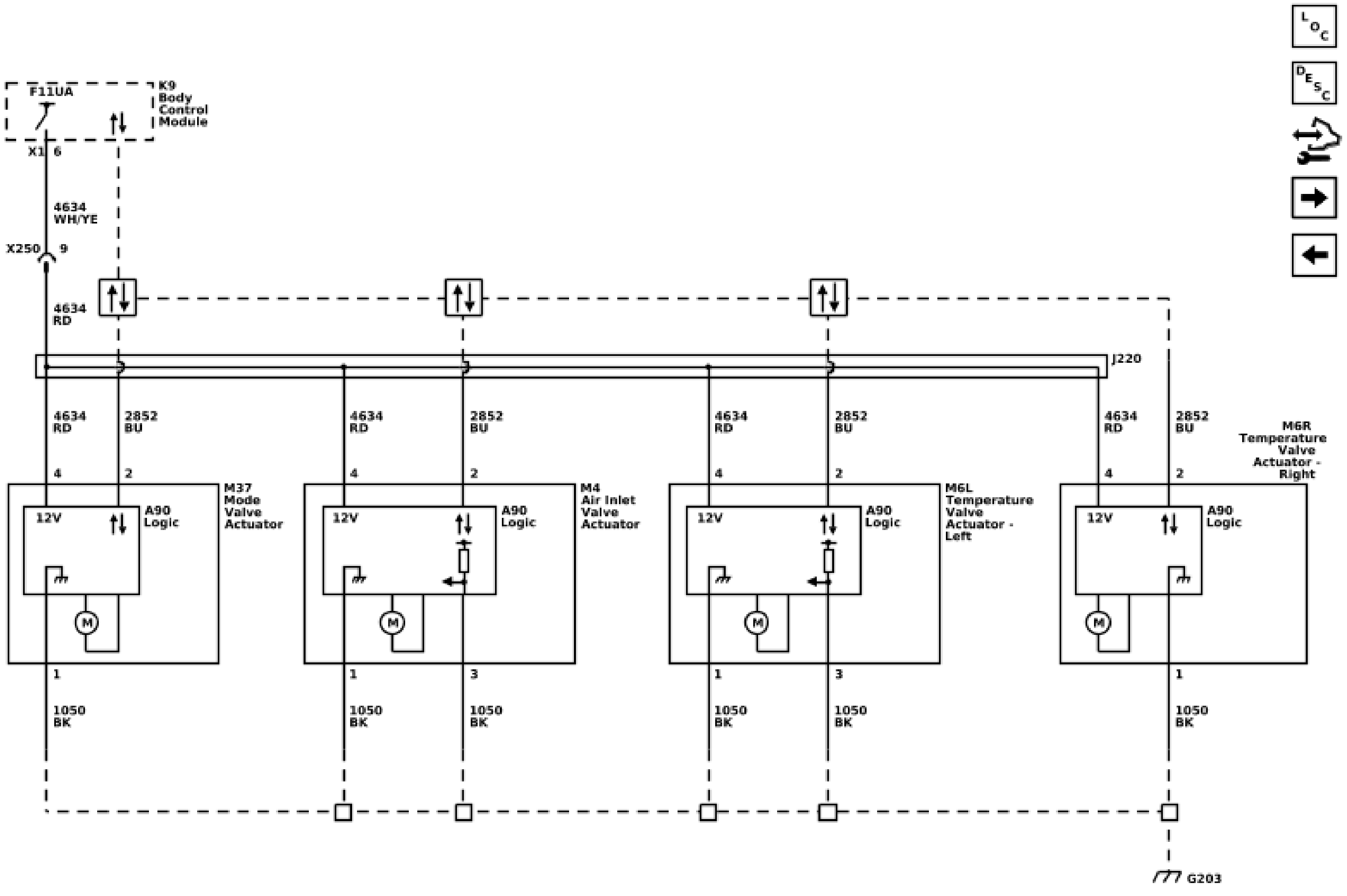
BK/WH
G201

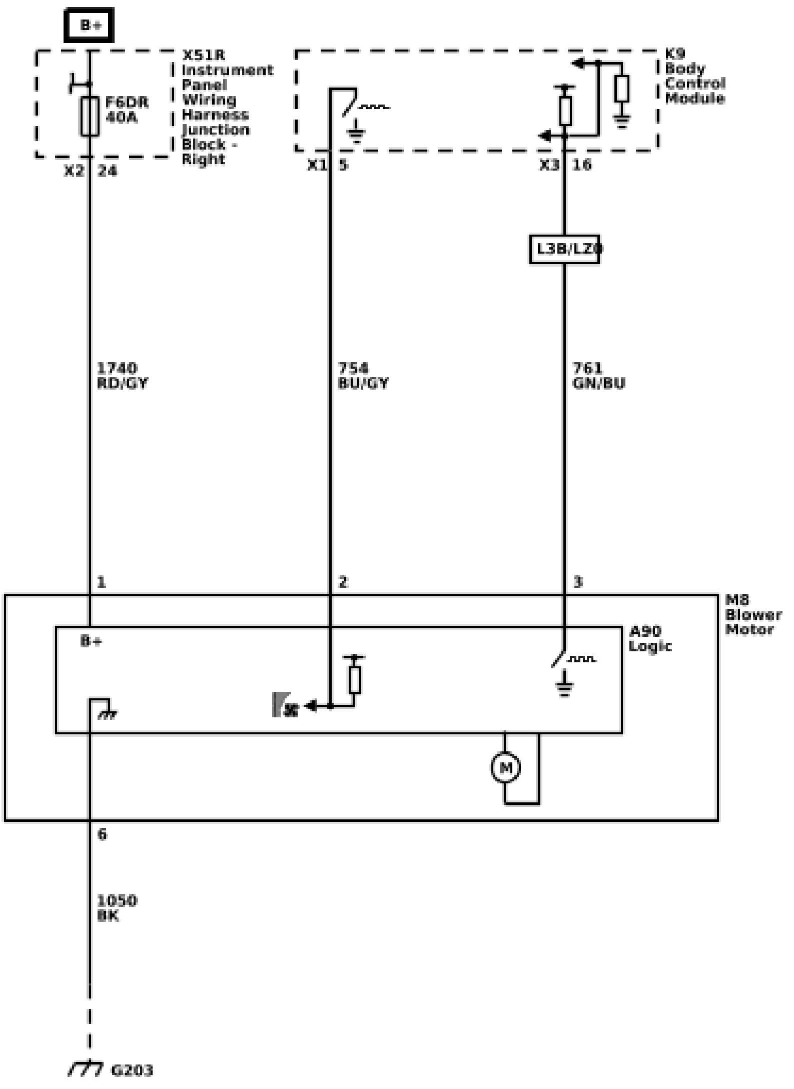
HVAC Schematics (CJ2) (Actuators)



F11UA
K9
Body
Control
Module
X1 6
4634
WH/YE
X250 9
4634
RD
J220
4634
RD
2852
BU
4
2
12V
A90
Logic
M37
Mode
Valve
Actuator
M
1
1050
BK
4634
RD
2852
BU
4
2
12V
A90
Logic
M4
Air Inlet
Valve
Actuator
M
1
3
1050
BK
1050
BK
4634
RD
2852
BU
4
2
12V
A90
Logic
M6L
Temperature
Valve
Actuator -
Left
M
1
3
1050
BK
1050
BK
4634
RD
2852
BU
M6R
Temperature
Valve
Actuator -
Right
4
2
12V
A90
Logic
M
1
1050
BK
G203

6847016

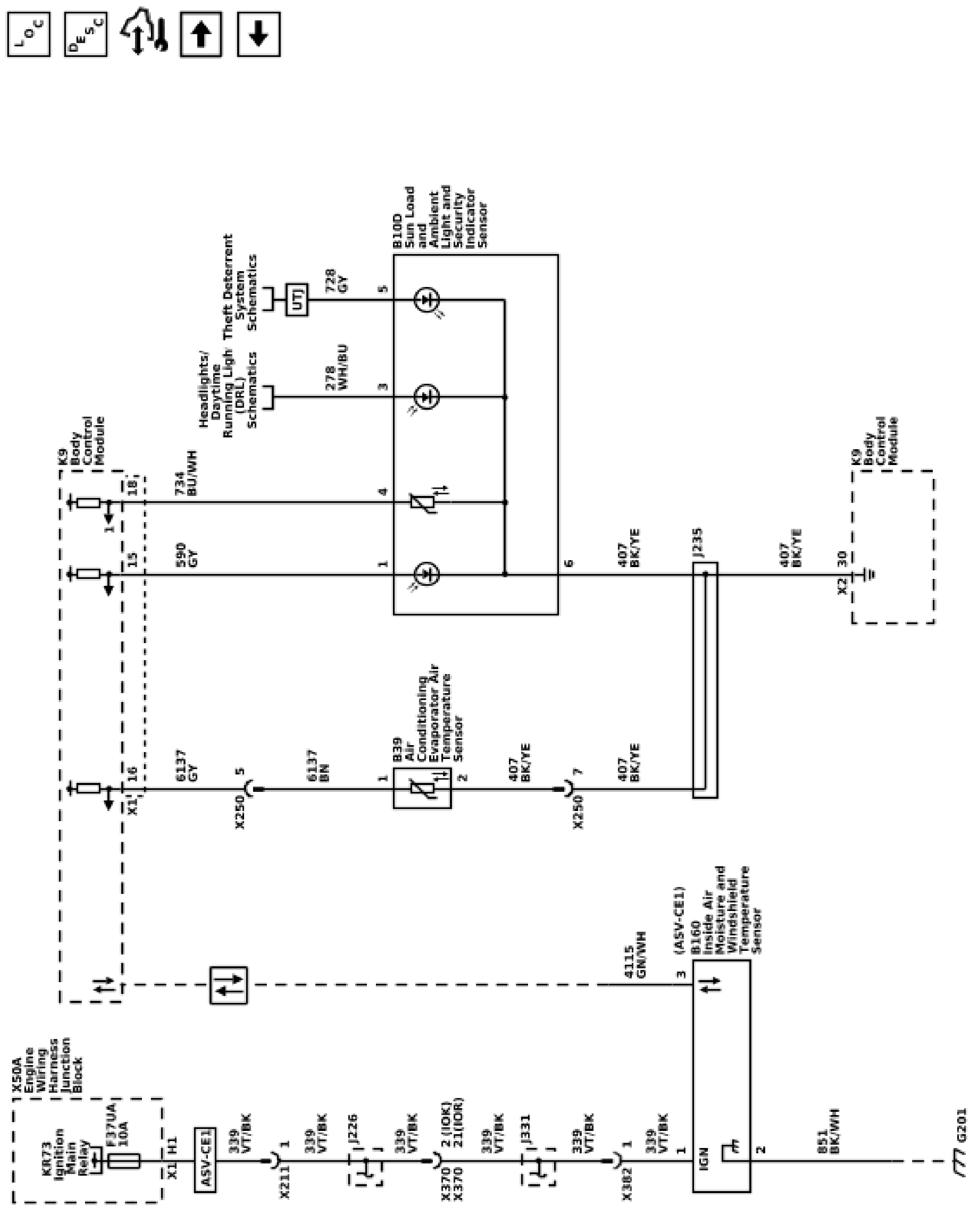
HVAC Schematics (CJ2) (Blower Motor)


B+
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
F6DR
40A
X2 24
X1 5
X3 16
K9
Body
Control
Module
L3B/LZ0
1740
RD/GY
754
BU/GY
761
GN/BU
1
2
3
M8
Blower
Motor
A90
Logic
B+
M
6
1050
BK
G203

6847017

HVAC Schematics (CJ2) (Windshield Sensors and A/C Evaporator Temperature Sensor)

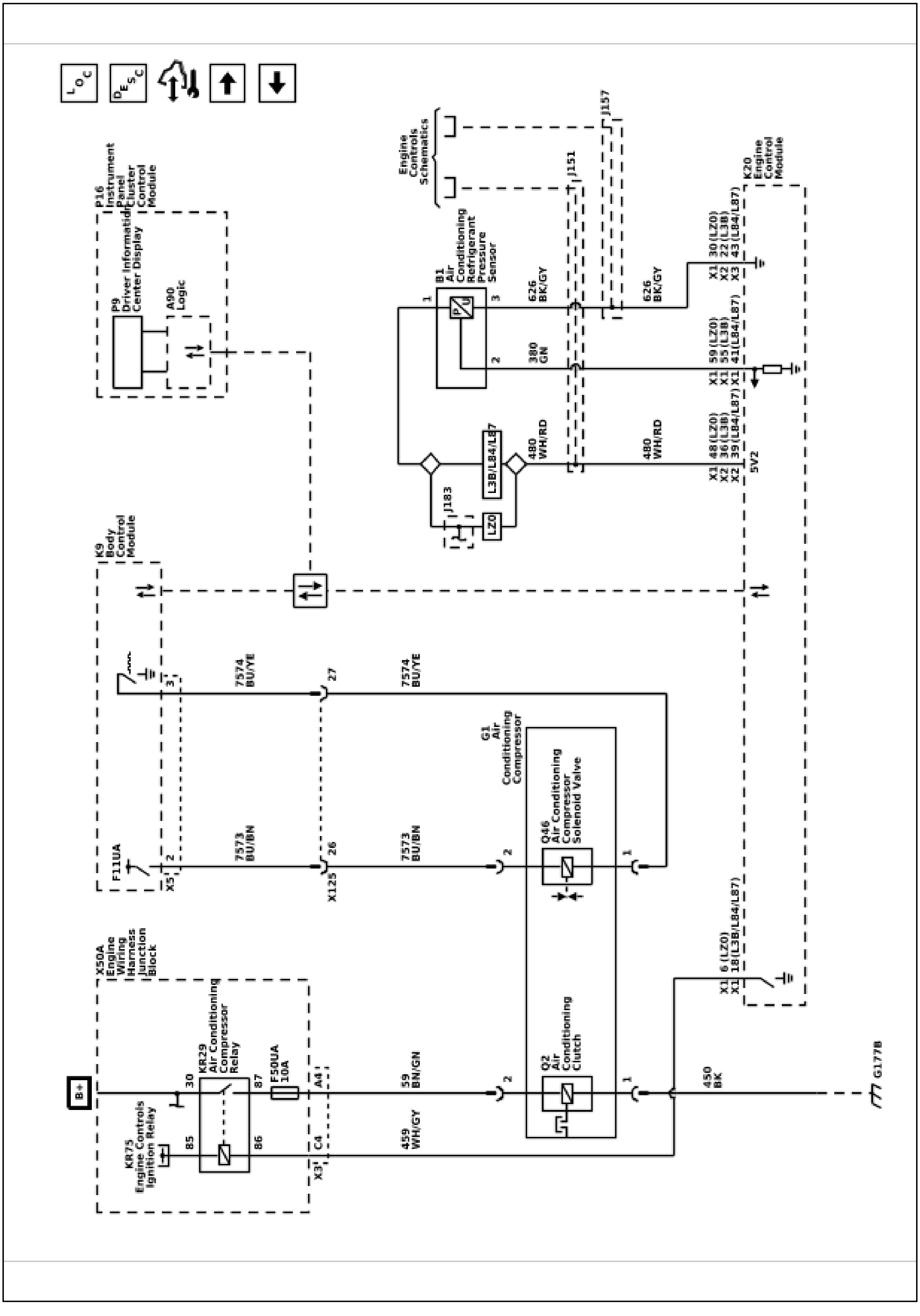
6847018



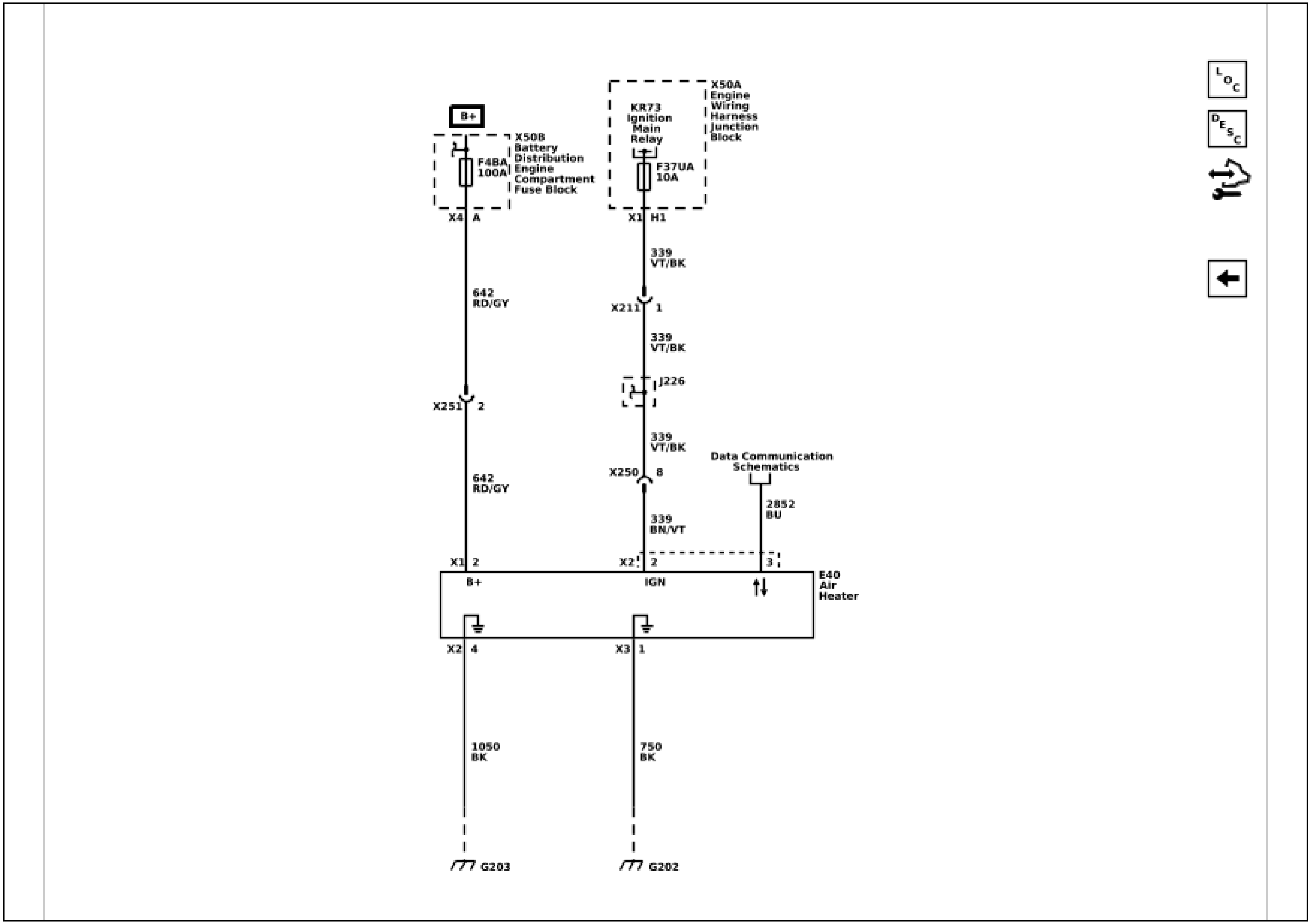
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F37UA 10A
X1 H1
ASV-CE1
339 VT/BK
X211 1
J226
X370 2 (IOK)
X370 21(IOR)
J331
X382 1
1 IGN
2
B51 BK/WH
G201
4115 GN/WH
3
(ASV-CE1)
B160 Inside Air Moisture and Windshield Temperature Sensor
K9 Body Control Module
X1 16
6137 GY
X250 5
6137 BN
1
B39 Air Conditioning Evaporator Air Temperature Sensor
2
407 BK/YE
X250 7
J235
15
590 GY
18
734 BU/WH
1
4
3
5
6
278 WH/BU
728 GY
UTJ
Headlights/ Daytime Running Lights (DRL) Schematics
Theft Deterrent System Schematics
B10D Sun Load and Ambient Light and Security Indicator Sensor
X2 30

HVAC Schematics (CJ2) (A/C Compressor Controls)

6847019


P16 Instrument Panel Cluster Control Module
P9 Driver Information Center Display
A90 Logic
K9 Body Control Module
Engine Controls Schematics
J151
J157
B1 Air Conditioning Refrigerant Pressure Sensor
1
2
3
626 BK/GY
380 GN
480 WH/RD
L3B/L84/L87
LZ0
J183
K20 Engine Control Module
X1 30 (LZ0)
X2 22 (L3B)
X3 43 (L84/L87)
X1 59 (LZ0)
X1 55 (L3B)
X1 41(L84/L87)
X1 48 (LZ0)
X2 36 (L3B)
X2 39(L84/L87)
5V2
X1 6 (LZ0)
X1 18(L3B/L84/L87)
F11UA
X5
7574 BU/YE
7573 BU/BN
26
27
X125
G1 Air Conditioning Compressor
Q46 Air Conditioning Compressor Solenoid Valve
Q2 Air Conditioning Clutch
X50A Engine Wiring Harness Junction Block
B+
KR29 Air Conditioning Compressor Relay
30
87
85
86
F50UA 10A
A4
C4
X3
KR75 Engine Controls Ignition Relay
59 BN/GN
459 WH/GY
450 BK
G177B

HVAC Schematics (CJ2) (Air Heater (C32))


B+
X50B
Battery
Distribution
Engine
Compartment
Fuse Block
F4BA
100A
X4 A
642
RD/GY
X251 2
642
RD/GY
X1 2
B+
X50A
Engine
Wiring
Harness
Junction
Block
KR73
Ignition
Main
Relay
F37UA
10A
X1 H1
339
VT/BK
X211 1
339
VT/BK
J226
339
VT/BK
X250 8
339
BN/VT
X2 2
IGN
Data Communication
Schematics
2852
BU
3
E40
Air
Heater
X2 4
1050
BK
G203
X3 1
750
BK
G202

6847020

Description and Operation

Automatic HVAC Description and Operation

The air temperature and the air delivery description and operation are divided into the following:

- HVAC Control Components
- Air Speed and Blower Motor
- Air Delivery
- Heating and A/C Operation
- Recirculation Operation
- Automatic Operation
- Engine Coolant and A/C System Refrigerant

HVAC Control Components

K9 Body Control Module

The body control module (BCM) is a CAN device that interfaces between the operator and the HVAC system to maintain and control desired air temperature and air distribution settings. The BCM provides a device ON-Signal for the HVAC controls. The BCM provides blower, air delivery mode and air temperature control.

A26 Heater and Air Conditioning User Interface Control - Front

The HVAC control contains all switches which are required to control the functions of HVAC and serve as interface between the operator and the BCM. The selected values are passed to the BCM via serial data.

Actuators

Doors in the HVAC case assembly are used to control air flow. The BCM operates the doors through the use of actuators, with one actuator being used for each door. The system has the following air control doors and associated actuators: mode, left and right temperature, and recirculation.

Each actuator used in the system is a LIN device controlled by the BCM. The BCM supplies a 12 V reference voltage to the actuators, and ground is provided by the wiring harness. When the BCM sends a request message to the actuator, the actuator then operates internal stepper motors to move the door to the required position.

Air Speed and M8 Blower Motor

The selected blower motor speed is passed from the controls to the BCM via serial data.

The motor uses a fused B+, ground, control, and speed output signal circuits to operate. The blower motor speed is controlled by increasing or decreasing the voltage drop on the ground side of the blower motor speed control circuit. The BCM provides a low side pulse width modulation (PWM) signal to the blower motor to request a specific motor speed. The blower motor internal circuitry translates the PWM signal and drives the motor accordingly.

The blower motor has a signal wire used to output a speed signal. The signal is monitored by the BCM. The BCM monitors the blower motor speed to modify the total commanded engine coolant flow rate, which is a percentage of available coolant flow sent to the heater core for occupant comfort and windshield defrosting. The HVAC Blower Speed is monitored so that the ECM can optimize engine coolant flow for fuel economy and emissions.

Afterblow

Afterblow is a feature that dries the evaporator core by operating the blower motor after the engine is turned OFF under certain conditions. This reduces the amount of moisture that can create undesirable odors. For additional information on afterblow, the default setting, and changing the setting, refer to [Link target (target-id 328146-) not found] .

Duct Air Temperature

Physical duct air temperature sensors are not used with the front system. The air temperature in the air distribution ducts is calculated by the BCM based on the engine coolant temperature, coolant flow, evaporator temperature, outside air temperature, solar load, blower motor speed, air inlet door position, and temperature door position information. The BCM uses the values to calculate actuator position.

B39 Air Conditioning Evaporator Air Temperature Sensor

The evaporator temperature sensor is a 2-wire negative temperature coefficient thermistor. The sensor operates within a temperature range of −40 to +85°C (−40 to +185°F). The sensor is installed near the evaporator core to measure the air temperature exiting the core.

Based on vehicle operating conditions and operator settings, the HVAC software algorithms will determine a target evaporator air temperature. The operation of the compressor solenoid will be adjusted as needed to quickly reach and maintain the targeted temperature.

B1 Air Conditioning Refrigerant Pressure Sensor

The A/C refrigerant pressure sensor is a 3-wire piezoelectric pressure transducer. A 5 V reference voltage, low reference, and signal circuits enable the sensor to operate. The A/C pressure signal can be between 0.2–4.8 V. When the A/C refrigerant pressure is low, the signal value is near 0 V. When the A/C refrigerant pressure is high, the signal value is near 5 V. The engine control module (ECM) converts the voltage signal to a pressure value. When pressure is too high or too low, the ECM will not allow the A/C compressor clutch to engage.

G1 Air Conditioning Compressor

The A/C compressor uses a conventional belt driven magnetic clutch to engage and mechanically turn the compressor. When the A/C switch is pressed, the BCM sends an A/C request message to the ECM via serial data. If specific criteria is met, the ECM then grounds the A/C compressor clutch relay control circuit, which will switch the A/C compressor clutch relay. With the relay contacts closed, battery voltage is supplied to the permanently grounded A/C compressor clutch. The A/C compressor clutch will then be activated.

This A/C system utilizes a variable displacement solenoid valve to alter the amount of displacement created by the turning of the compressor. The BCM provides both battery voltage and a pulse width modulated ground to the Q46 Air Conditioning Compressor Solenoid Valve. When the A/C switch is pressed, the BCM grounds the variable displacement solenoid using a (PWM) signal in order to determine the amount of compressor displacement. The performance of the A/C compressor is regulated based on cooling load.

B160 Inside Air Moisture and Windshield Temperature Sensor

The windshield temperature and inside moisture sensor includes the relative humidity sensor, windshield temperature sensor and humidity sensing element temperature sensor.

This sensor assembly provides information about:

- Relative humidity level at windshield (passenger compartment side)
- Temperature of the windshield (passenger compartment side)
- Temperature of the humidity sensor element

The relative humidity sensor measures the relative humidity of the passenger compartment side of the windshield. It also detects the temperature of the windshield surface on the passenger compartment side. Both values are used as control inputs for the BCM application to calculate the fog risk on windshield compartment side and ability to reduce fuel consumption by decreasing A/C compressor power to a minimum without causing any fog. The sensor will also enable partial recirculation mode in order to improve heat-up performance of the passenger compartment under cold ambient temperature conditions without the risk of mist build-up on the windshield. The humidity sensor element temperature sensor supplies the temperature of the humidity sensor element. It is only needed if the thermal contact between the humidity sensing element and the inside windshield surface is not sufficient.

The sensor is a LIN device, and the sensor values are transmitted to the BCM via serial data.

When equipped with CE1, the sensor is part of the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor LIN windshield sensor array, and the windshield temperature and humidity values are transmitted to the BCM via serial data.

B10D Sun Load Temperature and Ambient Light and Security Indicator Sensor

The ambient light/sunload sensor includes the solar sensor and passenger compartment temperature sensor.

The solar sensor is connected to a low reference and 5 V supply through the BCM. As the sunload increases, the sensor signal voltage also increases and vice versa. The signal provided to the BCM varies between 1.2–4.85 V.

The passenger compartment temperature sensor is a negative temperature coefficient thermistor, connected to a low reference and 5 V supply through the BCM. As the air temperature increases, the sensor resistance decreases. The signal varies between 0–5 V.

Bright or high intensity light can cause the vehicles interior temperature to increase. The HVAC system uses the sensor values and compensates for the increased temperature to maintain the system settings.

E40 Air Heater (C32)

Some models are equipped with an auxiliary electric heater to assist in warming the passenger compartment when the engine coolant has not sufficiently warmed to operating temperature. The air heater is a LIN device. The heater uses an ignition circuit, battery voltage circuit, ground circuit, and a serial data signal from the BCM to operate.

The heater is a 12 V positive temperature coefficient heating element located in the HVAC case just downstream of the traditional heater core. The system will activate the heater when the outside temperature is less than approximately 8°C (46°F), the engine coolant temperature is less than approximately 75°C (167°F), and the temperature blend door is commanded to the full hot position.

Air Delivery

The BCM controls the distribution of air by the use of recirculation and mode door actuators. The modes that may be selected are:

- Defrost: windshield outlet
- Panel: dashboard outlets
- Floor: front footwell outlets
- Defog: defrost + floor
- Bi-level: panel + floor
- Tri-level: panel + defrost + floor

- Hi-level: panel + defrost

The desired air distribution mode can be selected with the air distribution switches at the HVAC control. The HVAC control delivers the values to the BCM via serial data. The BCM sends a request to the mode door actuator to move the door to the required position. Depending on the position of the door, air is distributed through various ducts leading to the outlets in the dash. When defrost airflow is active, the BCM will move the recirculation actuator to outside air, to aid in reducing window fogging. When defrost is selected the blower motor will be activated, regardless of the coolant temperature. A/C is available in all modes.

Refer to the owners manual for operation of the HVAC controls and mode selection.

Recirculation Operation

The recirculation switch is integrated into the HVAC control. The selected recirculation setting is sent to the BCM via serial data. The BCM controls the air intake using the recirculation actuator. In recirculation mode the recirculation door is positioned to block outside air from entering and circulate the air within the vehicle. In outside air mode the recirculation door is positioned to route outside air into the vehicle.

Recirculation is only available if the defrost mode is not active. When the defrost mode is active, the recirculation actuator positions the recirculation door so that outside air is circulated to the windshield to reduce fogging.

In automatic mode the values of the sensors are used as inputs for the BCM to calculate the fog risk on the passenger compartment side of the windshield. The A/C compressor and the defrost mode may be activated to prevent or remove fog on the passenger compartment side of the windshield.

In automatic mode, a partial recirculation mode may be commanded to accelerate cabin heating or cooling and reduce energy usage. The recirculation indicator remains illuminated at all times, regardless of the actual operating mode determined by the system.

Heating and A/C Operation

The purpose of the heating and A/C system is to provide heated and cooled air to the interior of the vehicle. The A/C system will also remove humidity from the interior and reduce windshield fogging. Regardless of the temperature setting, the following may affect the rate that the HVAC system can achieve the desired temperature:

- Recirculation setting
- Difference between inside and desired temperature
- Blower motor speed setting
- Mode setting
- Dashboard outlet open/closed position

When the A/C switch or the AUTO switch is pressed, the HVAC control sends a signal to the BCM via serial data. The BCM evaluates this signal and sends an A/C request signal to the ECM via CAN-Bus. The ECM checks all preconditions before releasing and if all conditions are met sends a release signal back to the BCM. The A/C compressor is activated by the BCM. The BCM supplies battery voltage to the A/C compressor solenoid. When the A/C switch is pressed, the BCM provides a pulse width modulation (PWM) signal to the A/C compressor solenoid in order to command the performance of the A/C compressor. The performance of the A/C compressor is regulated using evaporator temperature and engine load.

The A/C indicator does not indicate the compressor is currently active. The A/C indicator shows that A/C has been requested and the system will activate the compressor as needed.

The following conditions must be met in order to activate the A/C compressor:

- Battery voltage is between 9–18 V
- Engine coolant temperature is less than 124°C (255°F)
- Engine speed is greater than 600 RPM
- Engine speed is less than 5 500 RPM
- A/C high side pressure is between 269–2 929 kPa (39–425 PSI)
- Throttle position is less than 100%
- Evaporator temperature is greater than 3°C (38°F)
- ECM does not detect immoderate torque load
- ECM does not detect insufficient idle quality
- The ambient temperature is above 1°C (34°F)

The sensor information is used by the ECM to determine the following:

- The A/C high side pressure
- An A/C system load on the engine
- An immoderate A/C high side pressure
- The heat load at the A/C condenser

The air streams into the passenger compartment through the heater core and the evaporator core. The air temperature actuator drives the mixed air door to direct the airflow. If the interior temperature should be increased, the mixed air door is put into the position in which more air streams through the heater core. If the interior temperature should be decreased, the mixed air door is put into the position in which more air streams through the evaporator core.

Automatic Operation

In automatic operation, the BCM maintains the comfort level inside of the vehicle by controlling the A/C compressor solenoid, the blower motor, the air temperature actuators, mode actuator and recirculation actuator.

The automatic mode indicator shows that the system is in full automatic operation. If an individual setting is changed (excluding temperature), the automatic indicator will turn off, and that function will enter manual control. All other functions will remain under automatic control unless manually changed.

To put the HVAC system in automatic mode, the following is required:

1. The auto switch must be activated.
2. The air temperature switch must not be in either the full hot or full cold position.

Once the desired temperature is reached, the blower motor, mode, recirculation and temperature actuators automatically adjust to maintain the temperature selected. The BCM performs the following functions to maintain the desired air temperature:

- Monitors the following:
  - Ambient (outside) air temperature sensor
  - Passenger compartment temperature sensor
  - Calculated front duct air temperatures
  - Windshield temperature and inside moisture sensor
  - Evaporator temperature sensor
  - Ambient light/sunload sensor
- Regulate the blower motor speed
- Position the air temperature actuators
- Position the mode door actuators
- Position the recirculation actuator
- Control of the A/C compressor solenoid

When the temperature setting is set to full hot, the blower speed will increase gradually as the coolant warms to normal operating temperature. When normal engine operating temperature is reached the blower stays on high speed and the air temperature actuators stays in the full heat position.

When the temperature setting is set to full cold, the blower will immediately operate at high speed and the air temperature actuators move to full cold position. The mode actuator moves to the panel position and the recirculation actuator moves to the recirculation position.

Under cold ambient temperatures, the automatic HVAC system provides heat in the most efficient manner. The operator can select an extreme temperature setting but the system will not warm the vehicle any faster. Under warm ambient temperatures, the automatic HVAC system also provides air conditioning in the most efficient manner. Selecting an extreme cool temperature will not cool the vehicle any faster.

In automatic mode the values of the windshield temperature and inside moisture sensor are used as control inputs for the BCM application to calculate the fog risk on the passenger compartment side of the windshield and ability to reduce fuel consumption by decreasing A/C compressor power to a minimum without causing any fog. The A/C compressor and the defrost mode are activated to prevent or remove fog on the passenger compartment side of the windshield. The sensor will also enable partial recirculation mode in order to improve heat-up performance of the passenger compartment under cold ambient temperature conditions without the risk of mist build-up on the windshield.

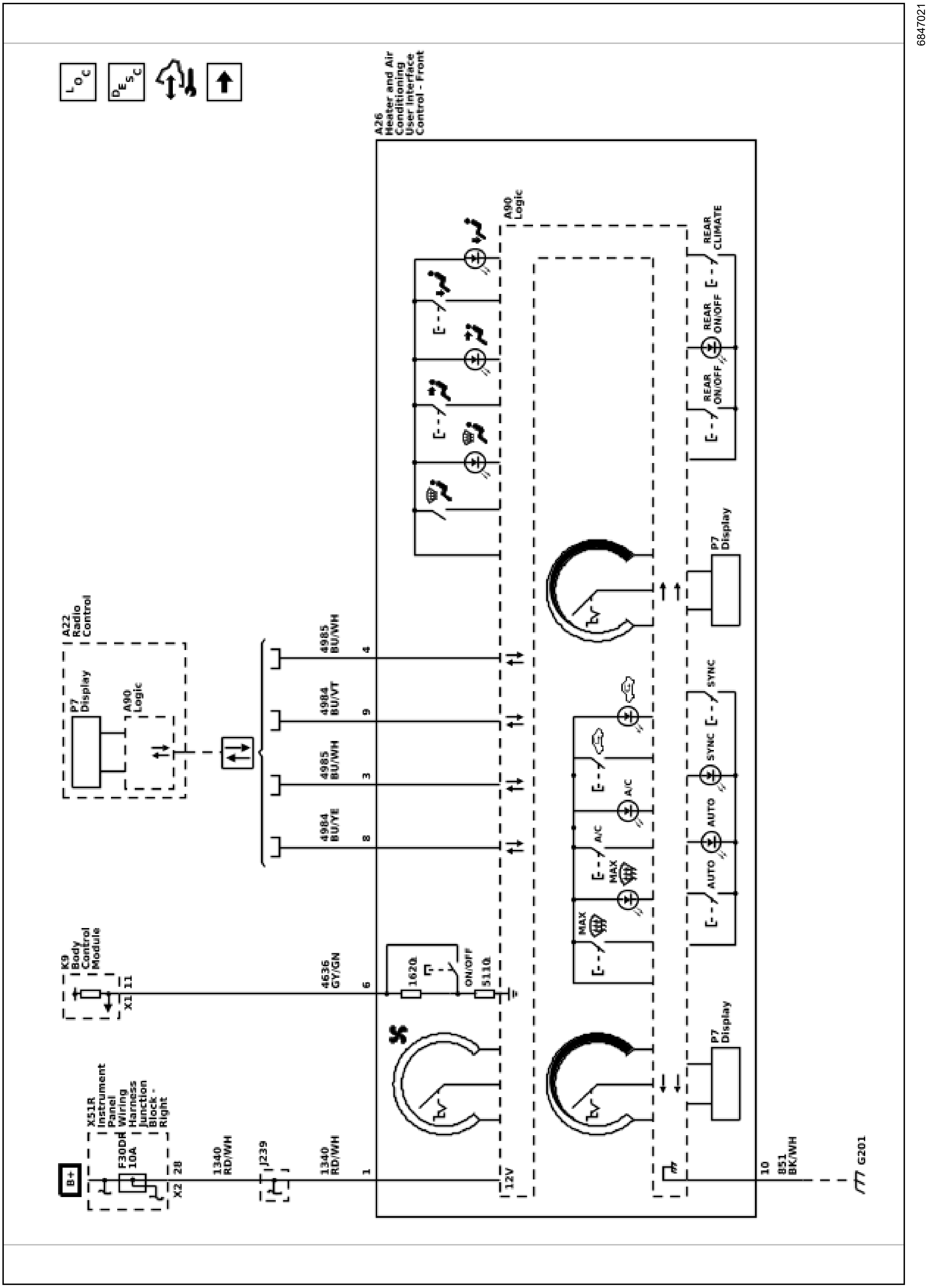
Engine Coolant and A/C System Refrigerant

For information on engine coolant, coolant flow, A/C refrigerant, and the A/C refrigerant cycle, refer to [Link target (target-id 162334-) not found] .

HVAC - Manual

Schematic and Routing Diagrams

HVAC Schematics (C67) (HVAC Controls)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B+
X51R Instrument Panel Wiring Harness Junction Block - Right
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X2 28
1340 RD/WH
J239
1340 RD/WH
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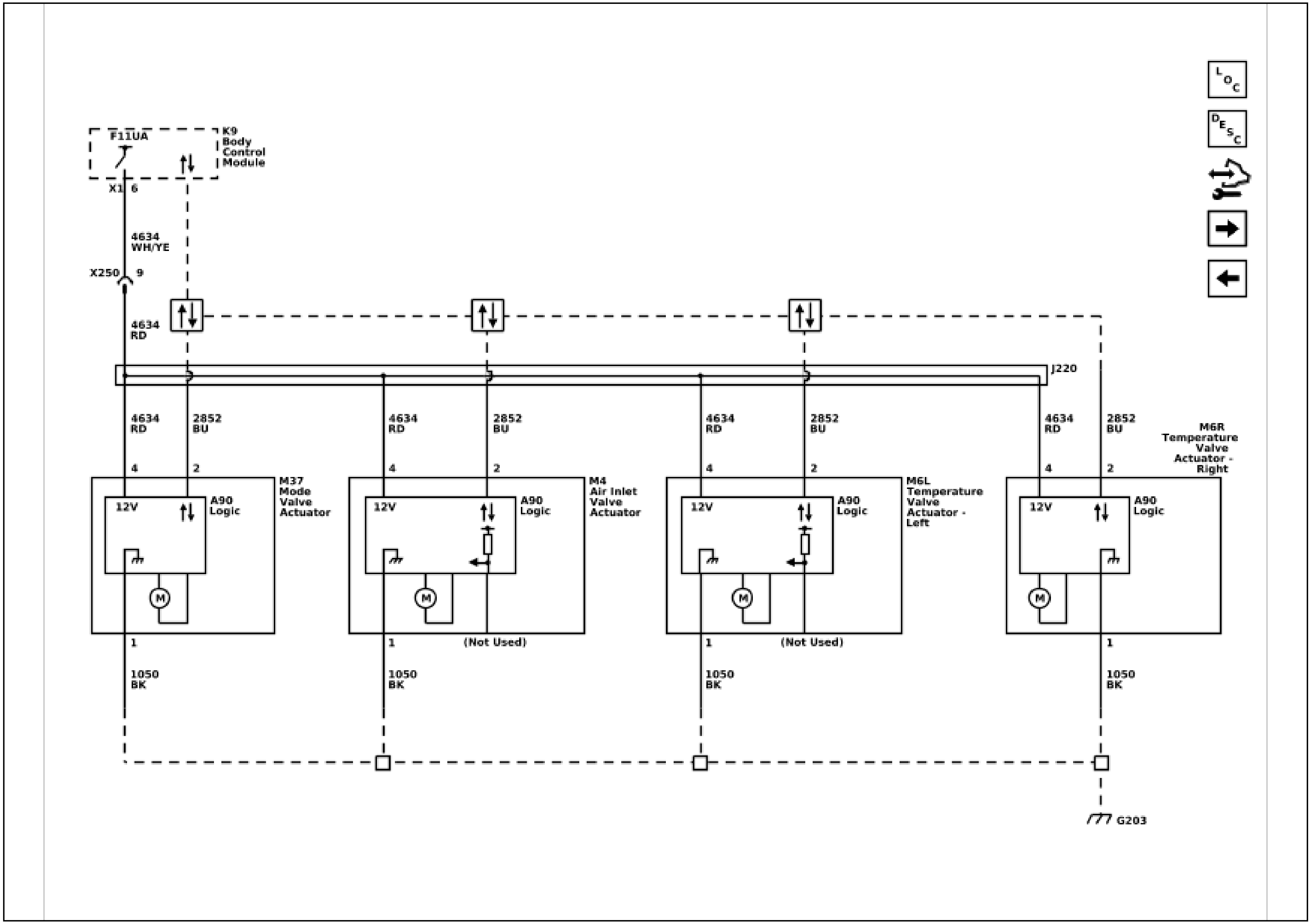
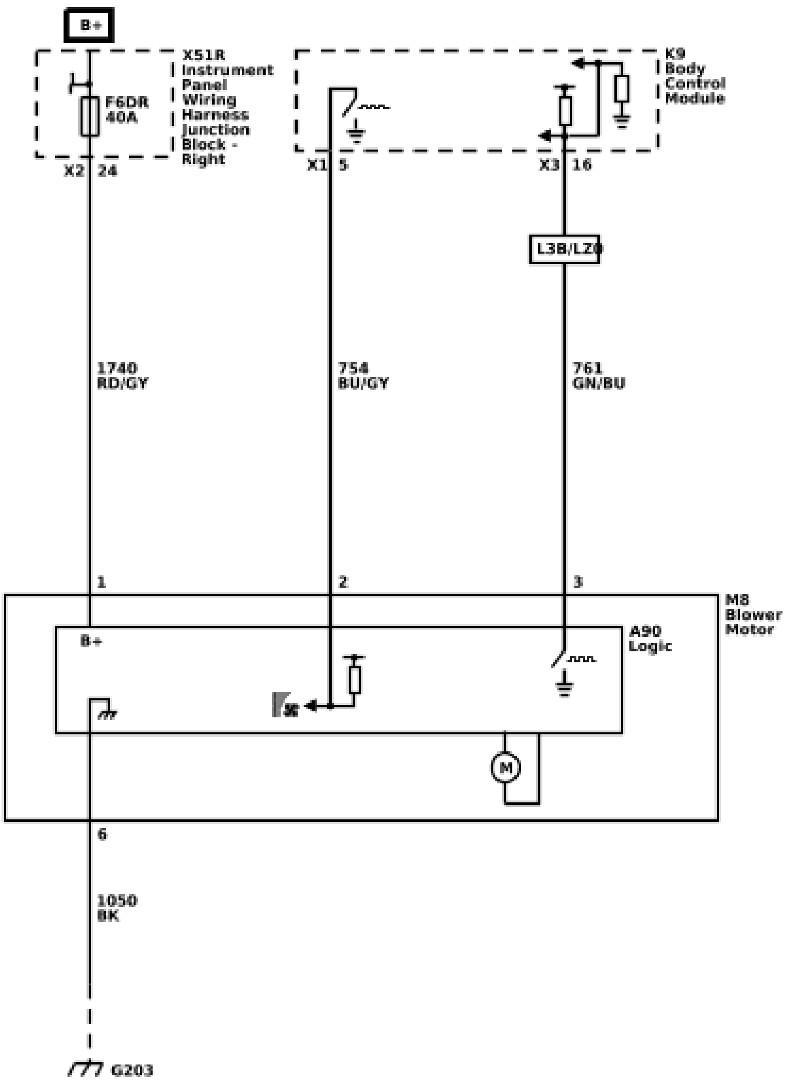
K9 Body Control Module
X1 11
4636 GY/GN
6
A22 Radio Control
P7 Display
A90 Logic
4984 BU/YE
8
4985 BU/WH
3
4984 BU/VT
9
4985 BU/WH
4
A26 Heater and Air Conditioning User Interface Control - Front
1620Ω
ON/OFF
511Ω
12V
A90 Logic
MAX
MAX
A/C
A/C
AUTO
AUTO
SYNC
SYNC
P7 Display
P7 Display
REAR ON/OFF
REAR ON/OFF
REAR CLIMATE
10
851 BK/WH
G201

HVAC Schematics (C67) (Actuators)


F11UA
K9
Body
Control
Module
X1 6
4634
WH/YE
X250 9
4634
RD
J220
4634
RD
2852
BU
4
2
M37
Mode
Valve
Actuator
12V
A90
Logic
M
1
1050
BK
M4
Air Inlet
Valve
Actuator
(Not Used)
M6L
Temperature
Valve
Actuator -
Left
M6R
Temperature
Valve
Actuator -
Right
G203

6847022

HVAC Schematics (C67) (Blower Motor)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Panel
Wiring
Harness
Junction
Block -
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F6DR
40A
X2 24
K9
Body
Control
Module
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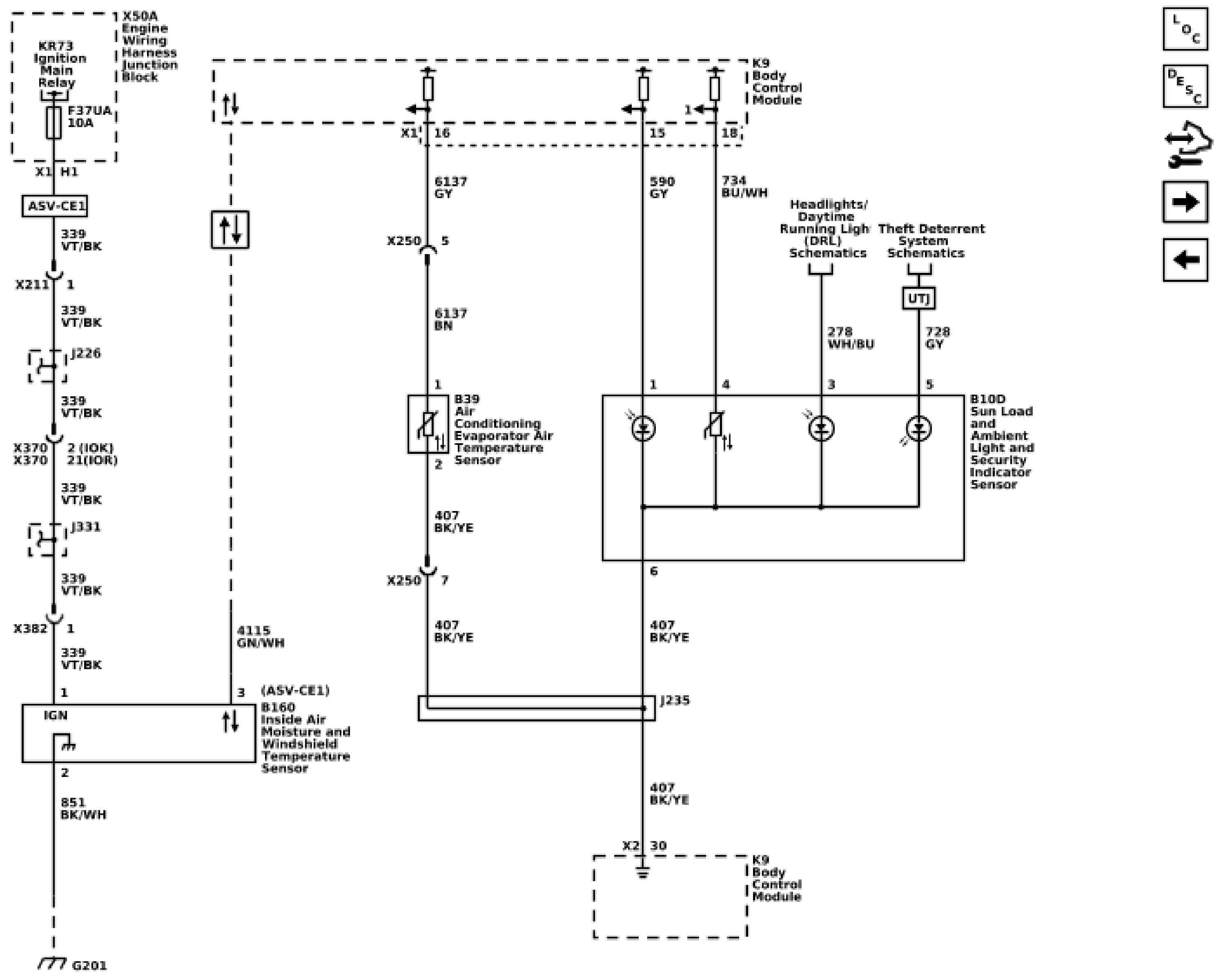
X3 16
L3B/LZ0
1740
RD/GY
754
BU/GY
761
GN/BU
1
2
3
M8
Blower
Motor
A90
Logic
B+
M
6
1050
BK
G203

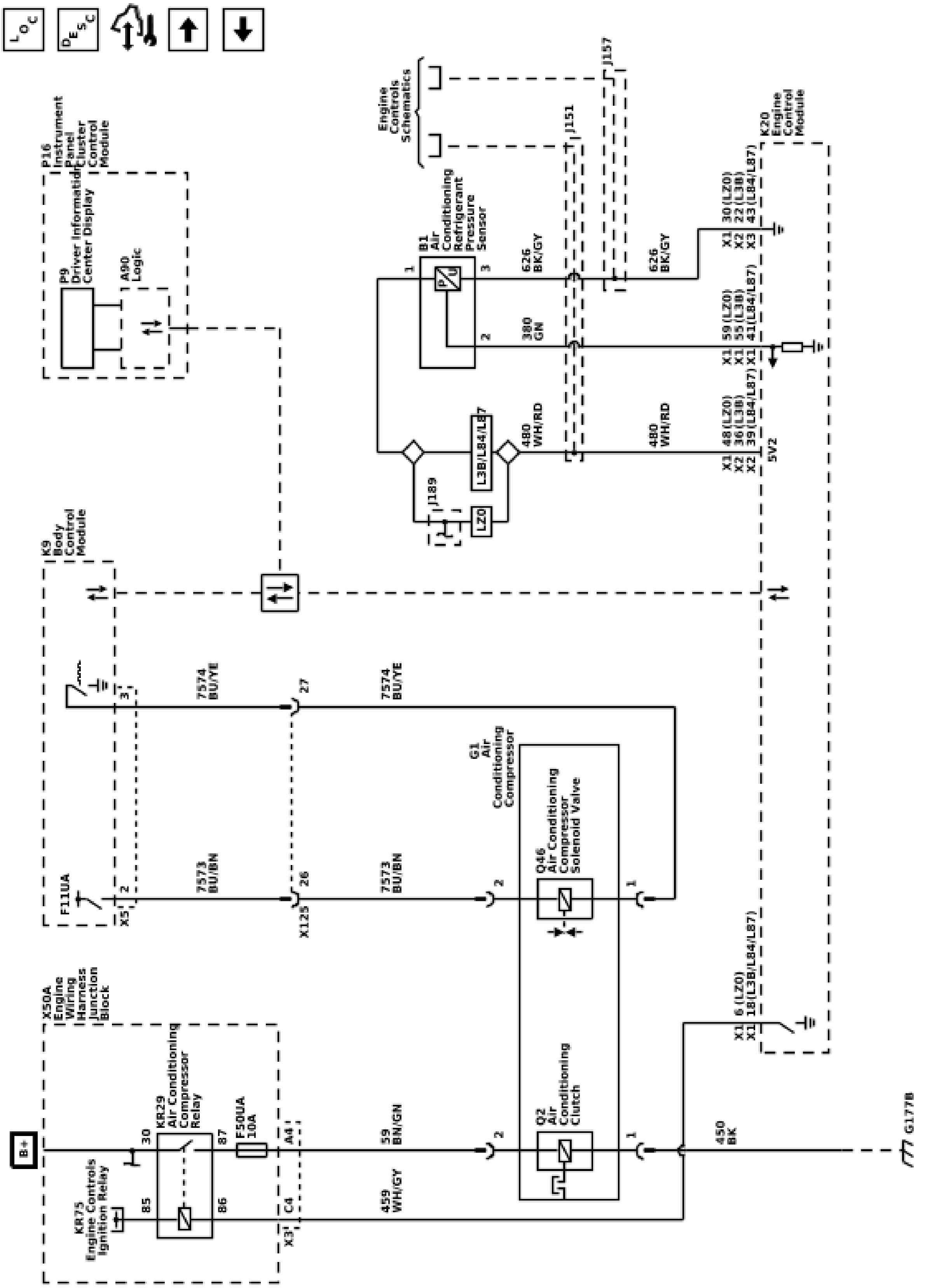
6847023

HVAC Schematics (C67) (Windshield Sensors and A/C Evaporator Temperature Sensor)


X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F37UA 10A
X1 H1
ASV-CE1
339 VT/BK
X211 1
339 VT/BK
J226
339 VT/BK
X370 2 (IOK)
X370 21(IOR)
339 VT/BK
J331
339 VT/BK
X382 1
339 VT/BK
1
IGN
2
851 BK/WH
G201
4115 GN/WH
3 (ASV-CE1)
B160 Inside Air Moisture and Windshield Temperature Sensor
K9 Body Control Module
X1 16
15
18
1
6137 GY
X250 5
6137 BN
1
B39 Air Conditioning Evaporator Air Temperature Sensor
2
407 BK/YE
X250 7
407 BK/YE
J235
590 GY
734 BU/WH
Headlights/ Daytime Running Ligh (DRL) Schematics
Theft Deterrent System Schematics
UTJ
278 WH/BU
728 GY
1
4
3
5
B10D Sun Load and Ambient Light and Security Indicator Sensor
6
407 BK/YE
407 BK/YE
X2 30
K9 Body Control Module
LOC
DESC

6847024

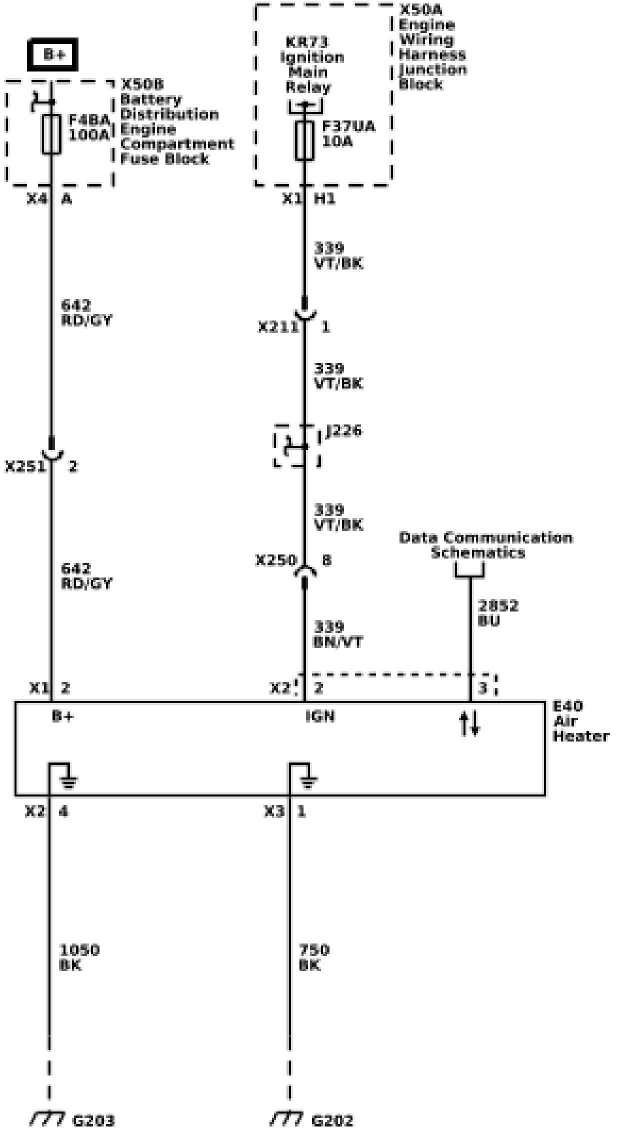
HVAC Schematics (C67) (A/C Compressor Controls)



L O C
D E S C
P16 Instrument Panel Cluster Control Module
P9 Driver Information Center Display
A90 Logic
Engine Controls Schematics
J157
J151
B1 Air Conditioning Refrigerant Pressure Sensor
626 BK/GY
380 GN
480 WH/RD
K20 Engine Control Module
X1 30 (LZ0)
X2 22 (L3B)
X3 43 (L84/L87)
X1 59 (LZ0)
X1 55 (L3B)
X1 41 (L84/L87)
X1 48 (LZ0)
X2 36 (L3B)
X2 39 (L84/L87)
5V2
L3B/L84/L87
LZ0
J189
K9 Body Control Module
7574 BU/YE
27
3
F11UA
X5
2
7573 BU/BN
26
X125
G1 Air Conditioning Compressor
Q46 Air Conditioning Compressor Solenoid Valve
1
X50A Engine Wiring Harness Junction Block
KR29 Air Conditioning Compressor Relay
30
87
85
86
F50UA 10A
A4
C4
X3
B+
KR75 Engine Controls Ignition Relay
59 BN/GN
459 WH/GY
Q2 Air Conditioning Clutch
X1 6 (LZ0)
X1 18 (L3B/L84/L87)
450 BK
G177B

6847025

HVAC Schematics (C67) (Air Heater (C32))


B+
X50B
Battery
Distribution
Engine
Compartment
Fuse Block
F4BA
100A
X4 A
642
RD/GY
X251 2
642
RD/GY
X1 2
B+
X50A
Engine
Wiring
Harness
Junction
Block
KR73
Ignition
Main
Relay
F37UA
10A
X1 H1
339
VT/BK
X211 1
339
VT/BK
J226
339
VT/BK
X250 8
339
BN/VT
X2 2
IGN
Data Communication
Schematics
2852
BU
3
E40
Air
Heater
X2 4
1050
BK
G203
X3 1
750
BK
G202
6847026

Description and Operation

Manual HVAC Description and Operation

The air temperature and the air delivery description and operation are divided into the following:

- HVAC Control Components
- Air Speed and Blower Motor
- Air Delivery
- Heating and A/C Operation
- Recirculation Operation
- Engine Coolant and A/C System Refrigerant

HVAC Control Components

K9 Body Control Module

The body control module (BCM) is a CAN device that interfaces between the operator and the HVAC system to maintain and control desired air temperature and air distribution settings. The BCM provides a device ON-Signal for the HVAC controls. The BCM provides blower, air delivery mode and air temperature control.

A26 Heater and Air Conditioning User Interface Control - Front

The HVAC control contains all switches which are required to control the functions of HVAC and serve as interface between the operator and the BCM. The selected values are passed to the BCM via serial data.

Actuators

Doors in the HVAC case assembly are used to control air flow. The BCM operates the doors through the use of actuators, with one actuator being used for each door. The system has the following air control doors and associated actuators: mode, temperature, and recirculation.

Each actuator used in the system is a LIN device controlled by the BCM. The BCM supplies a 12 V reference voltage to the actuators, and ground is provided by the wiring harness. When the BCM sends a request message to the actuator, the actuator then operates internal stepper motors to move the door to the required position.

Air Speed and M8 Blower Motor

The selected blower motor speed is passed from the controls to the BCM via serial data.

The motor uses a fused B+, ground, control, and speed output signal circuits to operate. The blower motor speed is controlled by increasing or decreasing the voltage drop on the ground side of the blower motor speed control circuit. The BCM provides a low side pulse width modulation (PWM) signal to the blower motor to request a specific motor speed. The blower motor internal circuitry translates the PWM signal and drives the motor accordingly.

The blower motor has a signal wire used to output a speed signal. The signal is monitored by the BCM. The BCM monitors the blower motor speed to modify the total commanded engine coolant flow rate, which is a percentage of available coolant flow sent to the heater core for occupant comfort and windshield defrosting. The HVAC Blower Speed is monitored so that the ECM can optimize engine coolant flow for fuel economy and emissions.

Afterblow

Afterblow is a feature that dries the evaporator core by operating the blower motor after the engine is turned OFF under certain conditions. This reduces the amount of moisture that can create undesirable odors. For additional information on afterblow, the default setting, and changing the setting, refer to [Link target (target-id 328147-) not found] .

B39 Air Conditioning Evaporator Air Temperature Sensor

The evaporator temperature sensor is a 2-wire negative temperature coefficient thermistor. The sensor operates within a temperature range of −40 to +85°C (−40 to +185°F). The sensor is installed near the evaporator core to measure the air temperature exiting the core.

Based on vehicle operating conditions and operator settings, the HVAC software algorithms will determine a target evaporator air temperature. The operation of the compressor solenoid will be adjusted as needed to quickly reach and maintain the targeted temperature.

B1 Air Conditioning Refrigerant Pressure Sensor

The A/C refrigerant pressure sensor is a 3-wire piezo-electric pressure transducer. A 5 V reference voltage, low reference, and signal circuits enable the sensor to operate. The A/C pressure signal can be between 0.2–4.8 V. When the A/C refrigerant pressure is low, the signal value is near 0 V. When the A/C refrigerant pressure is high, the signal value is near 5 V. The engine control module (ECM) converts the voltage signal to a pressure value. When pressure is too high or too low, the ECM will not allow the A/C compressor clutch to engage.

G1 Air Conditioning Compressor

The A/C compressor uses a conventional belt driven magnetic clutch to engage and mechanically turn the compressor. When the A/C switch is pressed, the BCM sends an A/C request message to the ECM via serial data. If specific criteria is met, the ECM then grounds the A/C compressor clutch relay control circuit, which will switch the A/C compressor clutch relay. With the relay contacts closed, battery voltage is supplied to the permanently grounded A/C compressor clutch. The A/C compressor clutch will then be activated.

This A/C system utilizes a variable displacement solenoid valve to alter the amount of displacement created by the turning of the compressor. The BCM provides both battery voltage and a pulse width modulated ground to the Q46 Air Conditioning Compressor Solenoid Valve. When the A/C switch is pressed, the BCM grounds the variable displacement solenoid using a (PWM) signal in order to determine the amount of compressor displacement. The performance of the A/C compressor is regulated based on cooling load.

E40 Air Heater (C32)
Some models are equipped with an auxiliary electric heater to assist in warming the passenger compartment when the engine coolant has not sufficiently warmed to operating temperature. The air heater is a LIN device. The heater uses an ignition circuit, battery voltage circuit, ground circuit, and a serial data signal from the BCM to operate.

The heater is a 12 V positive temperature coefficient heating element located in the HVAC case just downstream of the traditional heater core. The system will activate the heater when the outside temperature is less than approximately 8°C (46°F), the engine coolant temperature is less than approximately 75°C (167°F), and the temperature blend door is commanded to the full hot position.

Air Delivery

The BCM controls the distribution of air by the use of recirculation and mode door actuators. The modes that may be selected are:

- Defrost: windshield outlet
- Panel: dashboard outlets
- Floor: front footwell outlets
- Defog: defrost + floor
- Bi-level: panel + floor
- Tri-level: panel + defrost + floor
- Hi-level: panel + defrost

The desired air distribution mode can be selected with the air distribution switches at the HVAC control. The HVAC control delivers the values to the BCM via serial data. The BCM sends a request to the mode door actuator to move the door to the required position. Depending on the position of the door, air is distributed through various ducts leading to the outlets in the dash. When defrost airflow is active, the BCM will move the recirculation actuator to outside air, to aid in reducing window fogging. When defrost is selected the blower motor will be activated, regardless of the coolant temperature. A/C is available in all modes.

Refer to the owners manual for operation of the HVAC controls and mode selection.

Recirculation Operation
The recirculation switch is integrated into the HVAC control. The selected recirculation setting is sent to the BCM via serial data. The BCM controls the air intake using the recirculation actuator. In recirculation mode the recirculation door is positioned to block outside air from entering and circulate the air within the vehicle. In outside air mode the recirculation door is positioned to route outside air into the vehicle.

Recirculation is only available if the defrost mode is not active. When the defrost mode is active, the recirculation actuator positions the recirculation door so that outside air is circulated to the windshield to reduce fogging.

Heating and A/C Operation

The purpose of the heating and A/C system is to provide heated and cooled air to the interior of the vehicle. The A/C system will also remove humidity from the interior and reduce windshield fogging. Regardless of the temperature setting, the following may affect the rate that the HVAC system can achieve the desired temperature:

- Recirculation setting
- Difference between inside and desired temperature
- Blower motor speed setting
- Mode setting
- Dashboard outlet open/closed position

When the A/C switch or the AUTO switch is pressed, the HVAC control sends a signal to the BCM via serial data. The BCM evaluates this signal and sends an A/C request signal to the ECM via CAN-Bus. The ECM checks all preconditions before releasing and if all conditions are met sends a release signal back to the BCM. The A/C compressor is activated by the BCM. The BCM supplies battery voltage to the A/C compressor solenoid. When the A/C switch is pressed, the BCM provides a pulse width modulation (PWM) signal to the A/C compressor solenoid in order to command the performance of the A/C compressor. The performance of the A/C compressor is regulated using evaporator temperature and engine load.

The A/C indicator does not indicate the compressor is currently active. The A/C indicator shows that A/C has been requested and the system will activate the compressor as needed.

The following conditions must be met in order to activate the A/C compressor:

- Battery voltage is between 9–18 V
- Engine coolant temperature is less than 124°C (255°F)
- Engine speed is greater than 600 RPM

- Engine speed is less than 5 500 RPM
- A/C high side pressure is between 269–2 929 kPa (39–425 PSI)
- Throttle position is less than 100%
- Evaporator temperature is greater than 3°C (38°F)
- ECM does not detect immoderate torque load
- ECM does not detect insufficient idle quality
- The ambient temperature is above 1°C (34°F)

The sensor information is used by the ECM to determine the following:

- The A/C high side pressure
- An A/C system load on the engine
- An immoderate A/C high side pressure
- The heat load at the A/C condenser

The air streams into the passenger compartment through the heater core and the evaporator core. The air temperature actuator drives the mixed air door to direct the airflow. If the interior temperature should be increased, the mixed air door is put into the position in which more air streams through the heater core. If the interior temperature should be decreased, the mixed air door is put into the position in which more air streams through the evaporator core.

Engine Coolant and A/C System Refrigerant

For information on engine coolant, coolant flow, A/C refrigerant, and the A/C refrigerant cycle, refer to [Link target (target-id 162334-) not found] .

Section 8

Power and Signal Distribution

Data Communications 8-2
- **Schematic and Routing Diagrams** 8-2
  - Data Communication Schematics 8-3
  - Body Control System Schematics 8-23
- **Description and Operation** 8-26
  - Data Link Communications Description and Operation 8-26

Electrical Component and Inline Harness Connector End Views 8-30
- **Component Locator** 8-30
  - Electrical Center Identification Views 8-30
  - Component Connector End Views 8-78
  - Inline Harness Connector End Views 8-632

Electrical Component Locator and Harness Routing Views 8-769
- **Schematic and Routing Diagrams** 8-769
  - Harness Routing Views 8-769
- **Component Locator** 8-821
  - Front of Vehicle/Engine Compartment Component Views 8-821
  - Powertrain Component Views 8-832
  - Instrument Panel/Center Console Component Views 8-850
  - Passenger Compartment/Roof Component Views 8-858
  - Door Component Views 8-874
  - Luggage Compartment/Rear of Vehicle Component Views 8-882
  - Wheels/Vehicle Underbody Component Views 8-888
  - Ground Views 8-894

Power Outlets 8-914
- **Schematic and Routing Diagrams** 8-914
  - Cigar Lighter/Power Outlet Schematics 8-915
- **Description and Operation** 8-926
  - Mobile Device Wireless Charger Description and Operation 8-926
  - Power Outlets Description and Operation 8-926

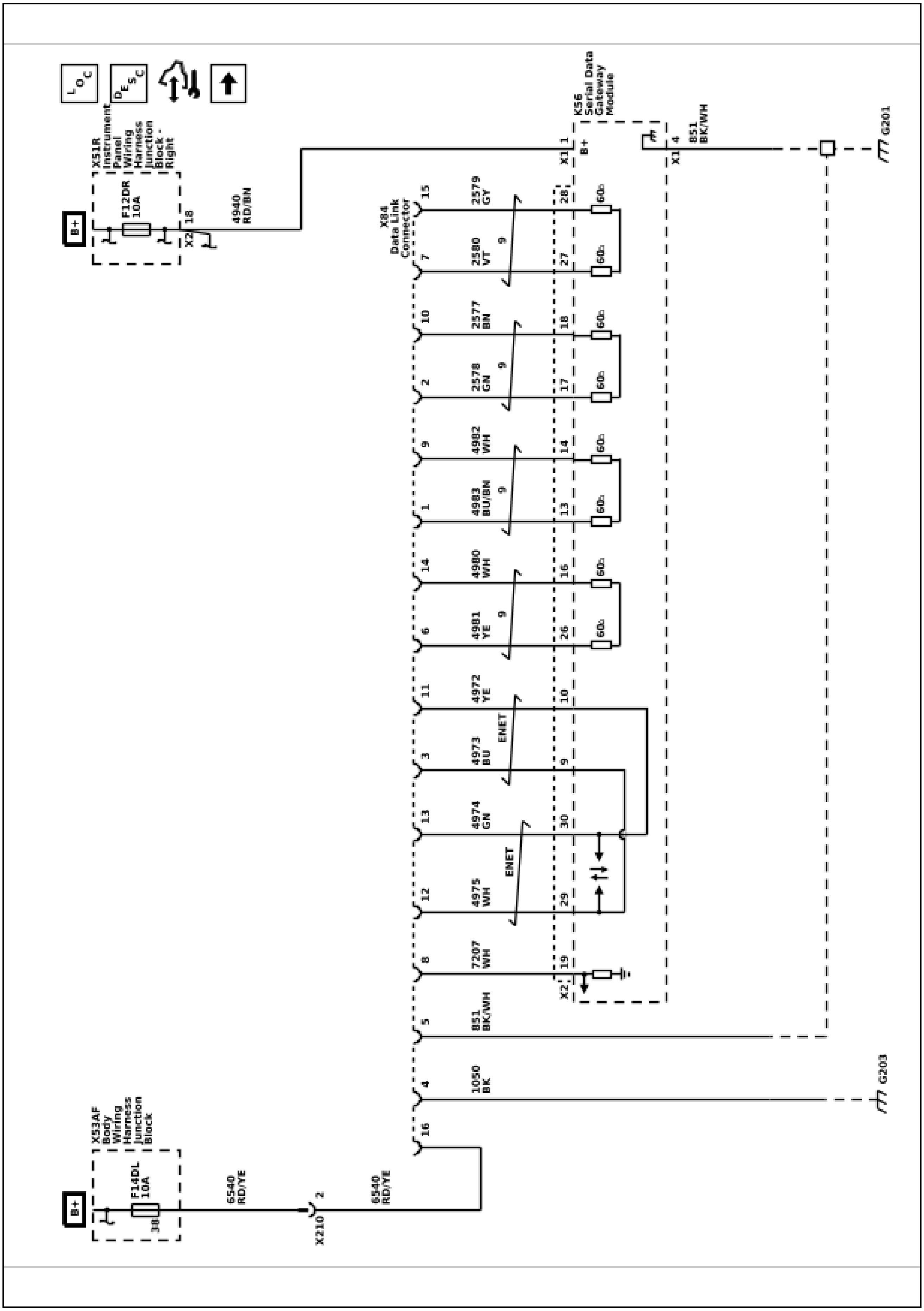
Wiring Systems and Power Management 8-929
- **Schematic and Routing Diagrams** 8-929
  - How to Use Electrical Schematics 8-929
  - Electrical Schematic Symbols 8-955
  - Schematics RPO Code List 8-971
  - Master Electrical Schematic Icons 8-975
  - Power Distribution Schematics 8-976
  - Power Moding Schematics 8-999
  - Ground Distribution Schematics 8-1001
  - Upfitter Provision Schematics 8-1027
- **Component Locator** 8-1032
  - Master Electrical Component List 8-1032
- **Description and Operation** 8-1104
  - Retained Accessory Power Description and Operation 8-1104
  - Special Purpose Vehicle Module Description and Operation 8-1105

Power and Signal Distribution

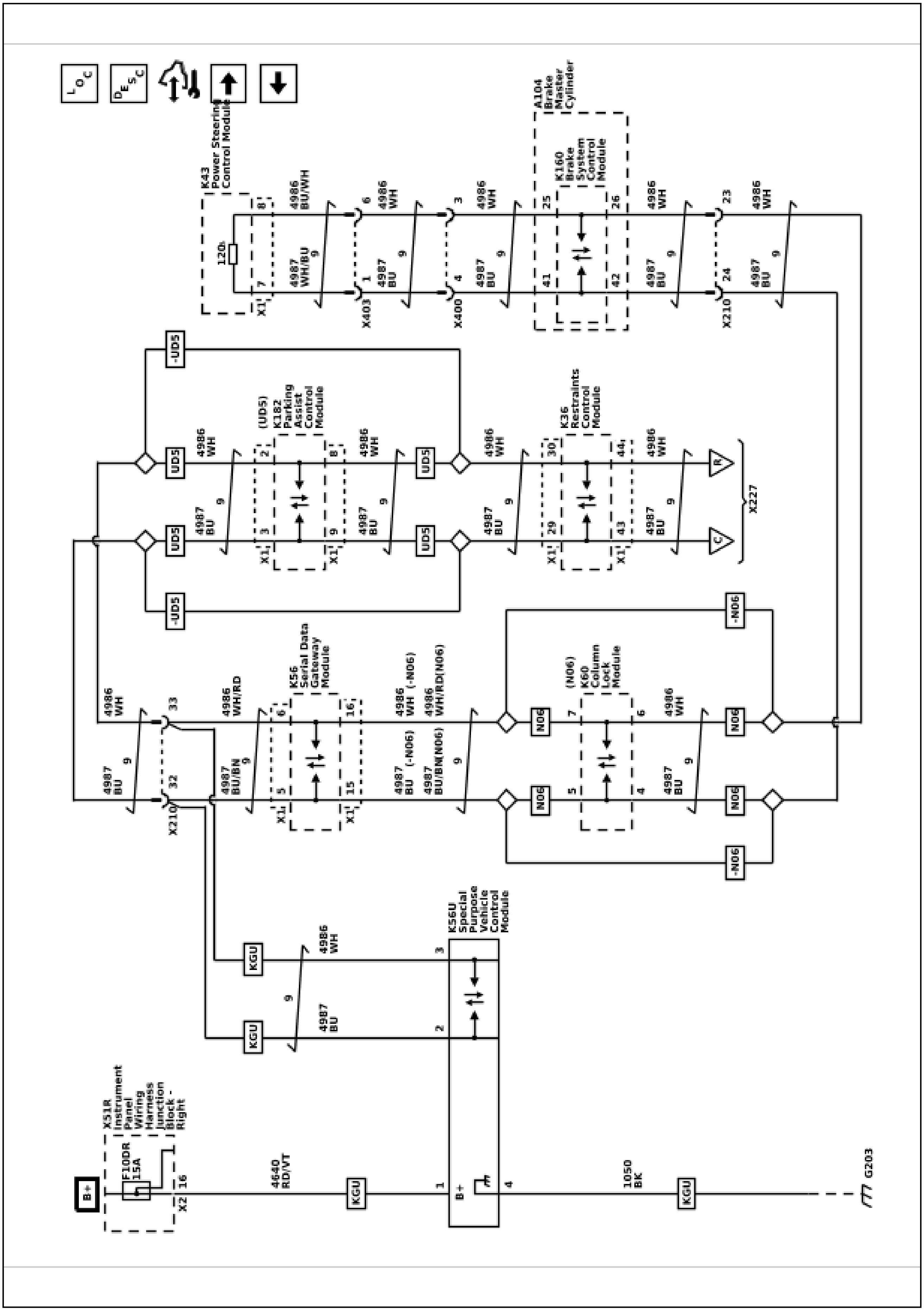
Data Communications

Schematic and Routing Diagrams

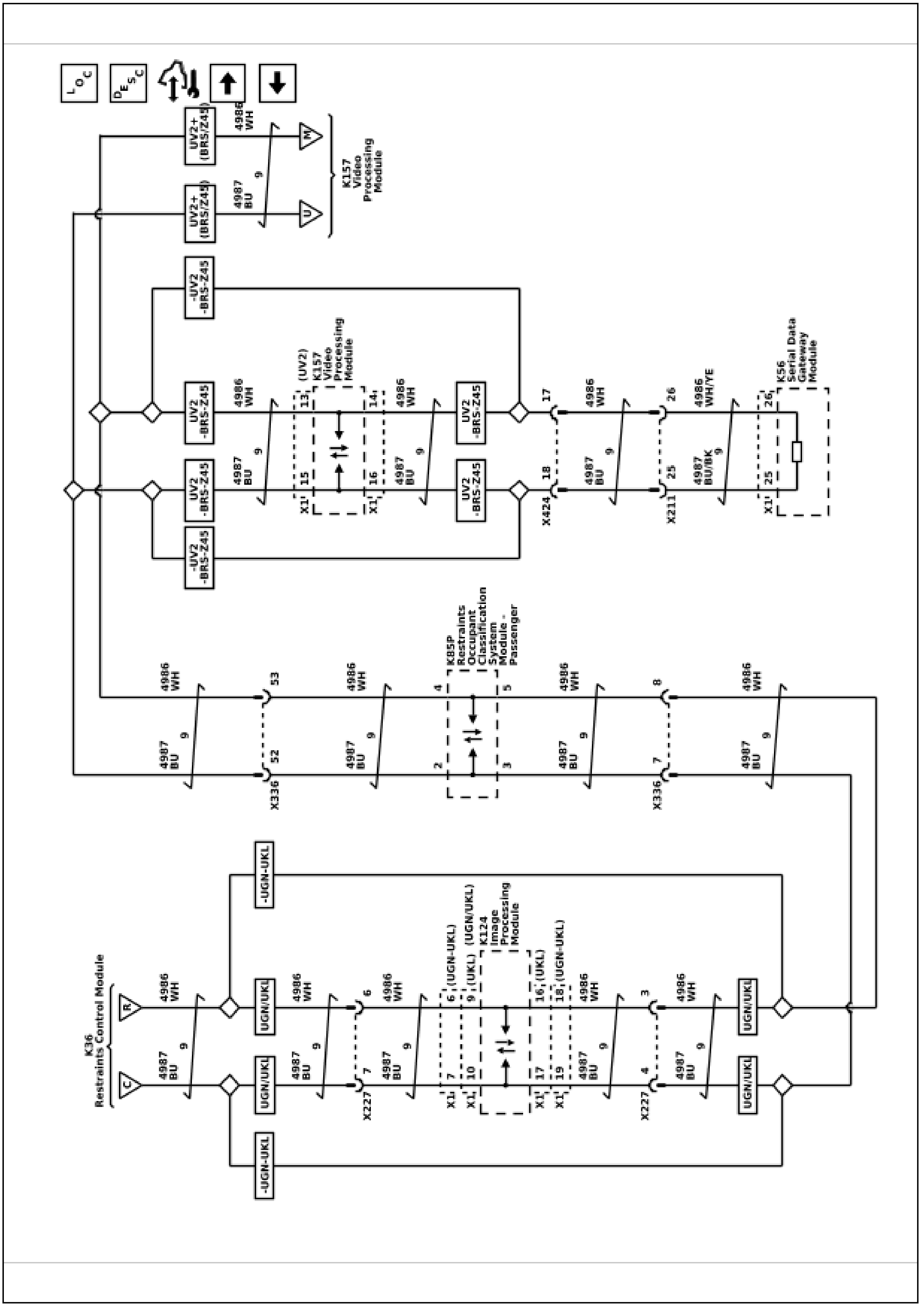
Data Communication Schematics (Data Link Connector and Serial Data Gateway Module Power and Ground)


6847027
B+
F12DR 10A
X51R Instrument Panel Wiring Harness Junction Block - Right
X2 18
4940 RD/BN
X84 Data Link Connector
K56 Serial Data Gateway Module
X1 1
B+
X1 4
851 BK/WH
G201
15
2579 GY
7
2580 VT
9
28
27
60Ω
10
2577 BN
2
2578 GN
18
17
9
4982 WH
1
4983 BU/BN
14
13
14
4980 WH
6
4981 YE
16
26
11
4972 YE
3
4973 BU
ENET
10
9
13
4974 GN
12
4975 WH
30
29
8
7207 WH
X2 19
5
851 BK/WH
4
1050 BK
G203
16
B+
F14DL 10A
38
X53AF Body Wiring Harness Junction Block
6540 RD/YE
X210 2
6540 RD/YE

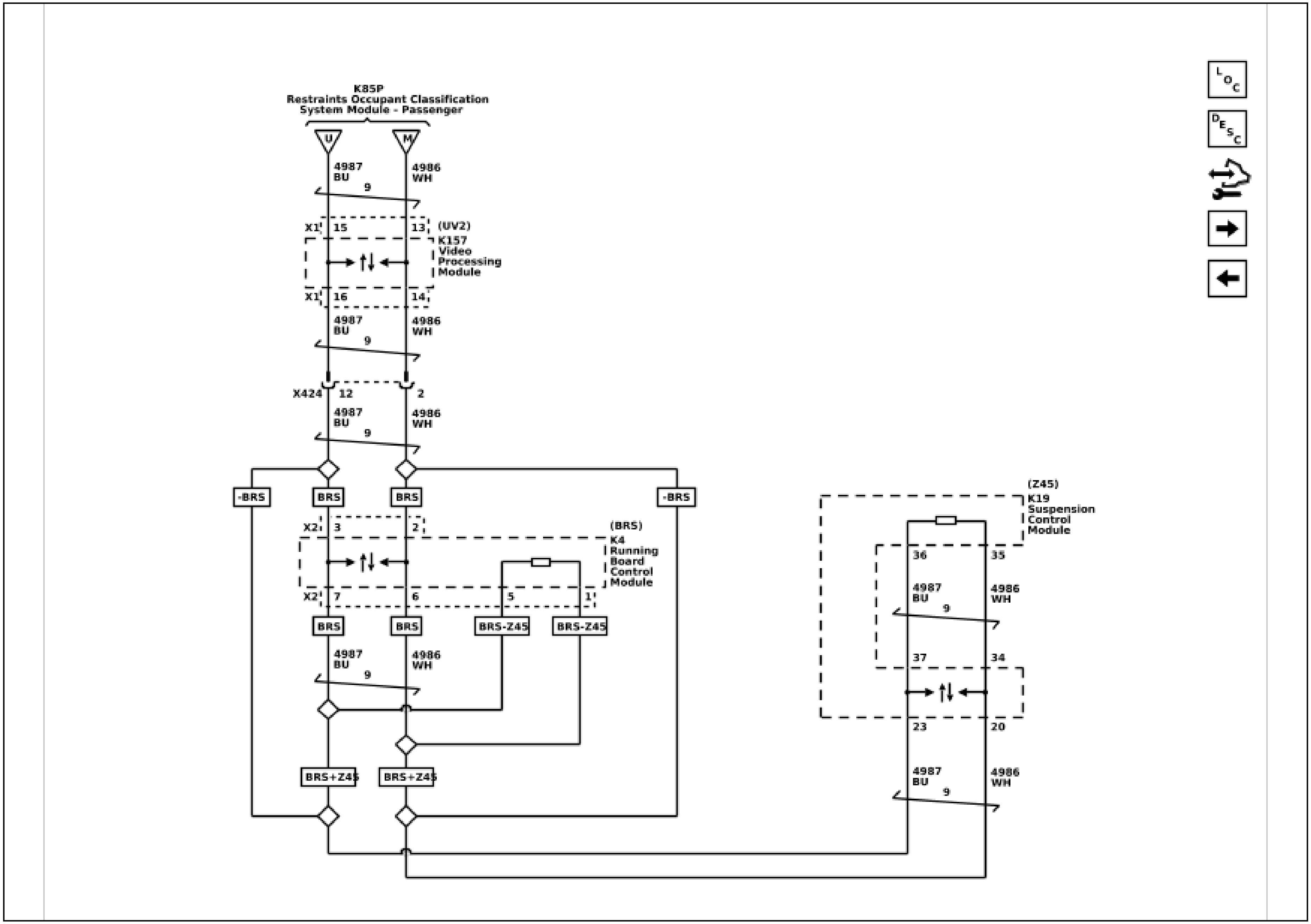
Data Communication Schematics (CAN 1 - 1 of 3 and Special Purpose Vehicle Control Module Power and Ground)


6847028
B+
F10DR 15A
X51R Instrument Panel Wiring Harness Junction Block - Right
X2 16
4640 RD/VT
KGU
1 B+
4
1050 BK
G203
K56U Special Purpose Vehicle Control Module
2
3
4987 BU
4986 WH
9
X210
32
33
4987 BU/BN
4986 WH/RD
K56 Serial Data Gateway Module
X1 5
6
15
16
4987 BU (-N06) 4987 BU/BN(N06)
4986 WH (-N06) 4986 WH/RD(N06)
N06
-N06
(N06) K60 Column Lock Module
7
4
UD5
-UD5
(UD5) K182 Parking Assist Control Module
X1 3
2
9
8
K36 Restraints Control Module
X1 29
30
43
44
R
C
X227
K43 Power Steering Control Module
120Ω
X1 7
8
4987 WH/BU
4986 BU/WH
X403
1
6
X400
4
3
A104 Brake Master Cylinder
K160 Brake System Control Module
41
25
42
26
X210
24
23

Data Communication Schematics (CAN 1 - 2 of 3)

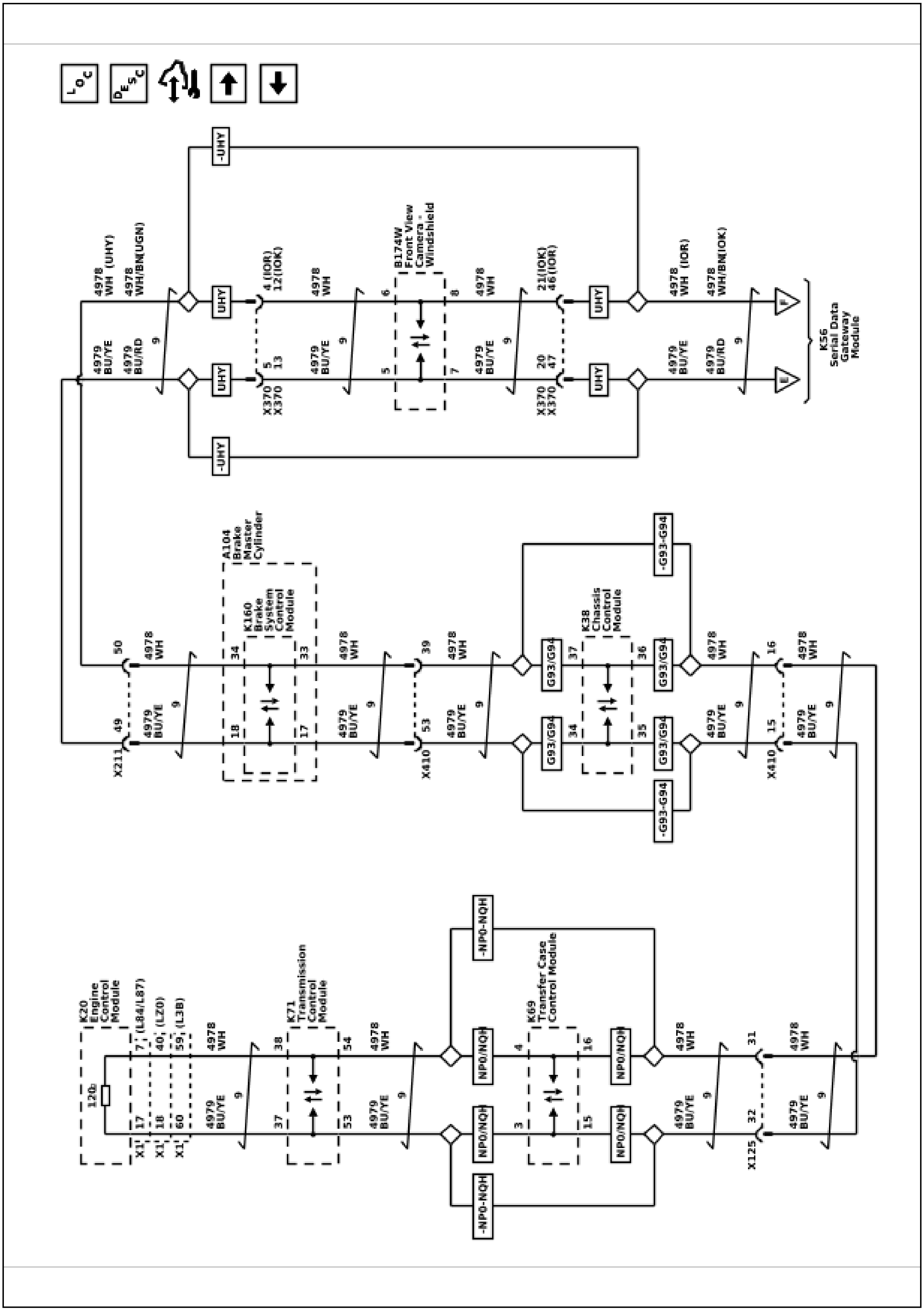

6847029
LOC
DESC
K157 Video Processing Module
UV2+ (BRS/Z45)
4986 WH
4987 BU
9
-UV2 -BRS-Z45
UV2 -BRS-Z45
(UV2) K157 Video Processing Module
X1 13
X1 14
X1 15
X1 16
X424 17
X424 18
X211 26
X211 25
4986 WH/YE
4987 BU/BK
X1 26
X1 25
K56 Serial Data Gateway Module
K85P Restraints Occupant Classification System Module - Passenger
X336 53
X336 52
4
2
5
3
X336 8
X336 7
-UGN-UKL
UGN/UKL
K36 Restraints Control Module
R
C
X227 6
X227 7
(UGN-UKL)
(UKL)
(UGN/UKL) K124 Image Processing Module
X1 6
X1 7
X1 9
X1 10
X1 16
X1 17
X1 18
X1 19
X227 3
X227 4

Data Communication Schematics (CAN 1 - 3 of 3)

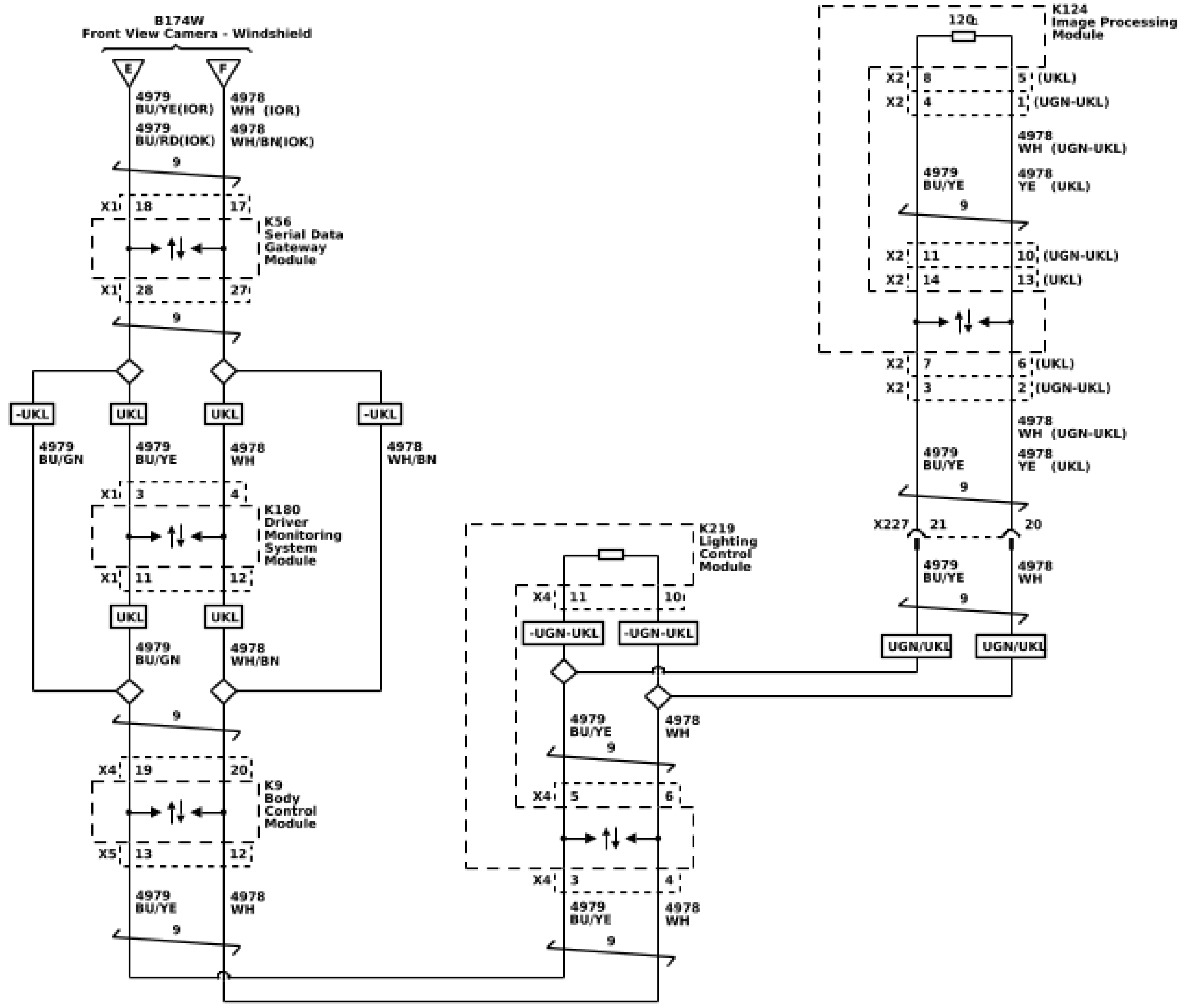

K85P
Restraints Occupant Classification System Module - Passenger
U
M
4987 BU
4986 WH
9
X1
15
13
(UV2)
K157 Video Processing Module
16
14
X424
12
2
-BRS
BRS
X2
3
(BRS)
K4 Running Board Control Module
7
6
5
1
BRS-Z45
BRS+Z45
(Z45)
K19 Suspension Control Module
36
35
37
34
23
20

6847030

Data Communication Schematics (CAN 2 - 1 of 2)

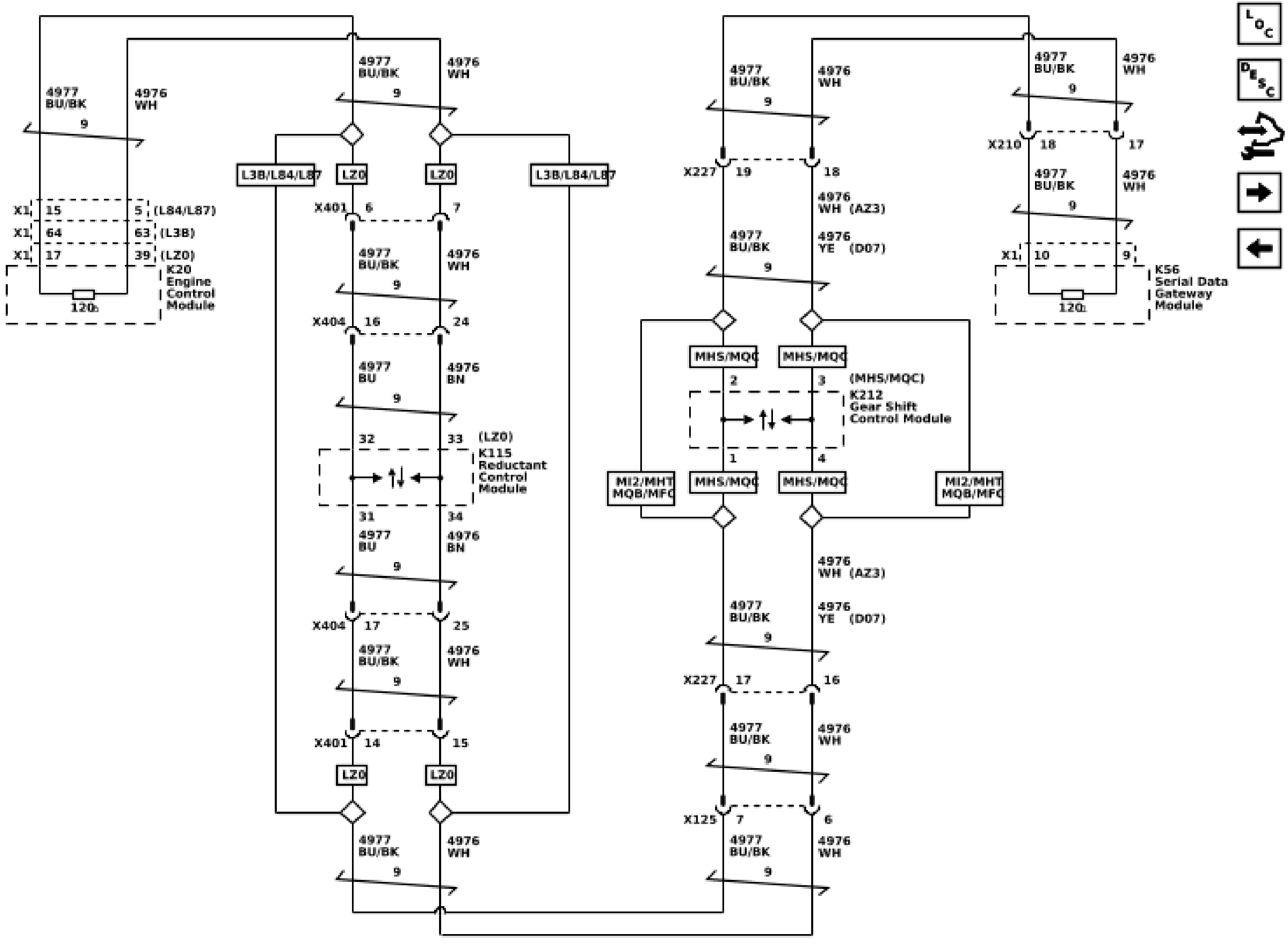

6847031
-UHY
UHY
4978 WH (UHY)
4978 WH/BN(UGN)
4979 BU/YE
4979 BU/RD
9
X370 4(IOR) 12(IOK)
X370 5 13
4978 WH
4979 BU/YE
B174W Front View Camera - Windshield
6
8
5
7
X370 21(IOK) 46(IOR)
X370 20 47
4978 WH (IOR)
4978 WH/BN(IOK)
F
E
K56 Serial Data Gateway Module
A104 Brake Master Cylinder
K160 Brake System Control Module
X211 50
X211 49
34
33
18
17
X410 39
X410 53
G93/G94
-G93-G94
K38 Chassis Control Module
37
36
34
35
X410 16
X410 15
K20 Engine Control Module
120Ω
X1 7 (L84/L87)
X1 40 (LZ0)
X1 59 (L3B)
X1 17
X1 18
X1 60
K71 Transmission Control Module
38
54
37
53
NP0/NQH
-NP0-NQH
K69 Transfer Case Control Module
4
16
3
15
X125 31
X125 32

Data Communication Schematics (CAN 2 - 2 of 2)


B174W
Front View Camera - Windshield
E
F
4979 BU/YE(IOR)
4979 BU/RD(IOK)
4978 WH (IOR)
4978 WH/BN(IOK)
9
X1 18
17
K56 Serial Data Gateway Module
X1 28
27
-UKL
UKL
UKL
-UKL
4979 BU/GN
4979 BU/YE
4978 WH
4978 WH/BN
X1 3
4
K180 Driver Monitoring System Module
X1 11
12
UKL
UKL
4979 BU/GN
4978 WH/BN
X4 19
20
K9 Body Control Module
X5 13
12
4979 BU/YE
4978 WH
K219 Lighting Control Module
X4 11
10
-UGN-UKL
-UGN-UKL
4979 BU/YE
4978 WH
X4 5
6
X4 3
4
K124 Image Processing Module
120Ω
X2 8
5 (UKL)
X2 4
1 (UGN-UKL)
4978 WH (UGN-UKL)
4978 YE (UKL)
X2 11
10 (UGN-UKL)
X2 14
13 (UKL)
X2 7
6 (UKL)
X2 3
2 (UGN-UKL)
X227 21
20
UGN/UKL
UGN/UKL

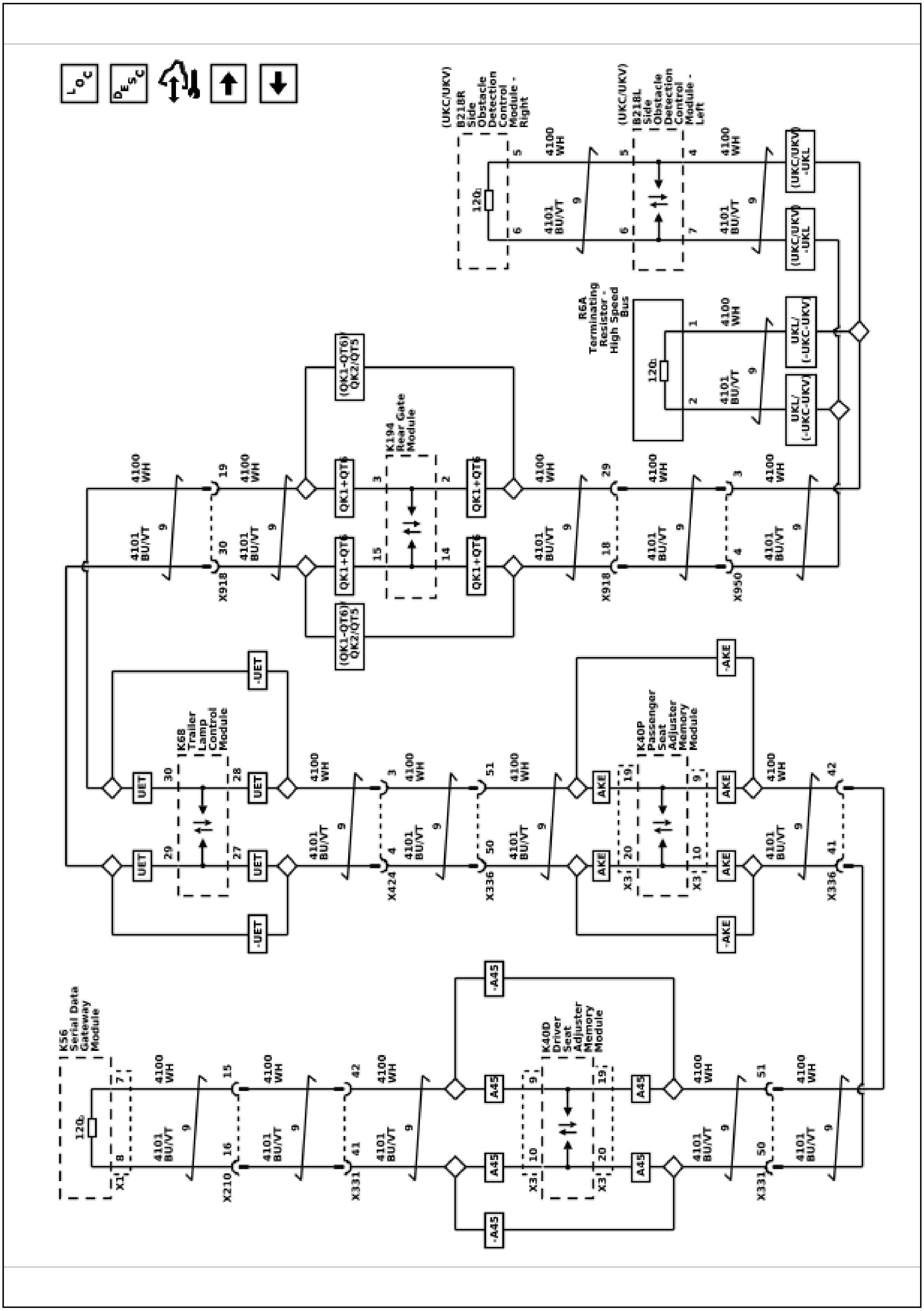
6847032

Data Communication Schematics (CAN 3)

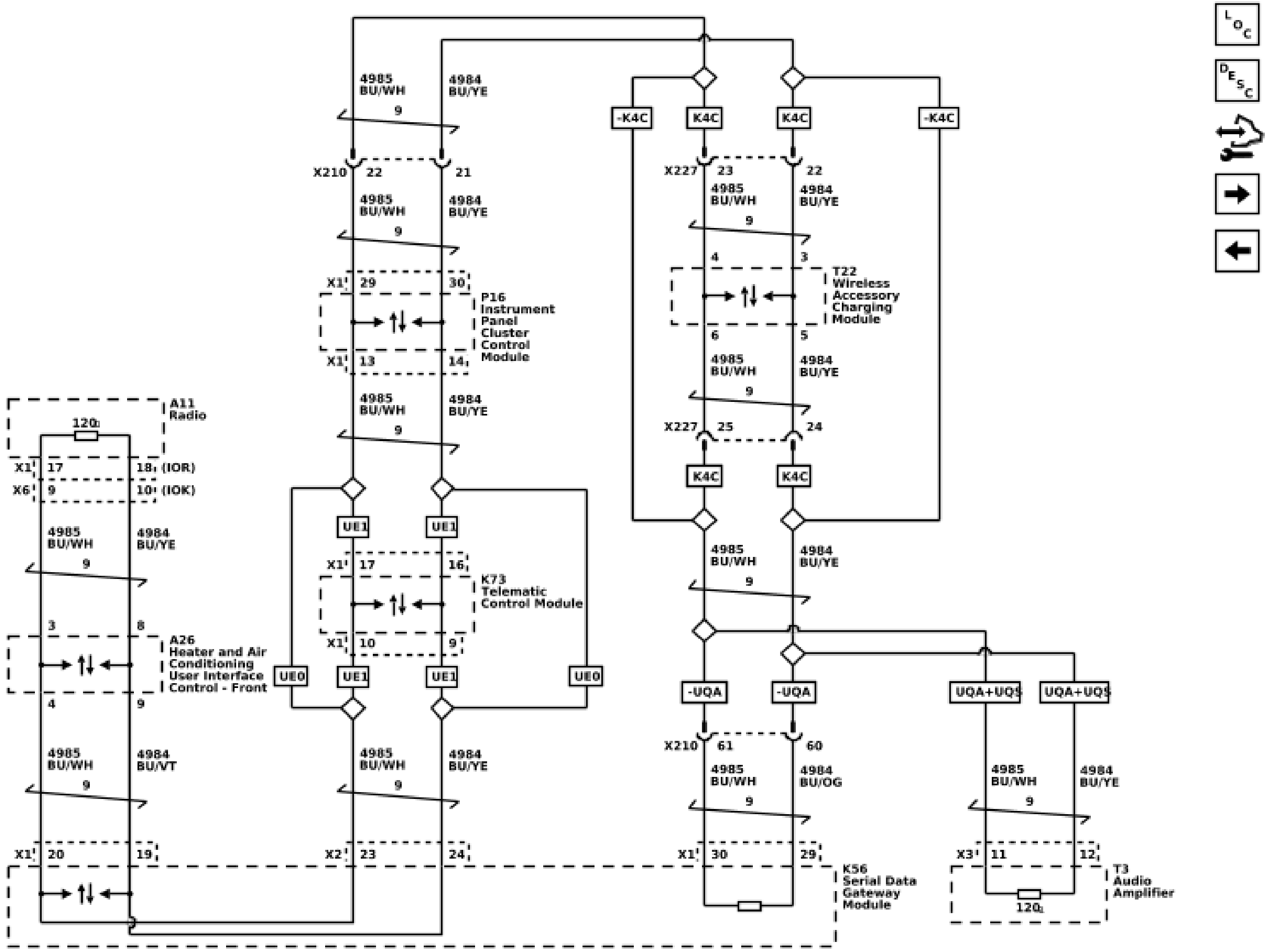

4977 BU/BK
4976 WH
9
X1 15
5 (L84/L87)
X1 64
63 (L38)
X1 17
39 (LZ0)
K20 Engine Control Module
120Ω
L38/L84/L87
LZ0
X401 6
7
X404 16
24
4977 BU
4976 BN
32
33 (LZ0)
K115 Reductant Control Module
31
34
X404 17
25
X401 14
15
X227 19
18
4976 WH (AZ3)
4976 YE (D07)
MHS/MQC
2
3 (MHS/MQC)
K212 Gear Shift Control Module
1
4
MI2/MHT MQB/MFC
X227 17
16
X125 7
6
X210 18
17
X1 10
9
K56 Serial Data Gateway Module
L O C
D E S C

6847033

Data Communication Schematics (CAN 4)

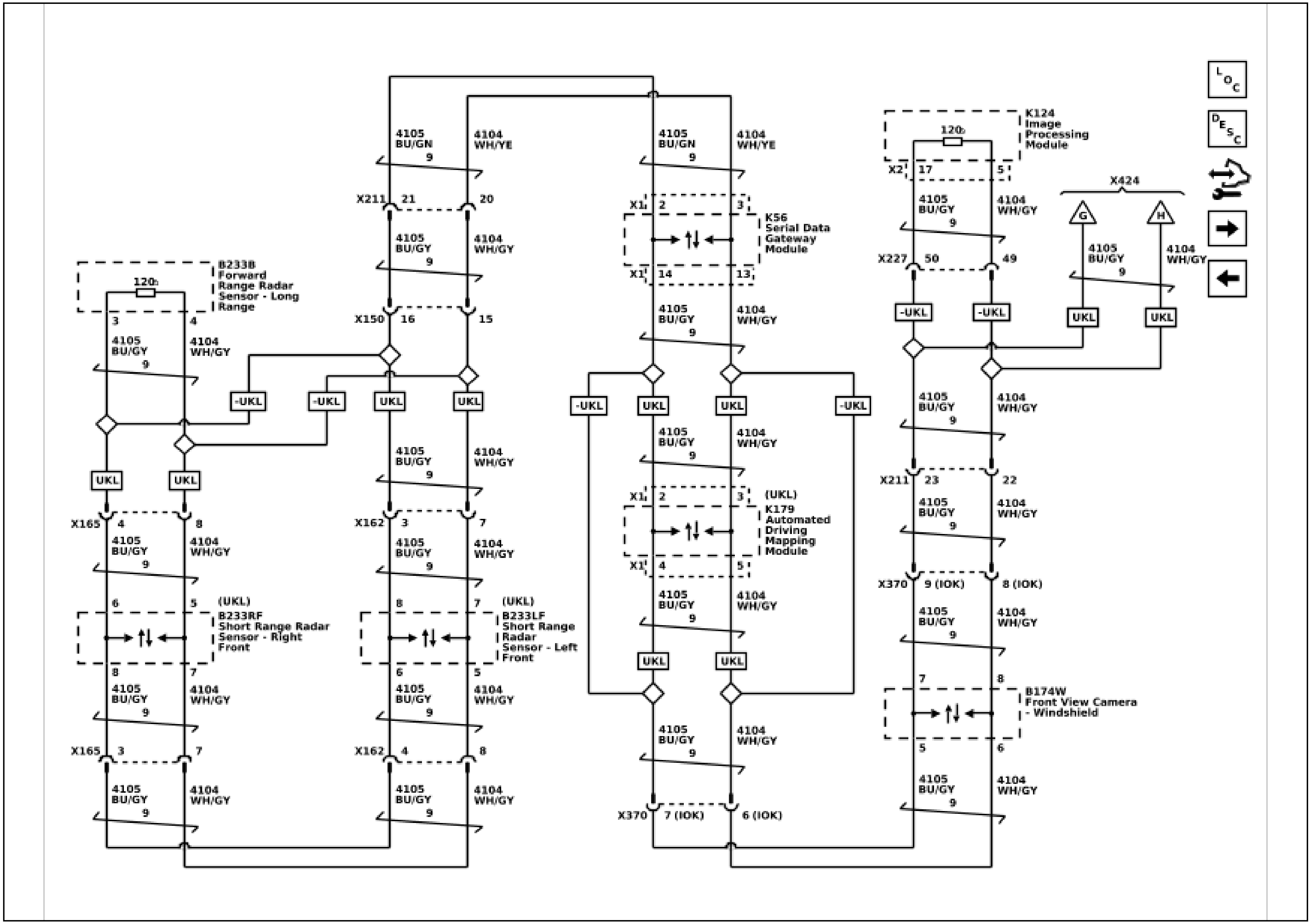

6847034
K56 Serial Data Gateway Module
120Ω
K68 Trailer Lamp Control Module
K194 Rear Gate Module
K40D Driver Seat Adjuster Memory Module
K40P Passenger Seat Adjuster Memory Module
R6A Terminating Resistor - High Speed Bus
(UKC/UKV) B218R Side Obstacle Detection Control Module - Right
(UKC/UKV) B218L Side Obstacle Detection Control Module - Left
4100 WH
4101 BU/VT
9
X1
X3
X210
X331
X336
X424
X918
X950
UET
-UET
AKE
-AKE
A45
-A45
QK1+QT6
(QK1-QT6) QK2/QT5
UKL/ (-UKC-UKV)
(UKC/UKV) -UKL

Data Communication Schematics (CAN 5)

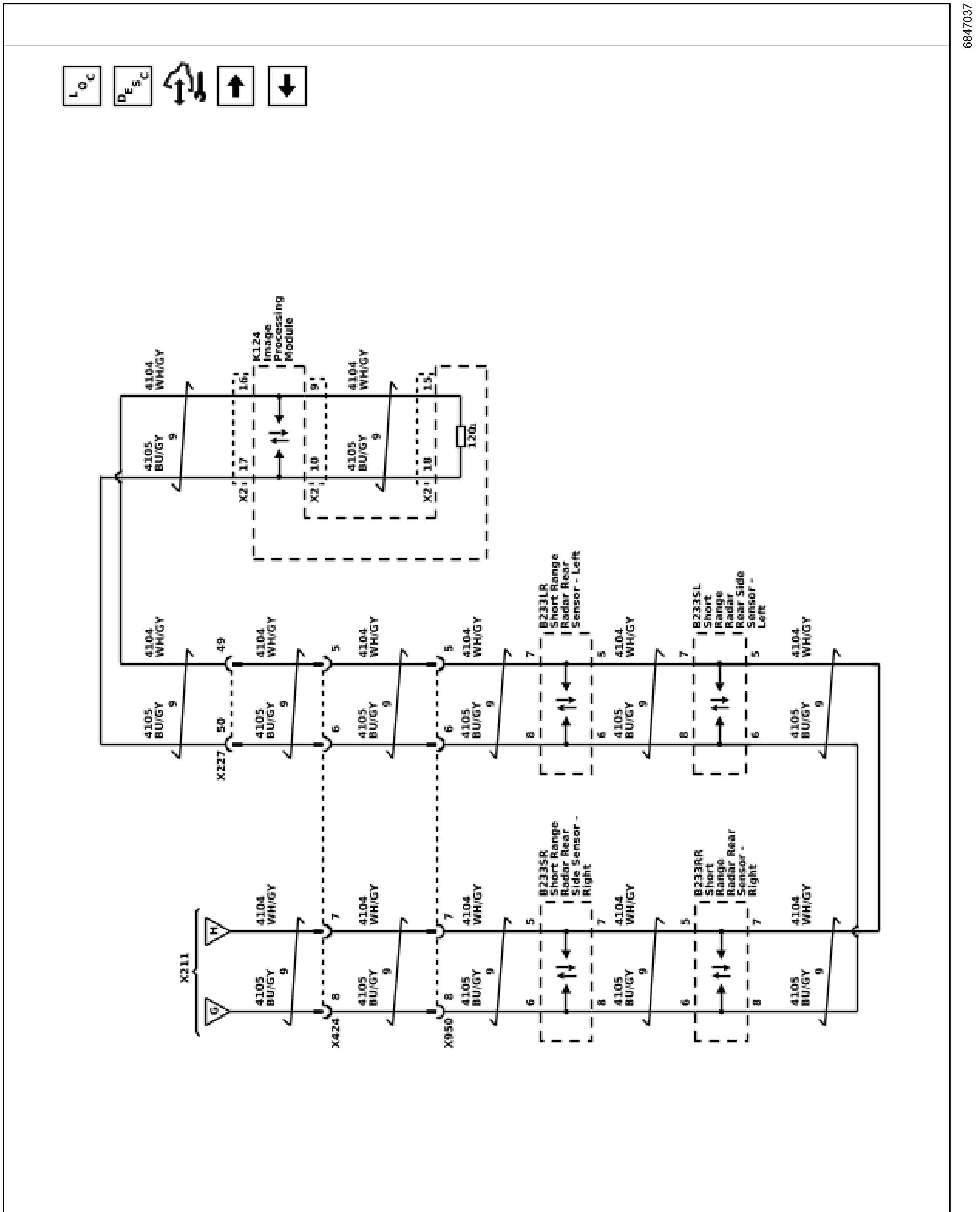

4985
BU/WH
4984
BU/YE
9
X210
22
21
X1
29
30
P16
Instrument
Panel
Cluster
Control
Module
13
14
A11
Radio
120Ω
17
18 (IOR)
X6
9
10 (IOK)
UE1
UE0
16
K73
Telematic
Control Module
10
A26
Heater and Air
Conditioning
User Interface
Control - Front
3
8
4
BU/VT
20
19
X2
23
24
K4C
-K4C
X227
T22
Wireless
Accessory
Charging
Module
6
5
25
-UQA
UQA+UQS
61
60
BU/OG
K56
Serial Data
Gateway
Module
X3
11
12
T3
Audio
Amplifier

6847035

Data Communication Schematics (CAN 8 - 1 of 2)

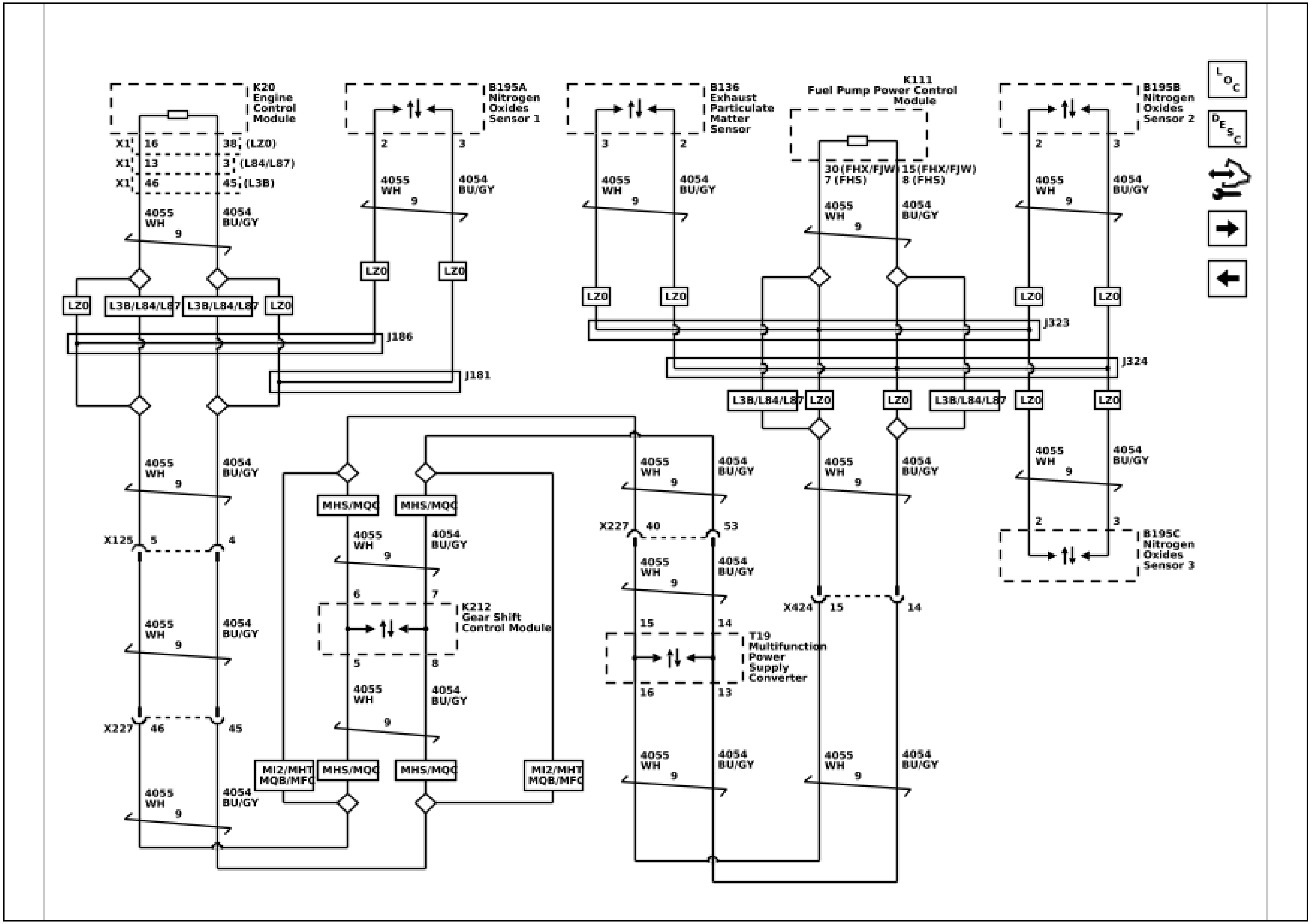

B233B Forward Range Radar Sensor - Long Range
120Ω
3
4
4105 BU/GY 9
4104 WH/GY
UKL
-UKL
X165 4
8
B233RF Short Range Radar Sensor - Right Front
(UKL)
6
5
8
7
X165 3
7
X211 21
20
4105 BU/GN 9
4104 WH/YE
X150 16
15
X162 3
7
B233LF Short Range Radar Sensor - Left Front
8
7
6
5
X162 4
8
K56 Serial Data Gateway Module
X1 2
3
X1 14
13
K179 Automated Driving Mapping Module
X1 2
3
X1 4
5
X370 7 (IOK)
6 (IOK)
K124 Image Processing Module
X2 17
5
X227 50
49
X424
G
H
X211 23
22
X370 9 (IOK)
8 (IOK)
B174W Front View Camera - Windshield
7
8
5
6
6847036

Data Communication Schematics (CAN 8 - 2 of 2 (UKL))


6847037
LOC
DESC
K124 Image Processing Module
X2 16
X2 17
X2 9
X2 10
X2 15
X2 18
120Ω
4104 WH/GY
4105 BU/GY 9
X227 49
X227 50
5
6
7
8
B233LR Short Range Radar Rear Sensor - Left
B233SL Short Range Radar Rear Side Sensor - Left
B233SR Short Range Radar Rear Side Sensor - Right
B233RR Short Range Radar Rear Sensor - Right
X211
H
G
X424
X950

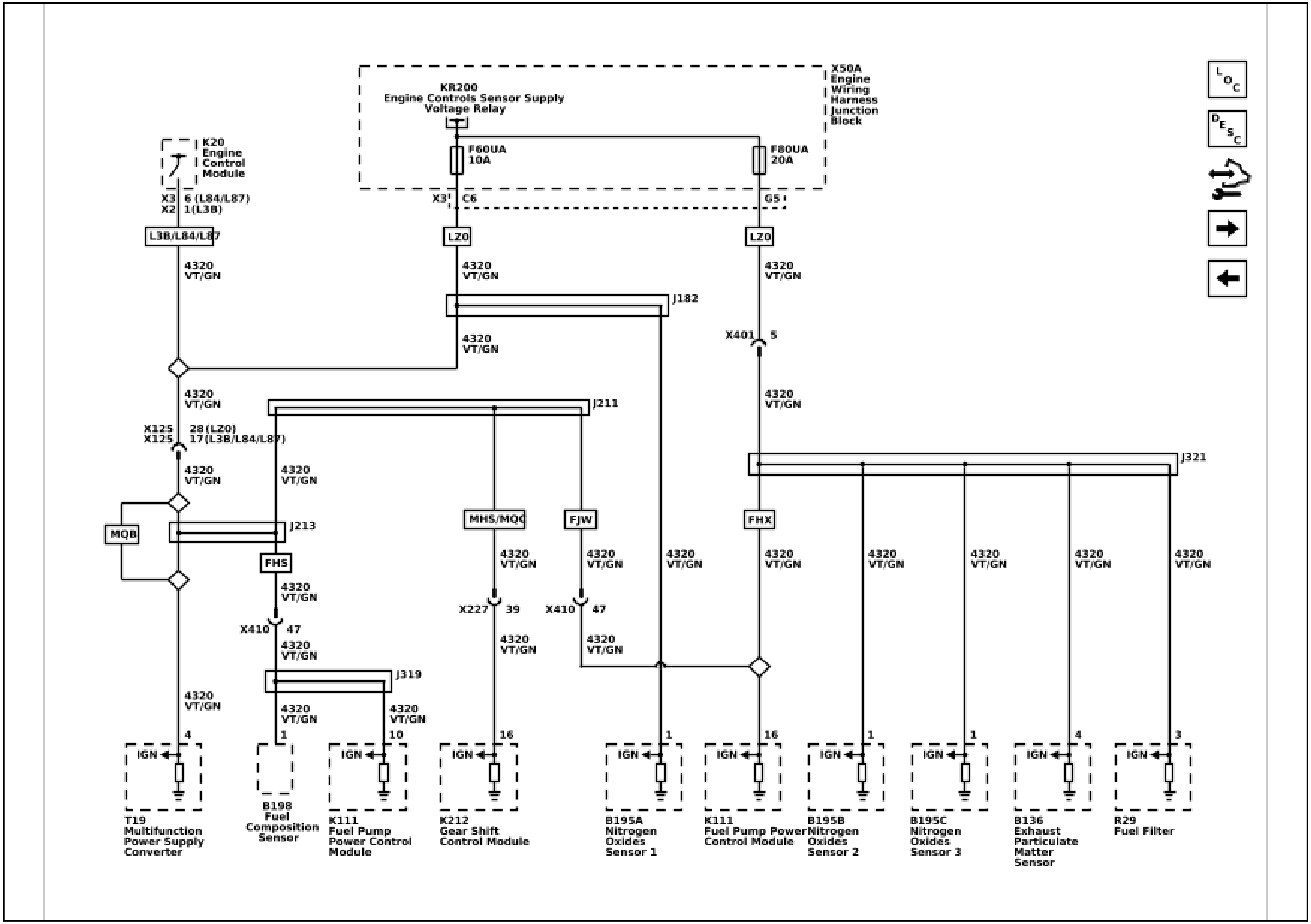
]

Data Communication Schematics (Powertrain CAN)


K20 Engine Control Module
X1 16
X1 13
X1 46
38 (LZ0)
3 (L84/L87)
45 (L3B)
B195A Nitrogen Oxides Sensor 1
B136 Exhaust Particulate Matter Sensor
K111 Fuel Pump Power Control Module
30 (FHX/FJW) 7 (FHS)
15 (FHX/FJW) 8 (FHS)
B195B Nitrogen Oxides Sensor 2
B195C Nitrogen Oxides Sensor 3
4055 WH
4054 BU/GY
9
LZ0
L3B/L84/L87
J186
J181
J323
J324
MHS/MQC
MI2/MHT MQB/MFC
X125
X227
X424
K212 Gear Shift Control Module
T19 Multifunction Power Supply Converter
2
3
4
5
6
7
8
13
14
15
16
40
45
46
53
L O C
D E S C

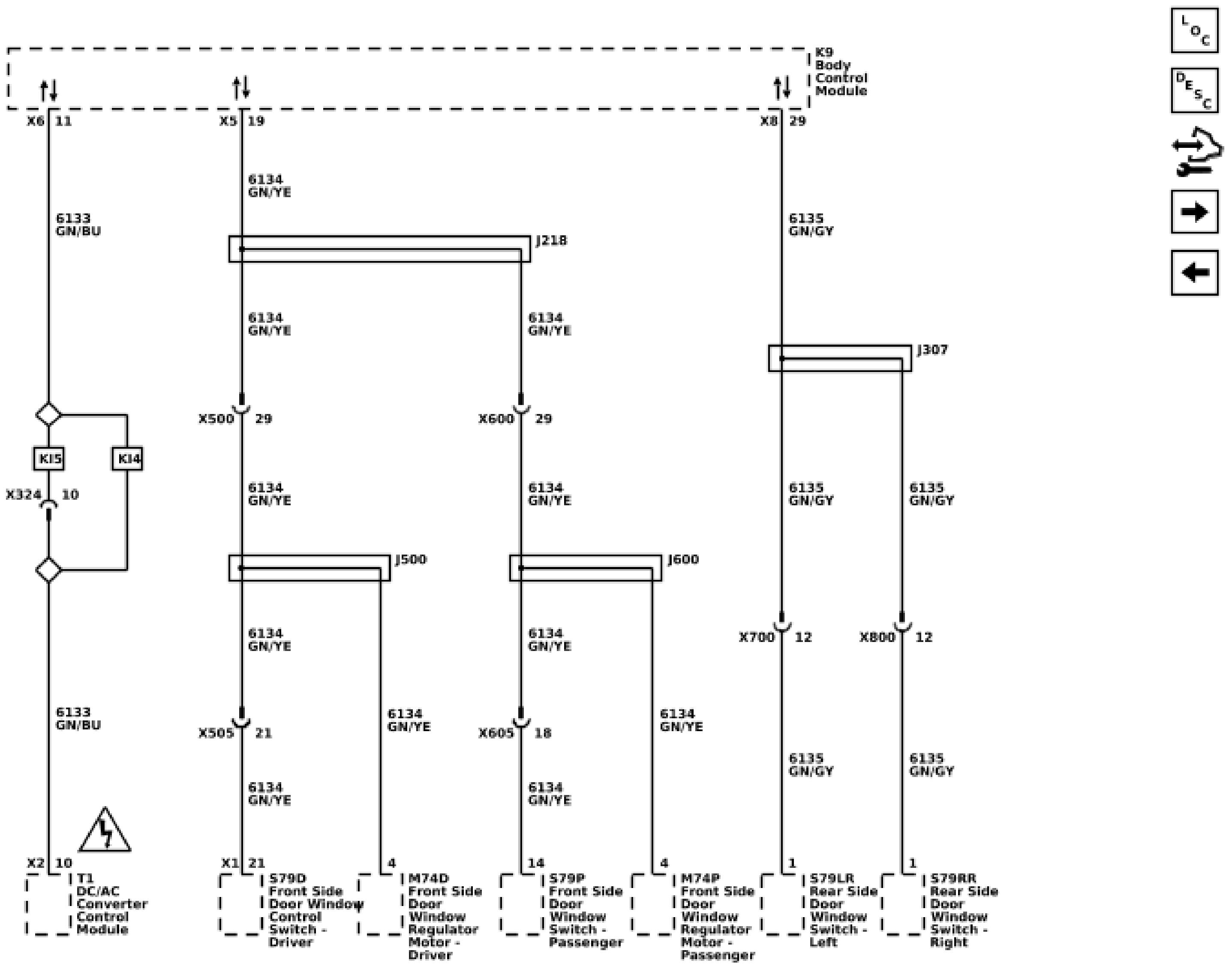
6847038

Data Communication Schematics (Powertrain CAN Enable)


X50A
Engine
Wiring
Harness
Junction
Block
KR200
Engine Controls Sensor Supply
Voltage Relay
F60UA
10A
F80UA
20A
X3
C6
G5
K20
Engine
Control
Module
X3 6 (L84/L87)
X2 1(L3B)
L3B/L84/L87
LZ0
LZ0
4320
VT/GN
J182
X401 5
J211
X125 28(LZ0)
X125 17(L3B/L84/L87)
J321
MQB
J213
MHS/MQC
FJW
FHX
FHS
X227 39
X410 47
X410 47
J319
IGN
4
1
10
16
1
16
1
1
4
3
T19
Multifunction
Power Supply
Converter
B198
Fuel
Composition
Sensor
K111
Fuel Pump
Power Control
Module
K212
Gear Shift
Control Module
B195A
Nitrogen
Oxides
Sensor 1
K111
Fuel Pump Power
Control Module
B195B
Nitrogen
Oxides
Sensor 2
B195C
Nitrogen
Oxides
Sensor 3
B136
Exhaust
Particulate
Matter
Sensor
R29
Fuel Filter
L
O
C
D
E
S
C

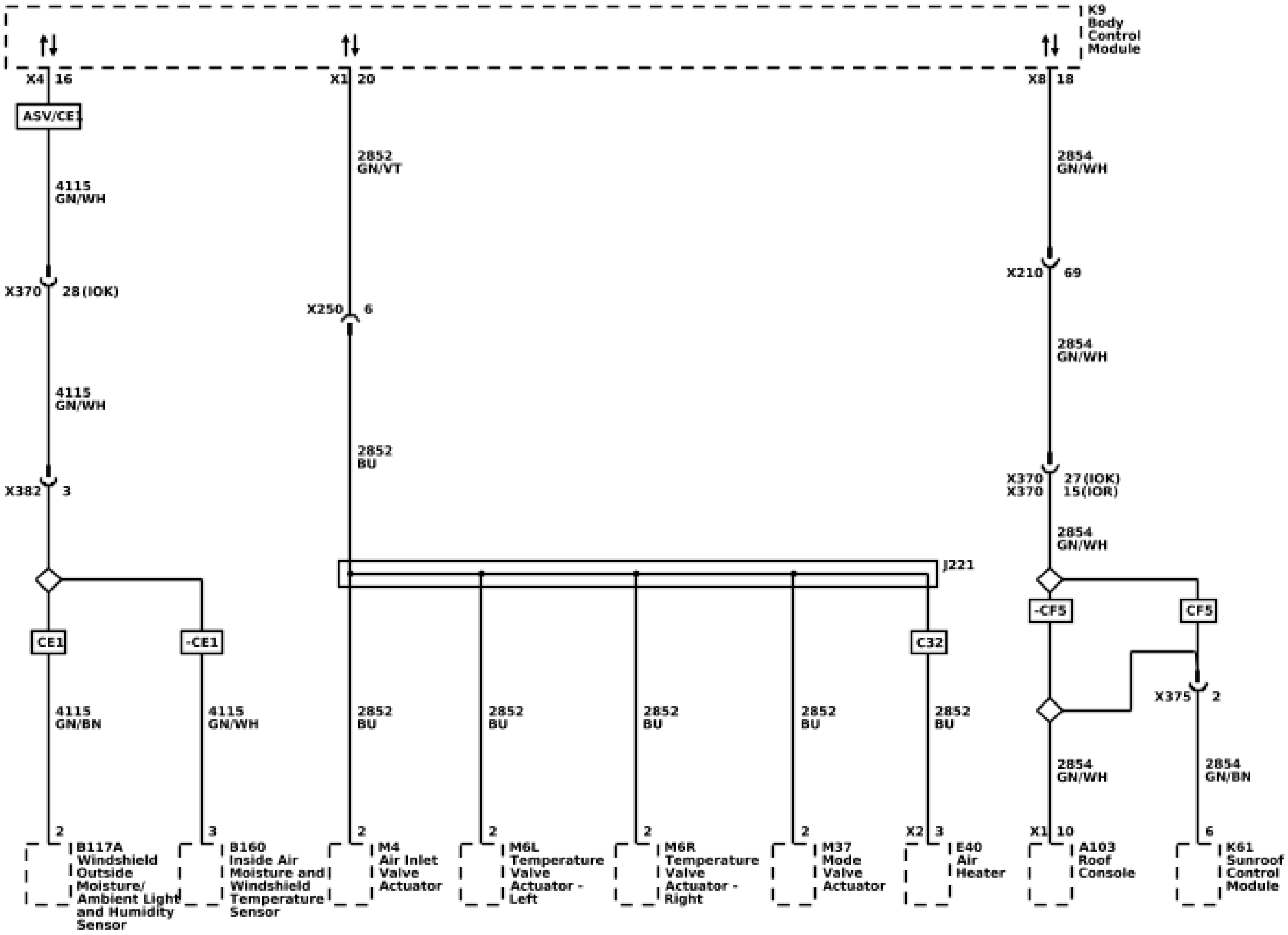
6847039

Data Communication Schematics (Body Control Module Local Interconnect Network LIN Busses 2, 3, and 4)


K9 Body Control Module
X6 11
X5 19
X8 29
6133 GN/BU
6134 GN/YE
6135 GN/GY
J218
J307
J500
J600
X500 29
X600 29
KI5
KI4
X324 10
X700 12
X800 12
X505 21
X605 18
X2 10
X1 21
4
14
1
T1 DC/AC Converter Control Module
S79D Front Side Door Window Control Switch - Driver
M74D Front Side Door Window Regulator Motor - Driver
S79P Front Side Door Window Switch - Passenger
M74P Front Side Door Window Regulator Motor - Passenger
S79LR Rear Side Door Window Switch - Left
S79RR Rear Side Door Window Switch - Right

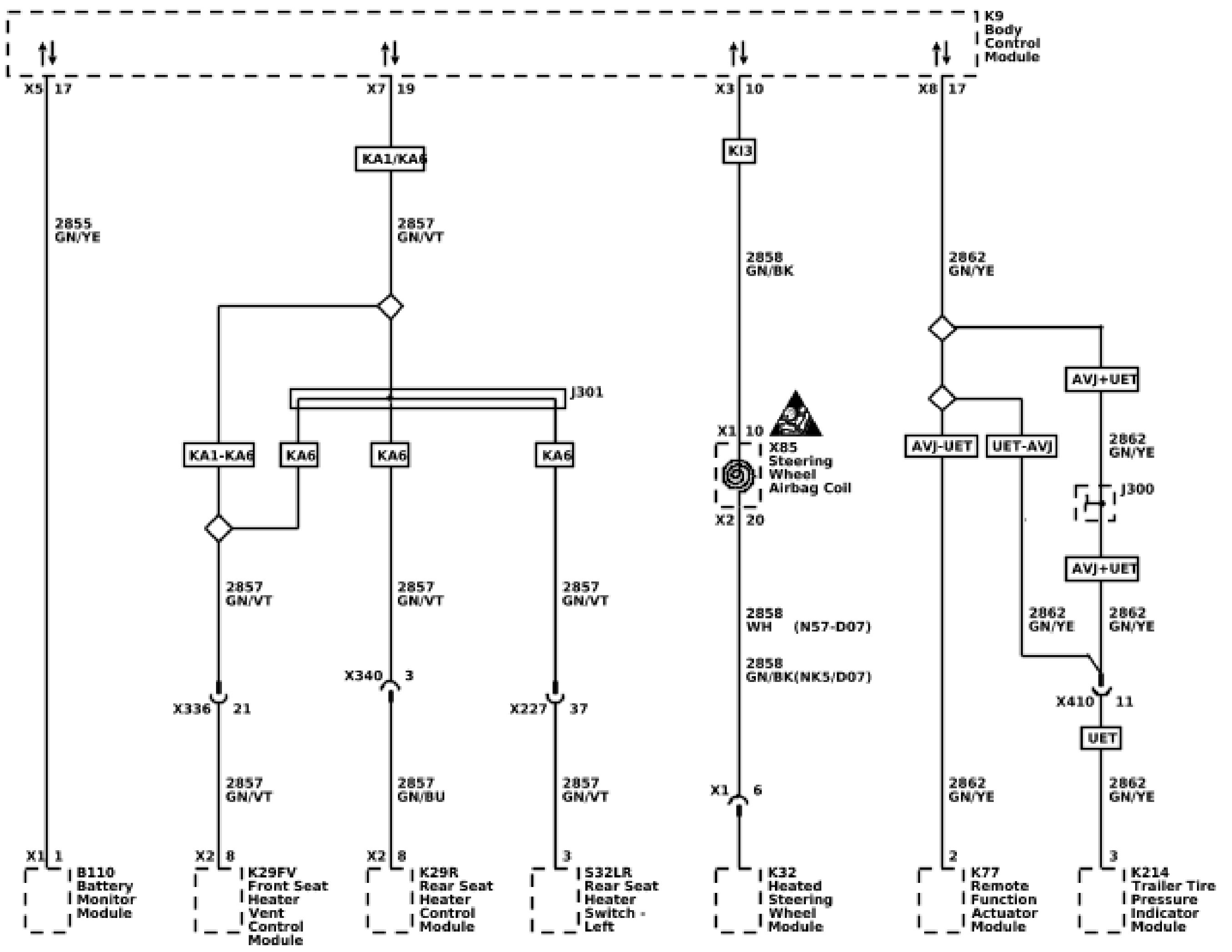
6847040

Data Communication Schematics (Body Control Module Local Interconnect Network LIN Busses 5, 6, and 8)


K9
Body
Control
Module
X4 16
X1 20
X8 18
ASV/CE1
4115
GN/WH
2852
GN/VT
2854
GN/WH
X370 28 (IOK)
X250 6
X210 69
4115
GN/WH
2852
BU
2854
GN/WH
X382 3
X370 27 (IOK)
X370 15 (IOR)
2854
GN/WH
J221
CE1
-CE1
C32
-CF5
CF5
X375 2
4115
GN/BN
4115
GN/WH
2852
BU
2852
BU
2852
BU
2852
BU
2852
BU
2854
GN/WH
2854
GN/BN
2
3
2
2
2
2
X2 3
X1 10
6
B117A
Windshield
Outside
Moisture/
Ambient Light
and Humidity
Sensor
B160
Inside Air
Moisture and
Windshield
Temperature
Sensor
M4
Air Inlet
Valve
Actuator
M6L
Temperature
Valve
Actuator -
Left
M6R
Temperature
Valve
Actuator -
Right
M37
Mode
Valve
Actuator
E40
Air
Heater
A103
Roof
Console
K61
Sunroof
Control
Module

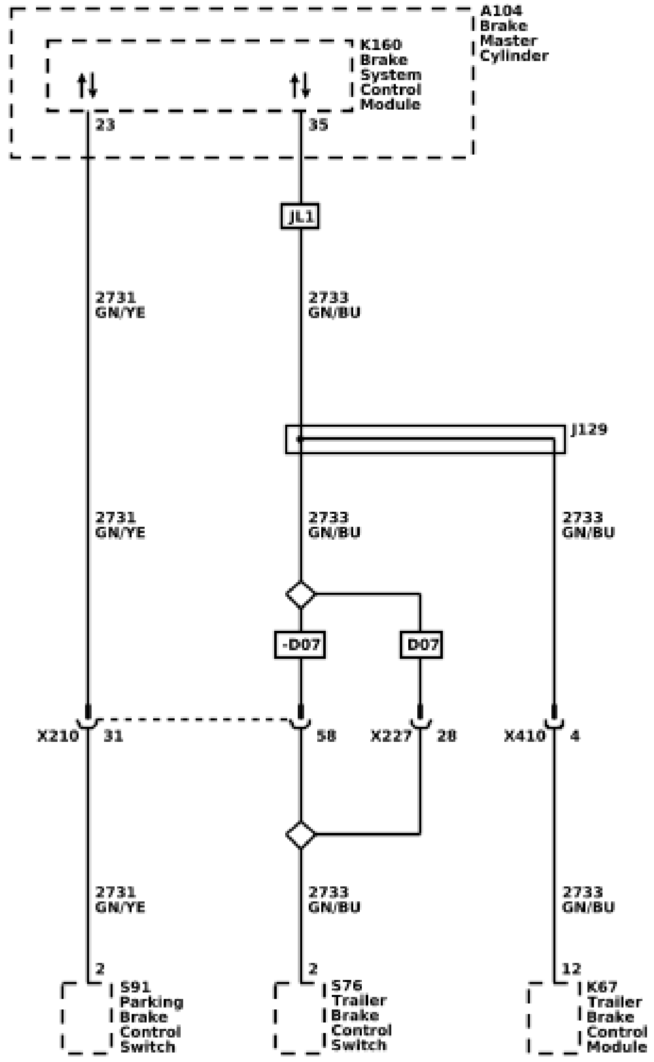
6847041

Data Communication Schematics (Body Control Module Local Interconnect Network LIN Busses 9, 11, 12, and 16)


K9
Body
Control
Module
X5 17
X7 19
X3 10
X8 17
KA1/KA6
KI3
2855
GN/YE
2857
GN/VT
2858
GN/BK
2862
GN/YE
J301
KA1-KA6
KA6
KA6
KA6
AVJ+UET
AVJ-UET
UET-AVJ
J300
AVJ+UET
X1 10
X85
Steering
Wheel
Airbag Coil
X2 20
2857
GN/VT
2857
GN/VT
2857
GN/VT
2858
WH (N57-D07)
2858
GN/BK(NK5/D07)
2862
GN/YE
2862
GN/YE
X336 21
X340 3
X227 37
X410 11
UET
2857
GN/VT
2857
GN/BU
2857
GN/VT
X1 6
2862
GN/YE
2862
GN/YE
X1 1
B110
Battery
Monitor
Module
X2 8
K29FV
Front Seat
Heater
Vent
Control
Module
X2 8
K29R
Rear Seat
Heater
Control
Module
3
S32LR
Rear Seat
Heater
Switch -
Left
K32
Heated
Steering
Wheel
Module
2
K77
Remote
Function
Actuator
Module
3
K214
Trailer Tire
Pressure
Indicator
Module

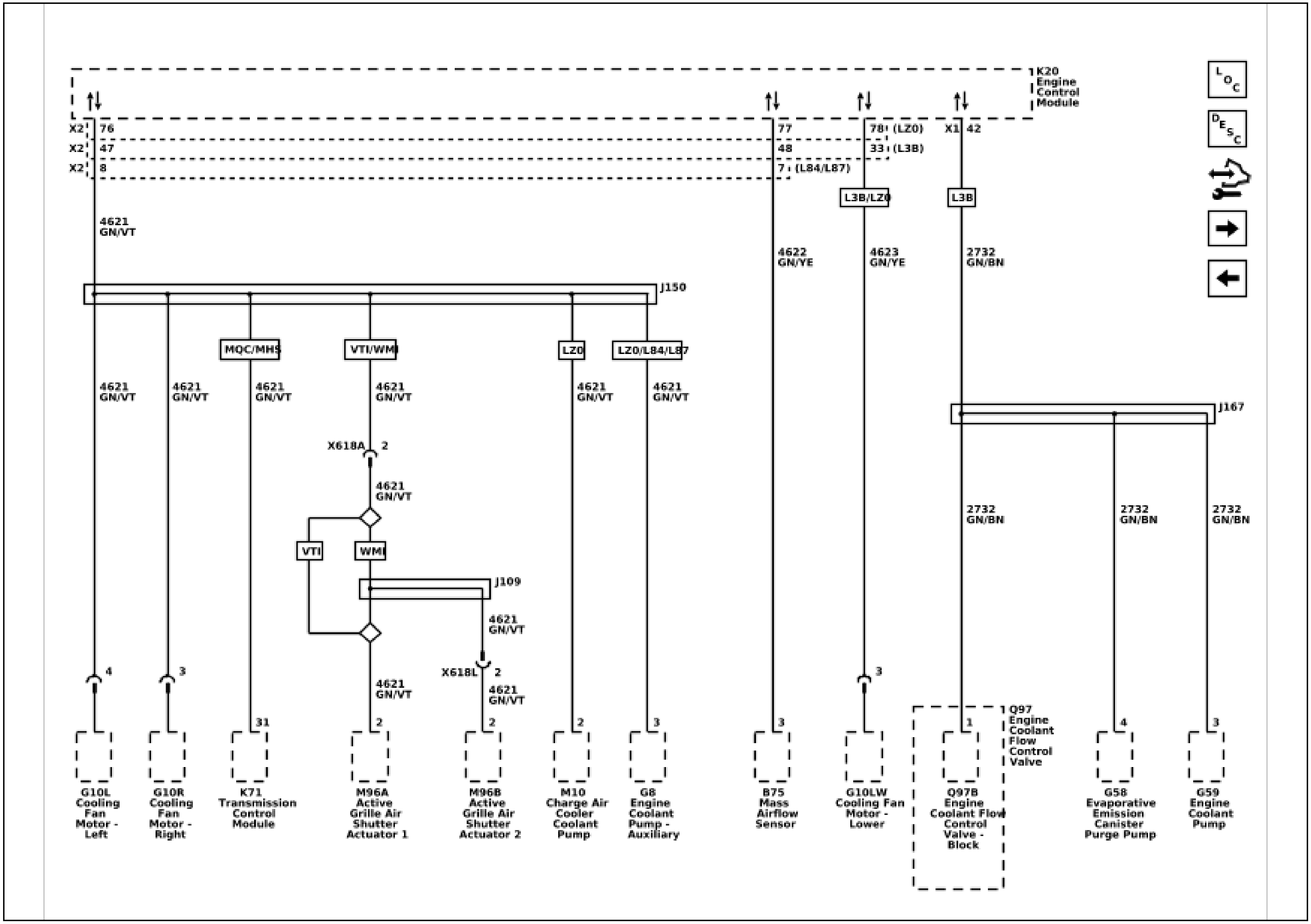
6847042

Data Communication Schematics (Brake System Control Module Local Interconnect Network LIN Busses)


A104
Brake
Master
Cylinder
K160
Brake
System
Control
Module
23
35
JL1
2731
GN/YE
2733
GN/BU
J129
2731
GN/YE
2733
GN/BU
2733
GN/BU
-D07
D07
X210
31
58
X227
28
X410
4
2731
GN/YE
2733
GN/BU
2733
GN/BU
2
2
12
S91
Parking
Brake
Control
Switch
S76
Trailer
Brake
Control
Switch
K67
Trailer
Brake
Control
Module

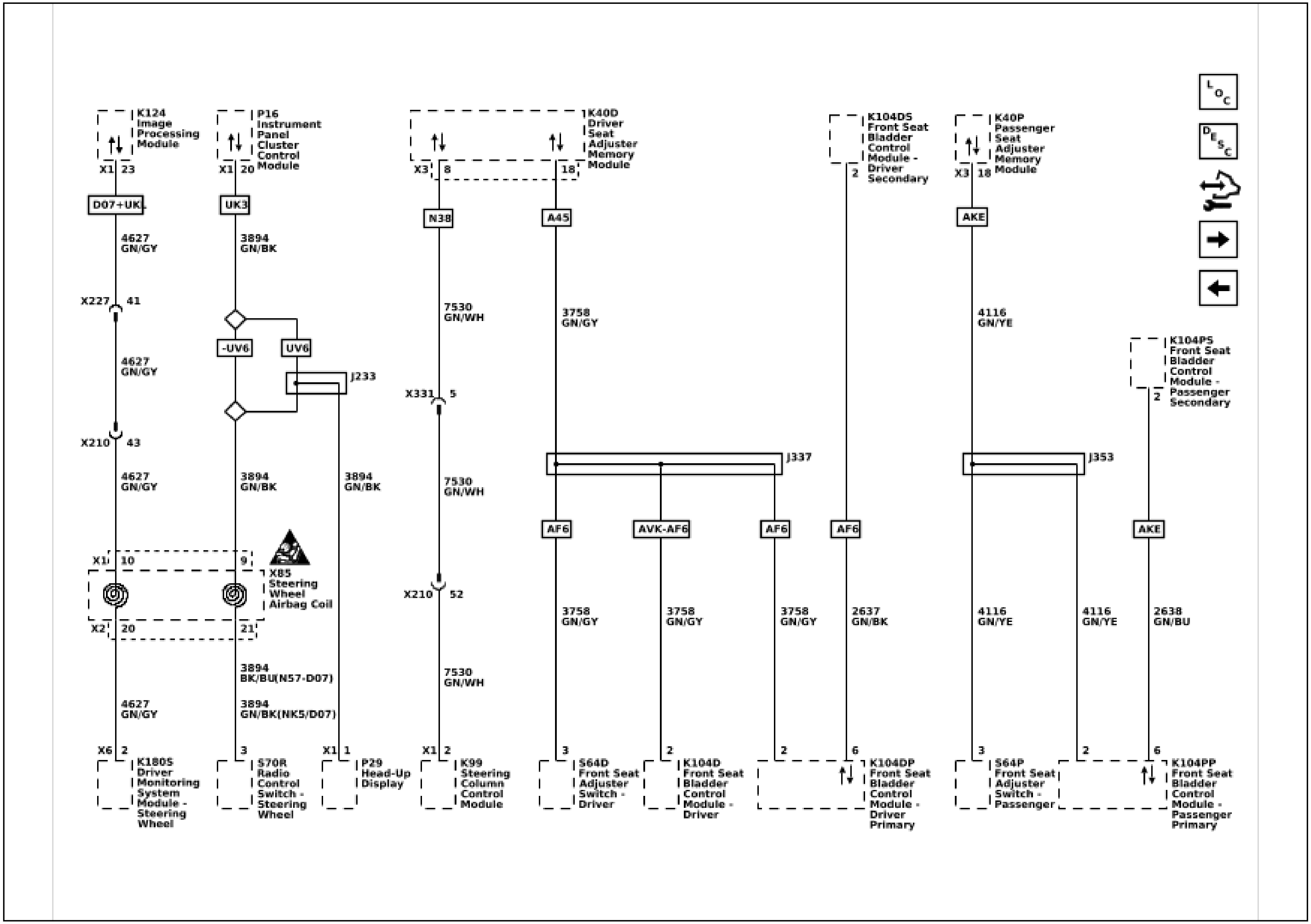
6847043

Data Communication Schematics (Engine Control Module Local Interconnect Network LIN Busses)


K20 Engine Control Module
X2 76
X2 47
X2 8
77
48
7 (L84/L87)
78 (LZ0)
33 (L3B)
X1 42
L3B/LZ0
L3B
4621 GN/VT
4622 GN/YE
4623 GN/YE
2732 GN/BN
J150
MQC/MHS
VTI/WMI
LZ0
LZ0/L84/L87
J167
X618A 2
VTI
WMI
J109
X618L 2
4
3
31
2
1
Q97 Engine Coolant Flow Control Valve
G10L Cooling Fan Motor - Left
G10R Cooling Fan Motor - Right
K71 Transmission Control Module
M96A Active Grille Air Shutter Actuator 1
M96B Active Grille Air Shutter Actuator 2
M10 Charge Air Cooler Coolant Pump
G8 Engine Coolant Pump - Auxiliary
B75 Mass Airflow Sensor
G10LW Cooling Fan Motor - Lower
Q97B Engine Coolant Flow Control Valve - Block
G58 Evaporative Emission Canister Purge Pump
G59 Engine Coolant Pump
LOC
DESC

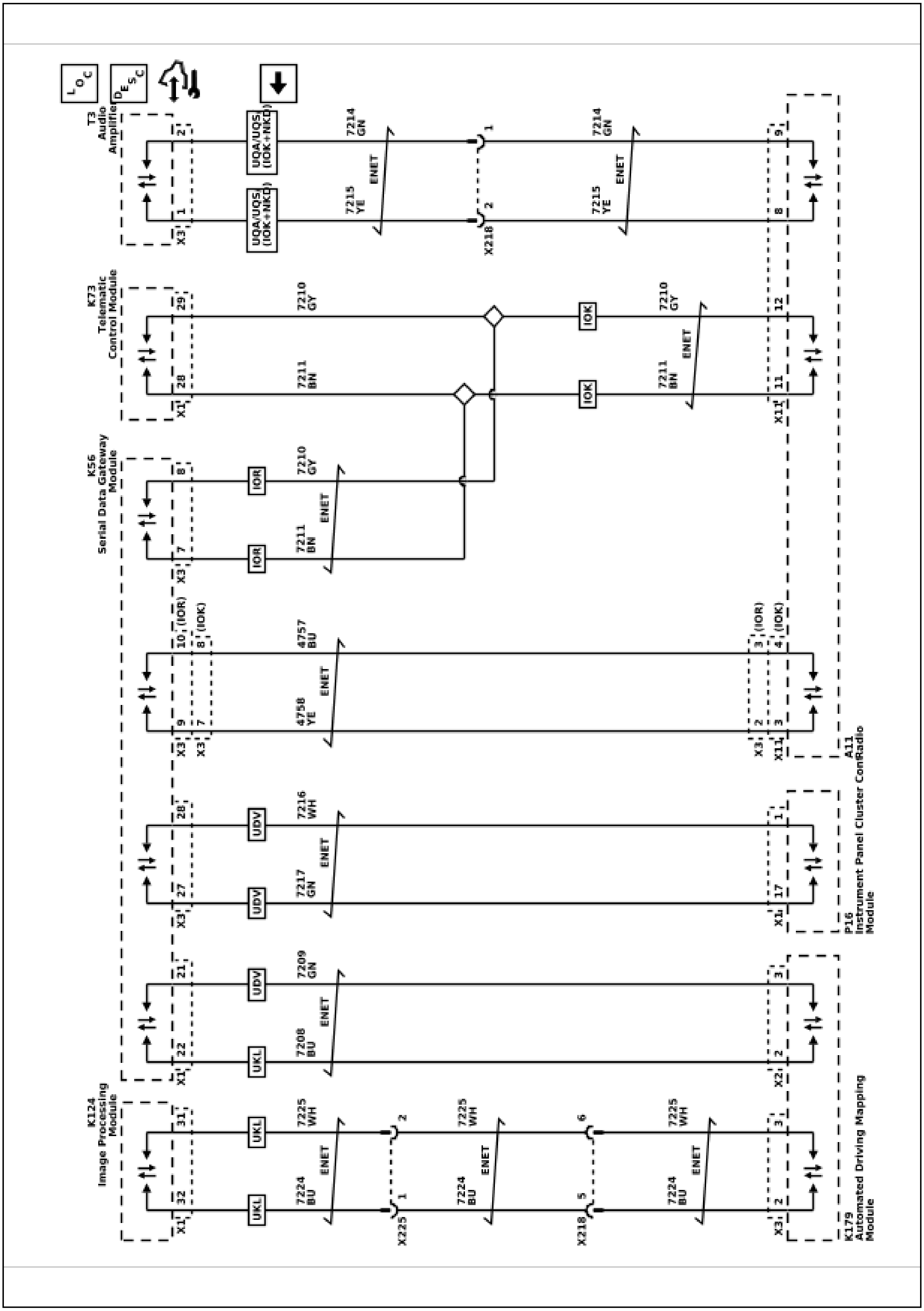
6847044

Data Communication Schematics (Image Processing Module, Instrument Panel Cluster, and Seat Memory Module Local Interconnect Network LIN Busses)

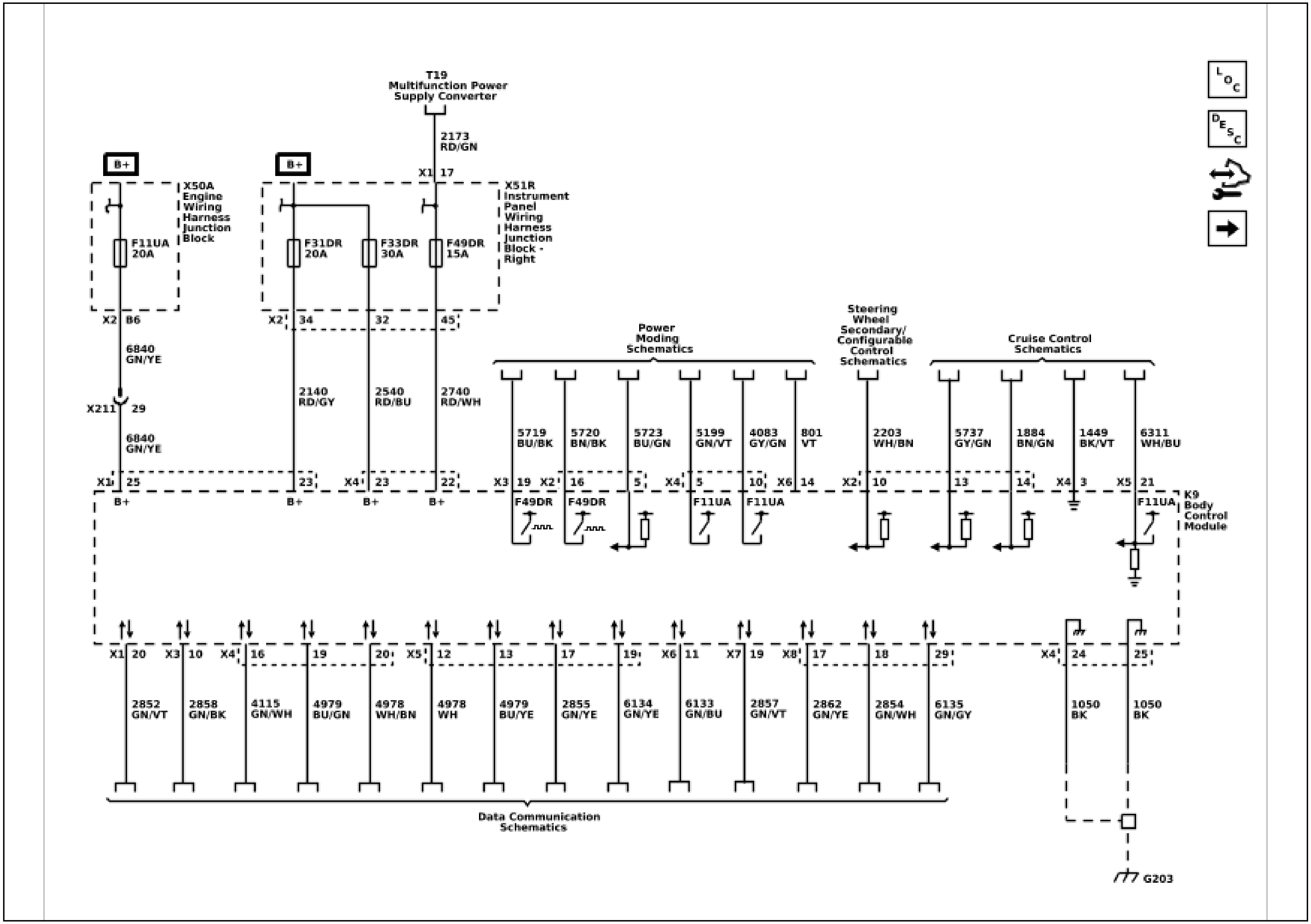

K124 Image Processing Module
X1 23
D07+UKL
4627 GN/GY
X227 41
X210 43
P16 Instrument Panel Cluster Control Module
X1 20
UK3
3894 GN/BK
-UV6
UV6
J233
X85 Steering Wheel Airbag Coil
X1 10
9
X2 20
21
3894 BK/BU(N57-D07)
3894 GN/BK(NK5/D07)
X6 2
K180S Driver Monitoring System Module - Steering Wheel
3
S70R Radio Control Switch - Steering Wheel
X1 1
P29 Head-Up Display
K40D Driver Seat Adjuster Memory Module
X3 8
18
N38
A45
7530 GN/WH
X331 5
X210 52
X1 2
K99 Steering Column Control Module
3758 GN/GY
J337
AF6
AVK-AF6
S64D Front Seat Adjuster Switch - Driver
K104D Front Seat Bladder Control Module - Driver
K104DS Front Seat Bladder Control Module - Driver Secondary
2637 GN/BK
6
K104DP Front Seat Bladder Control Module - Driver Primary
K40P Passenger Seat Adjuster Memory Module
X3 18
AKE
4116 GN/YE
J353
S64P Front Seat Adjuster Switch - Passenger
K104PS Front Seat Bladder Control Module - Passenger Secondary
2638 GN/BU
K104PP Front Seat Bladder Control Module - Passenger Primary
LOC
DESC

6847045

Data Communication Schematics (Ethernet Bus)

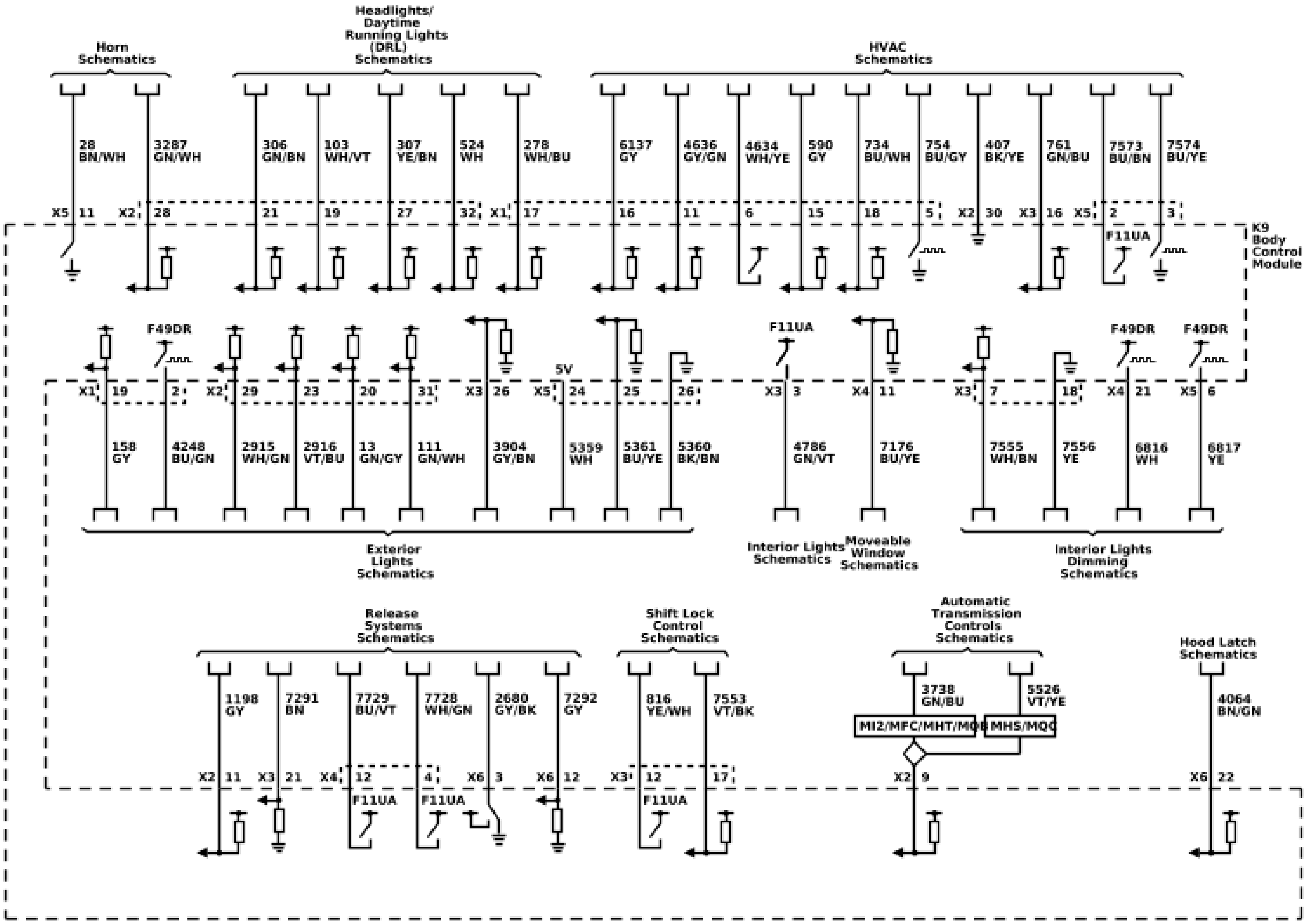

6847046
T3 Audio Amplifier
K73 Telematic Control Module
K56 Serial Data Gateway Module
K124 Image Processing Module
A11 Radio
P16 Instrument Panel Cluster Control Module
K179 Automated Driving Mapping Module
UQA/UQS/ (IOK+NKD)
IOK
IOR
UDV
UKL
ENET
7214 GN
7215 YE
7210 GY
7211 BN
4757 BU
4758 YE
7216 WH
7217 GN
7209 GN
7208 BU
7225 WH
7224 BU
X1
X2
X3
X11
X218
X225
10 (IOR)
8 (IOK)
3 (IOR)
4 (IOK)

Body Control System Schematics (Power, Ground, Serial Data, and Subsystem References - 1 of 3)


T19
Multifunction Power Supply Converter
2173
RD/GN
X1 17
B+
X50A
Engine Wiring Harness Junction Block
F11UA
20A
X2 B6
6840
GN/YE
X211 29
6840
GN/YE
X1 25
B+
B+
X51R
Instrument Panel Wiring Harness Junction Block - Right
F31DR
20A
F33DR
30A
F49DR
15A
X2 34
32
45
2140
RD/GY
2540
RD/BU
2740
RD/WH
23
X4 23
22
B+
B+
B+
Power Moding Schematics
5719
BU/BK
5720
BN/BK
5723
BU/GN
5199
GN/VT
4083
GY/GN
801
VT
X3 19
X2 16
5
X4 5
10
X6 14
F49DR
F49DR
F11UA
F11UA
Steering Wheel Secondary/ Configurable Control Schematics
2203
WH/BN
X2 10
Cruise Control Schematics
5737
GY/GN
1884
BN/GN
1449
BK/VT
6311
WH/BU
13
14
X4 3
X5 21
F11UA
K9
Body Control Module
X1 20
X3 10
X4 16
19
20
X5 12
13
17
19
X6 11
X7 19
X8 17
18
29
X4 24
25
2852
GN/VT
2858
GN/BK
4115
GN/WH
4979
BU/GN
4978
WH/BN
4978
WH
4979
BU/YE
2855
GN/YE
6134
GN/YE
6133
GN/BU
2857
GN/VT
2862
GN/YE
2854
GN/WH
6135
GN/GY
1050
BK
1050
BK
Data Communication Schematics
G203

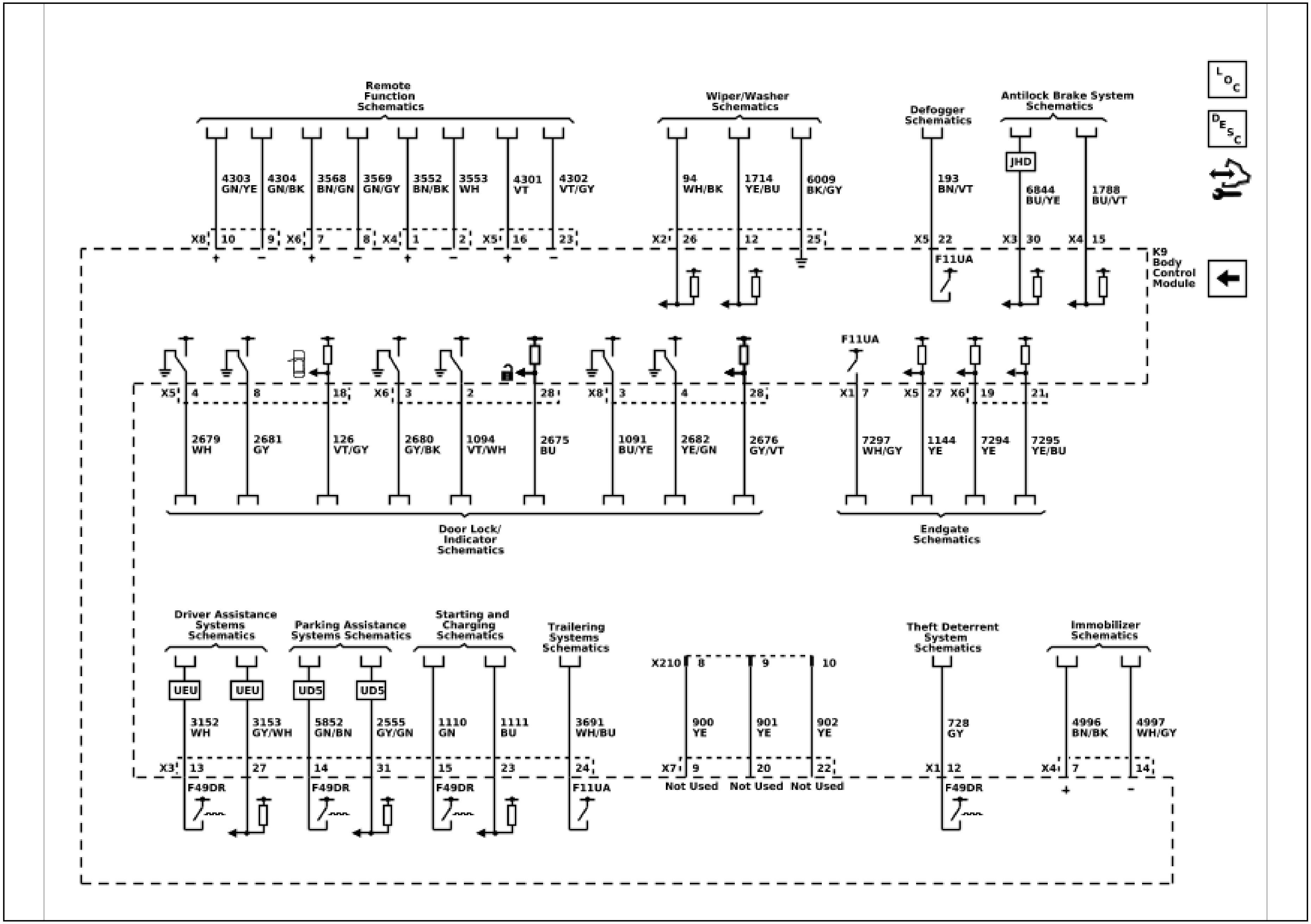
6847047

Body Control System Schematics (Subsystem References - 2 of 3)


Horn Schematics
28 BN/WH
3287 GN/WH
Headlights/ Daytime Running Lights (DRL) Schematics
306 GN/BN
103 WH/VT
307 YE/BN
524 WH
278 WH/BU
HVAC Schematics
6137 GY
4636 GY/GN
4634 WH/YE
590 GY
734 BU/WH
754 BU/GY
407 BK/YE
761 GN/BU
7573 BU/BN
7574 BU/YE
X5 11
X2 28
21
19
27
32
X1 17
16
11
6
15
18
5
X2 30
X3 16
X5 2
3
F11UA
K9 Body Control Module
F49DR
5V
F11UA
F49DR
F49DR
X1 19
2
X2 29
23
20
31
X3 26
X5 24
25
26
X3 3
X4 11
X3 7
18
X4 21
X5 6
158 GY
4248 BU/GN
2915 WH/GN
2916 VT/BU
13 GN/GY
111 GN/WH
3904 GY/BN
5359 WH
5361 BU/YE
5360 BK/BN
4786 GN/VT
7176 BU/YE
7555 WH/BN
7556 YE
6816 WH
6817 YE
Exterior Lights Schematics
Interior Lights Schematics
Moveable Window Schematics
Interior Lights Dimming Schematics
Release Systems Schematics
1198 GY
7291 BN
7729 BU/VT
7728 WH/GN
2680 GY/BK
7292 GY
Shift Lock Control Schematics
816 YE/WH
7553 VT/BK
Automatic Transmission Controls Schematics
3738 GN/BU
5526 VT/YE
MI2/MFC/MHT/MQB
MHS/MQC
Hood Latch Schematics
4064 BN/GN
X2 11
X3 21
X4 12
4
X6 3
X6 12
X3 12
17
F11UA
F11UA
F11UA
X2 9
X6 22

6847048

Body Control System Schematics (Subsystem References - 3 of 3)


Remote Function Schematics
4303 GN/YE
4304 GN/BK
3568 BN/GN
3569 GN/GY
3552 BN/BK
3553 WH
4301 VT
4302 VT/GY
X8 10 9 X6 7 8 X4 1 2 X5 16 23
Wiper/Washer Schematics
94 WH/BK
1714 YE/BU
6009 BK/GY
X2 26 12 25
Defogger Schematics
193 BN/VT
X5 22
F11UA
Antilock Brake System Schematics
JHD
6844 BU/YE
1788 BU/VT
X3 30 X4 15
K9 Body Control Module
2679 WH
2681 GY
126 VT/GY
2680 GY/BK
1094 VT/WH
2675 BU
1091 BU/YE
2682 YE/GN
2676 GY/VT
X5 4 8 18 X6 3 2 28 X8 3 4 28
Door Lock/ Indicator Schematics
F11UA
7297 WH/GY
1144 YE
7294 YE
7295 YE/BU
X1 7 X5 27 X6 19 21
Endgate Schematics
Driver Assistance Systems Schematics
UEU
UEU
3152 WH
3153 GY/WH
Parking Assistance Systems Schematics
UD5
UD5
5852 GN/BN
2555 GY/GN
Starting and Charging Schematics
1110 GN
1111 BU
Trailering Systems Schematics
3691 WH/BU
X3 13 27 14 31 15 23 24
F49DR
F49DR
F49DR
F11UA
X210 8 9 10
900 YE
901 YE
902 YE
X7 9 20 22
Not Used Not Used Not Used
Theft Deterrent System Schematics
728 GY
X1 12
F49DR
Immobilizer Schematics
4996 BN/BK
4997 WH/GY
X4 7 14
+ + + + + + +
− − − − − −

6847049

Description and Operation

Data Link Communications Description and Operation

Note: This is an overview of different serial data buses used by control modules to communicate with each others. Use *Data Communication Schematics 8-3* to find out which serial data buses are configured for a specific vehicle.

Vehicle Intelligence Platform (VIP) Data Link Communications Overview

There are many components in a vehicle that rely on information from other sources, transmit information to other sources, or both. Serial data communication networks provide a reliable, cost effective, way for various components of the vehicle to “talk” to one another and share information.

General Motors uses a number of different communication buses to ensure the timely and efficient exchange of information between control modules. When compared to each other, some of these buses are different in nature as far as speed, signal characteristics, and behavior.

On the other hand, when other buses are compared to each other they have similar characteristics and simply operate in parallel. In this case they are used to group together components which have high interaction. Examples are the Controller Area Network (CAN), private CAN, and Local Interconnect Network (LIN) buses. This allows them to communicate with each other on a bus with reduced message congestion insuring faster and the more timely exchange of information than if all vehicle control modules were on a single bus.

The majority of information that exists within a given network generally stays local; however some information will have to be shared on other networks. Control modules designated as Gateways perform the function of transferring information between the various buses. A Gateway module is connected to at least 2 buses and will interact with each network according to its message strategy and transmission models.

CAN provides the capability for a receiving control module to monitor message transmissions from other control modules in order to determine if messages of interest are not being received. The primary purpose is to allow reasonable default values to be substituted for the information no longer being received. Additionally, a control module may set a Diagnostic Trouble Code (DTC) to indicate that the control module it is expecting information from is no longer communicating.

K9 Body Control Module (BCM)

The body control system consists of the K9 Body Control Module, communications, and various input and outputs. Some inputs, outputs and messages require other control modules to interact with the K9 Body Control Module. The K9 Body Control Module also has discrete input and output terminals to control the vehicle's body functions. The K9 Body Control Module is wired to CAN bus and multiple LIN buses and acts as a gateway between them.

The various K9 Body Control Module input and output circuits are illustrated in the corresponding functional areas on the K9 Body Control Module electrical schematics. Refer to the *Body Control System Schematics 8-23* for more detailed information.

K56 Serial Data Gateway Module

The K56 Serial Data Gateway Module gates messages between the CAN networks described in the Controller Area Network (CAN) Bus Description section below. The K56 Serial Data Gateway Module needs to know what CAN control modules are present on a given vehicle in order to enable/disable loss of communication DTCs and to know which CAN control modules to track for their communication status. The K56 Serial Data Gateway Module has the ability to learn the diagnostic addresses list of CAN control modules to identify what CAN control modules are equipped on the vehicle and what CAN buses they are on. If the K56 Serial Data Gateway Module is replaced, this learn/verification process will have to be done again through K56 Serial Data Gateway Module programming and setup procedure in SPS. This learn process will not cause any previously learned contents to be forgotten/overwritten. If the learn process is not done on a new K56 Serial Data Gateway Module, DTC U1977 will be set until the learn procedure is executed. If the learn is invalid due to control module internal malfunction or a K56 Serial Data Gateway Module swap, DTC U3000 42 or DTC U3002 56 will be set. If any of these DTCs sets, the K56 Serial Data Gateway Module will enable loss of communication for all CAN control modules. This will result in loss of communication DTCs being set against CAN control modules that are not equipped on the vehicle.

A fault can be localized by monitoring the normal mode messages on a CAN bus. The K56 Serial Data Gateway Module will monitor one signal per CAN control module per CAN bus to determine control module status. When a signal times out, a loss of communication event will be started.

Controller Area Network (CAN) Bus Description

The CAN buses are used where data needs to be exchanged at a high enough rate to minimize the delay between the occurrence of a change in sensor value and the reception of this information by a control device using the information to adjust vehicle system performance.

Each CAN serial data network consists of two twisted wires. One signal circuit is identified as CAN-High and the other signal circuit is identified as CAN-Low. At each end of the data bus there is a 124 Ω termination resistor between the CAN-High and CAN-Low circuits. Most CAN control modules have an internal resistance of 4.950K Ω. There may be one or two CAN control modules that have a higher internal resistance like the K60 Column Lock Module which has an internal resistance of 77.4K Ω. The internal resistance of CAN control modules causes lower terminating resistor reading when splitting the CAN network to check for faults. The more CAN control modules on the network the lower the terminating resistor will read.

The data to be transmitted over a CAN bus is represented by the voltage difference between the CAN-High signal voltage and the CAN-Low signal voltage. Data symbols (1’s and 0’s) are transmitted sequentially at the following rate:

- CAN 1 (circuits 4986 & 4987) = 500 Kbit/s
- CAN 2 (circuits 4978 & 4979) = 2 Mbit/s
- CAN 3 (circuits 4976 & 4977) = 500 Kbit/s
- CAN 4 (circuits 4100 & 4101) = 500 Kbit/s
- CAN 5 (circuits 4984 & 4985) = 500 Kbit/s
- CAN 6 (circuits 4980 & 4981) = 5 Mbit/s
- CAN 7 (circuits 4982 & 4983) = 5 Mbit/s
- CAN 8 (circuits 4104 & 4105) = 2 Mbit/s
- CAN 9 (circuits 4102 & 4103) = 2 Mbit/s
- CAN 10 (circuits 10800 & 10801) = 2 Mbit/s

Classical CAN: CAN 1, CAN 3, CAN 4, and CAN 5 are Classical CAN buses. In Classical CAN, the entire message is transmitted at the same baud rate. The size of the data field is limited to 8 bytes.

CAN FD: CAN 2, CAN 8, CAN 9, and CAN 10 are CAN FD buses (FD = Flexible Data-Rate). In CAN FD, the data field of the message is transmitted at the same or at a faster baud rate. The size of the data field can be up to 64 bytes in length.

When the two wire bus is at rest the CAN-High and CAN-Low signal circuits are not being driven and this represents a logic “1”. In this state both signal circuits are at the same voltage of 2.5 V. The differential voltage is approximately 0 V.

When a logic “0” is to be transmitted, the CAN-High signal circuit is driven higher to about 3.5 V and the CAN-Low circuit is driven lower to about 1.5 V. The differential voltage becomes approximately 2.0 (+/- 0.5) V.

The CAN 1, CAN 2, CAN 3, CAN 4, CAN 5, CAN 8, CAN 9, and CAN 10 buses are used to communicate between the K56 Serial Data Gateway Module and other CAN control modules.

The CAN 8 and CAN 9 buses are reserved for the following systems:

- The CAN 8 bus is reserved for most control modules and sensors related to active safety system, if applicable.
- The CAN 9 bus is reserved for most control modules and sensors related to Hybrid/EV system, if applicable.

The following CAN buses are between the X84 Data Link Connector and the K56 Serial Data Gateway Module:

- The CAN 6 bus is used for CAN diagnostics and programming.
- The CAN 7 bus is used for programming by assembly plant only.
- The Private Presentation CAN 1 bus (circuits 2577 & 2578) is used by Engineering to observe data communications on CAN buses not directly accessible at the X84 Data Link Connector. It requires special security access and will not be used in a service environment.
- The Private Presentation CAN 2 bus (circuits 2579 & 2580) is used by Engineering to observe data communications on CAN buses not directly accessible at the X84 Data Link Connector. It requires special security access and will not be used in a service environment.

Private Powertrain CAN Bus Description

The Private Powertrain CAN bus (circuits 4054 & 4055) is reserved for Powertrain components. It has a transmission rate of 500 Kbit/s. Sometimes communication is required between the Private Powertrain CAN bus and another CAN bus. This is accomplished by using the K20 Engine Control Module / K45 Powertrain Control Module (for gas vehicles) or K16 Battery Energy Control Module (for electric vehicles) as the Gateway module. Since the Private Powertrain CAN bus and other CAN buses operate in the same manner, the diagnostics for each are similar.

Local Interconnect Network (LIN) Bus Description

The LIN Bus consists of a single wire with a transmission rate of 10.417 Kbit/s or 19.23 Kbit/s. This bus is used to exchange information between a master control module and other smart devices which provide supporting functionality. This type of configuration does not require the capacity or speed of a CAN bus and is thus relatively simpler.

The data symbols (1’s and 0’s) to be transmitted are represented by different voltage levels on the communication bus. When the LIN Bus is at rest and is not being driven, the signal is in a high voltage state of approximately Vbatt. This represents a logic “1”. When a logic “0” is to be transmitted, the signal voltage is driven low to about ground (0.0 V).

Ethernet Bus Description

Ethernet is a data communication technology that uses a single twisted copper pair of wires at speeds of 100 Mbit/s and 1000 Mbit/s. The Ethernet system uses point-to-point communication that is connected via an Ethernet switch [Module <--> Switch <--> Module]. The Ethernet bus does not use terminating resistors.

The K56 Serial Data Gateway Module and the A11 Radio have an Ethernet switch that connects to other Ethernet modules. The K56 Serial Data Gateway Module and the A11 Radio communicate with other devices and systems in the vehicle via CAN and LIN buses. Diagnostic Trouble Codes will be read on CAN to diagnose Ethernet, LIN and system faults.

Note: Ethernet harness failures should only be repaired using an appropriate kit to perform de-pin/re-pin overlays or in cases where the wiring harness repair kits are not available, the entire harness should be replaced. No crimps or splicing should be performed on the Ethernet wiring harness.

Ethernet 1

Ethernet bus 1 consists of 2 twisted pair of wires [1 pair for Ethernet bus 1R (circuits 4972 & 4973) and 1 pair for Ethernet bus 1T (circuits 4974 & 4975)]. It is connected between X84 Data Link Connector (DLC) and K56 Serial Data Gateway Module. This bus is used for diagnostics and service programming of control modules using Ethernet instead of CAN. The K56 Serial Data Gateway Module will convert Ethernet serial data to CAN as necessary, and vice versa. There is an Ethernet enable circuit (circuit 7207) which can be used to wake up the K56 Serial Data Gateway Module for Ethernet diagnostic and programming.

Ethernet 2

Ethernet bus 2 (circuits 4757 & 4758) is for connection between the A11 Radio and the K56 Serial Data Gateway Module.

Ethernet 3

Ethernet bus 3 (circuits 7208 & 7209) is for connection between the following control modules depending on vehicle configuration:

- K56 Serial Data Gateway Module and K179 Automated Driving Mapping Module.
- K56 Serial Data Gateway Module and K124 Image Processing Module.
- K56 Serial Data Gateway Module and B174W Front View Camera - Windshield.

Ethernet 4

Ethernet bus 4 (circuits 7210 & 7211) is for connection between the following control modules:

- K56 Serial Data Gateway Module and K73 Telematic Control Module for vehicles equipped with IOR radio.
- A11 Radio and K73 Telematic Control Module for vehicles equipped with other radios.

Ethernet 5

Ethernet bus 5 (circuits 7212 & 7213) is for connection between the A11 Radio and P22F Video Display - Right Front Seat Back.

Ethernet 6

Ethernet bus 6 (circuits 7214 & 7215) is for connection between the A11 Radio and T3 Audio Amplifier.

Ethernet 7

Ethernet bus 7 (circuits 7216 & 7217) is for connection between the K56 Serial Data Gateway Module and P16 Instrument Panel Cluster Control Module or K190 Off-Board Charger Control Module.

Ethernet 11

Ethernet bus 11 (circuits 7224 & 7225) is for connection between the K124 Image Processing Module and K179 Automated Driving Mapping Module.

Ethernet 14

Ethernet bus 14 (circuits 7230 & 7231) is for connection between the A11 Radio and P29 Head-Up Display.

Ethernet 15

Ethernet bus 15 (circuits 7232 & 7233) is for connection between the K56 Serial Data Gateway Module, K161 Vehicle Performance Data Recorder, and P22F Video Display - Passenger Seat Back.

X84 Data Link Connector (DLC)

The X84 Data Link Connector is a standardized 16-cavity connector. Connector design and location is dictated by an industry wide standard, and is required to provide the following:

- Terminal 1: CAN Bus 7 Serial Data [+]
- Terminal 2: Private Presentation CAN Bus 1 Serial Data [+]
- Terminal 3: Ethernet Bus 1R [+]
- Terminal 4: Scan tool power ground
- Terminal 5: Common signal ground
- Terminal 6: CAN Bus 6 Serial Data [+]
- Terminal 7: Private Presentation CAN Bus 2 Serial Data [+]
- Terminal 8: Ethernet Bus 1 Enable Signal
- Terminal 9: CAN Bus 7 Serial Data [-]
- Terminal 10: Private Presentation CAN Bus 1 Serial Data [-]
- Terminal 11: Ethernet Bus 1R [-]
- Terminal 12: Ethernet Bus 1T [+]
- Terminal 13: Ethernet Bus 1T [-]
- Terminal 14: CAN Bus 6 Serial Data [-]
- Terminal 15: Private Presentation CAN Bus 2 Serial Data [-]
- Terminal 16: Scan tool power, B+

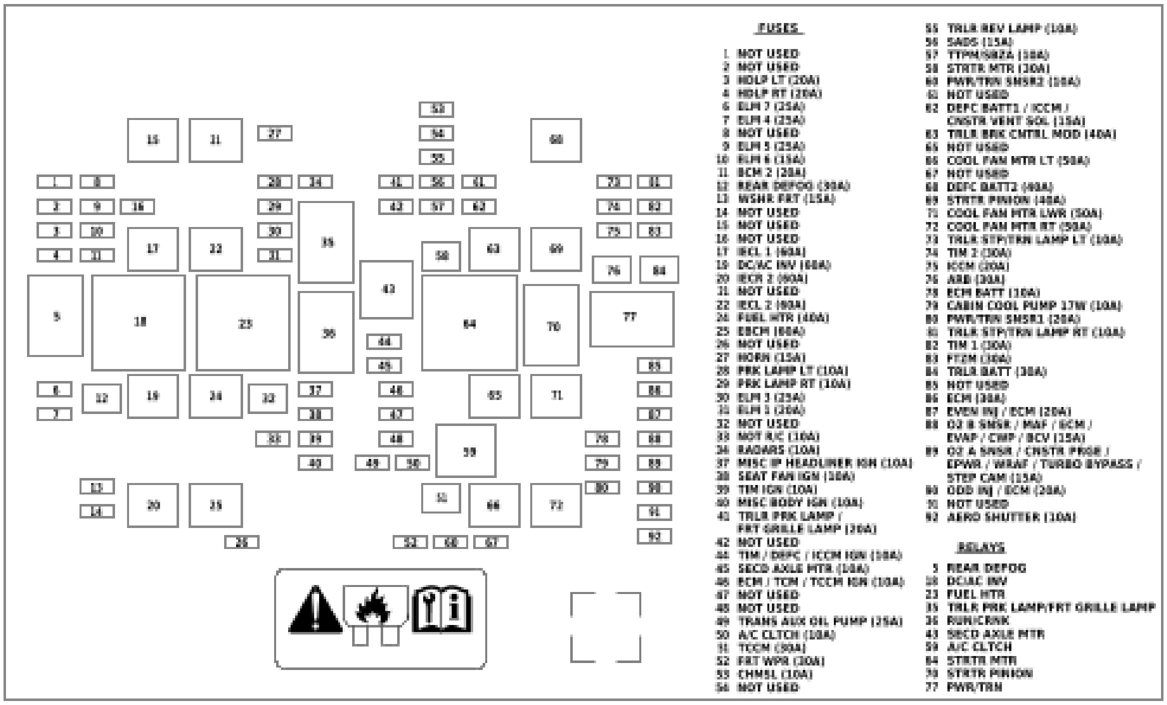
Serial Data Reference

The scan tool communicates over the various buses on the vehicle. When a scan tool is installed on a vehicle, the scan tool will try to communicate with every control module that could be optioned into the vehicle. If an option is not installed on the vehicle, the scan tool will display No Communication for that optional control module. In order to avert misdiagnoses of No Communication with a specific control module, refer to [Link target (target-id 148085-) not found] for a list of control modules and the buses they communicate with. Use schematics and specific vehicle build RPO codes to determine optional control modules.

Electrical Component and Inline Harness Connector End Views

Component Locator

X50A Engine Wiring Harness Junction Block Label



	FUSES
1	NOT USED
2	NOT USED
3	HDLP LT (20A)
4	HDLP RT (20A)
6	ELM 7 (25A)
7	ELM 4 (25A)
8	NOT USED
9	ELM 5 (25A)
10	ELM 6 (15A)
11	BCM 2 (20A)
12	REAR DEFOG (30A)
13	WSHR FRT (15A)
14	NOT USED
15	NOT USED
16	NOT USED
17	IECL 1 (60A)
19	DC/AC INV (60A)
20	IECR 2 (60A)
21	NOT USED
22	IECL 2 (60A)
24	FUEL HTR (40A)
25	EBCM (60A)
26	NOT USED
27	HORN (15A)
28	PRK LAMP LT (10A)
29	PRK LAMP RT (10A)
30	ELM 3 (25A)
31	ELM 1 (20A)
32	NOT USED
33	MOT R/C (10A)
34	RADARS (10A)
37	MISC IP HEADLINER IGN (10A)
38	SEAT FAN IGN (10A)
39	TIM IGN (10A)
40	MISC BODY IGN (10A)
41	TRLR PRK LAMP / FRT GRILLE LAMP (20A)
42	NOT USED
44	TIM / DEFC / ICCM IGN (10A)
45	SECD AXLE MTR (10A)
46	ECM / TCM / TCCM IGN (10A)
47	NOT USED
48	NOT USED
49	TRANS AUX OIL PUMP (25A)
50	A/C CLTCH (10A)
51	TCCM (30A)
52	FRT WPR (30A)
53	CHMSL (10A)
54	NOT USED
55	TRLR REV LAMP (10A)
56	SADS (15A)
57	TTPM/SBZA (10A)
58	STRTR MTR (30A)
60	PWR/TRN SNSR2 (10A)
61	NOT USED
62	DEFC BATT1 / ICCM / CNSTR VENT SOL (15A)
63	TRLR BRK CNTRL MOD (40A)
65	NOT USED
66	COOL FAN MTR LT (50A)
67	NOT USED
68	DEFC BATT2 (40A)
69	STRTR PINION (40A)
71	COOL FAN MTR LWR (50A)
72	COOL FAN MTR RT (50A)
73	TRLR STP/TRN LAMP LT (10A)
74	TIM 2 (30A)
75	ICCM (20A)
76	ARB (30A)
78	ECM BATT (10A)
79	CABIN COOL PUMP 17W (10A)
80	PWR/TRN SNSR1 (20A)
81	TRLR STP/TRN LAMP RT (10A)
82	TIM 1 (30A)
83	FTZM (30A)
84	TRLR BATT (30A)
85	NOT USED
86	ECM (30A)
87	EVEN INJ / ECM (20A)
88	O2 B SNSR / MAF / ECM / EVAP / CMP / BCV (15A)
89	O2 A SNSR / CNSTR PRGE / EPWR / WRAF / TURBO BYPASS / STEP CAM (15A)
90	ODD INJ / ECM (20A)
91	NOT USED
92	AERO SHUTTER (10A)

	RELAYS
5	REAR DEFOG
18	DC/AC INV
23	FUEL HTR
35	TRLR PRK LAMP/FRT GRILLE LAMP
36	RUN/CRNK
43	SECD AXLE MTR
59	A/C CLTCH
64	STRTR MTR
70	STRTR PINION
77	PWR/TRN

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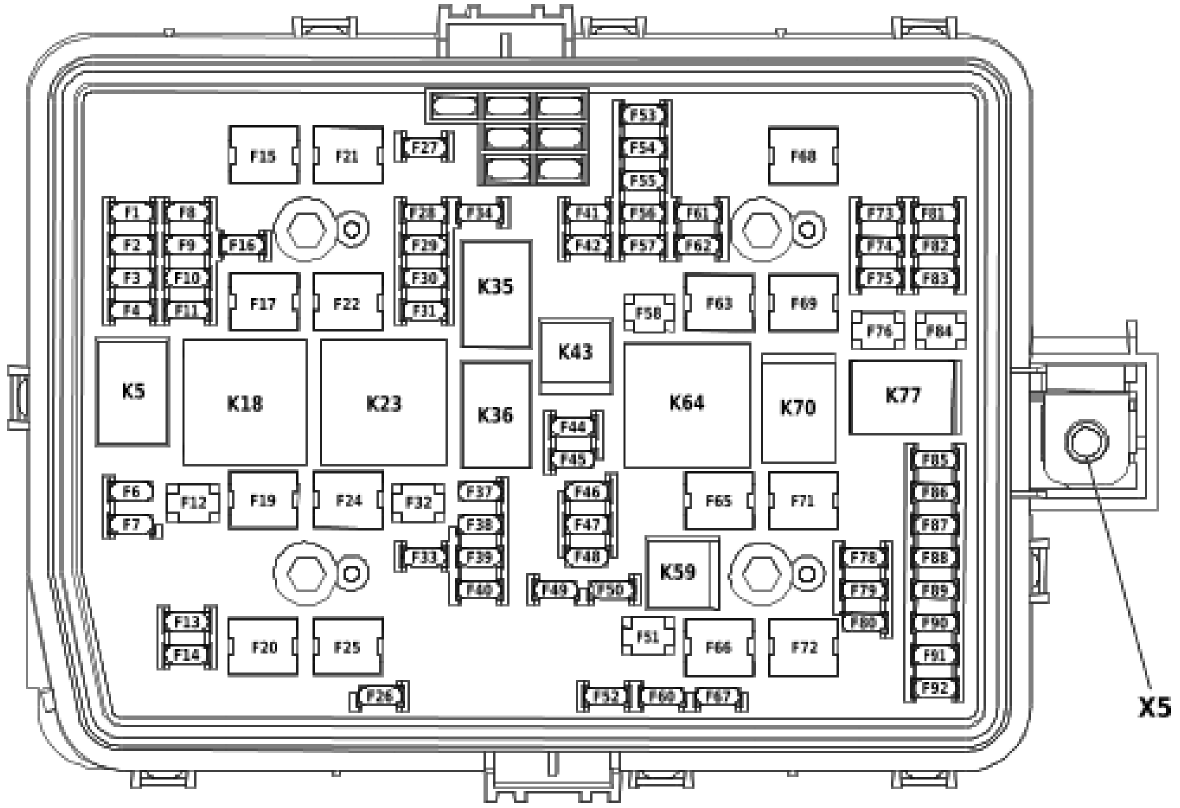
X50A Engine Wiring Harness Junction Block Top View


F15
F21
F27
F53
F54
F55
F56
F57
F68
F1
F2
F3
F4
F8
F9
F10
F11
F16
F28
F29
F30
F31
F34
F41
F42
F61
F62
F73
F74
F75
F81
F82
F83
F17
F22
K35
F58
F63
F69
F76
F84
K5
K18
K23
K36
K43
K64
K70
K77
F44
F45
F85
F86
F87
F88
F89
F90
F91
F92
F6
F7
F12
F19
F24
F32
F37
F38
F39
F40
F33
F46
F47
F48
F65
F71
K59
F49
F50
F78
F79
F80
F13
F14
F20
F25
F51
F66
F72
F26
F52
F60
F67
X5

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Usage Table

No.	Device Label Name	Device Assigned Name	Rating	Description
Fuses				
F1	NOT USED	F1UA	—	• Not Used
F2	NOT USED	F2UA	—	• Not Used
F3	HDLP LT	F3UA	20A	• E13LA Front Headlamp - Left
F4	HDLP RT	F4UA	20A	• E13RA Front Headlamp - Right
F6	ELM 7	F6UA	25A	• Not Used
F7	ELM 4	F7UA	25A	• K219 Lighting Control Module
F8	NOT USED	F8UA	—	• Not Used
F9	ELM 5	F9UA	25A	• Not Used

No.	Device Label Name	Device Assigned Name	Rating	Description
F10	ELM 6	F10UA	15A	• K219 Lighting Control Module
F11	BCM 2	F11UA	20A	• K9 Body Control Module
F12	REAR DEFOG	F12UA	30A	• E18 Rear Window Defogger Grid
F13	WSHR FRT	F13UA	15A	• G24 Windshield Washer Pump
F14	NOT USED	F14UA	—	• Not Used
F15	NOT USED	F15UA	—	• Not Used
F16	NOT USED	F16UA	—	• Not Used
F17	IECL 1	F17UA	60A	• X53AF Body Wiring Harness Junction Block
F19	DC/AC INV	F19UA	60A	• T1 DC/AC Converter Control Module (KI4 / KI5)
F20	IECR2	F20UA	60A	• X51R Instrument Panel Wiring Harness Junction Block - Right
F21	NOT USED	F21UA	—	• Not Used
F22	IECL 2	F22UA	60A	• X53AF Body Wiring Harness Junction Block
F24	FUEL HTR	F24UA	40A	• R29 Fuel Filter (LZ0)
F25	EBCM	F25UA	60A	• K160 Brake System Control Module
F26	NOT USED	F26UA	—	• Not Used
F27	HORN	F27UA	15A	• P13 Horn
F28	PRK LP MIR / GRILL	F28UA	15A	• A9A Outside Rearview Mirror - Driver (DPO / DQS) • A9B Outside Rearview Mirror - Passenger (DPO / DQS)
F29	SPARE	F29UA	10A	• Not Used
F30	ELM 3	F30UA	25A	• K219 Lighting Control Module
F31	ELM 1	F31UA	20A	• K219 Lighting Control Module
F32	NOT USED	F32UA	—	• Not Used
F33	NOT R/C	F33UA	10A	• K60 Column Lock Module
F34	RADARS	F34UA	10A	• B233B Forward Range Radar Sensor - Long Range (UKL / (UGN - UKL)) • B233LF Short Range Radar Sensor - Left Front (UKL) • B233RF Short Range Radar Sensor - Right Front (UKL) • B233LR Short Range Radar Rear Sensor - Left (UKL) • B233RR Short Range Radar Rear Sensor - Right (UKL) • B233SL Short Range Radar Rear Side Sensor - Left (UKL) • B233SR Short Range Radar Rear Side Sensor - Right (UKL)

No.	Device Label Name	Device Assigned Name	Rating	Description
F37	MISC IP HEADLINER IGN	F37UA	10A	• A10 Inside Rearview Mirror • B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor (ASV and CE1) • B160 Inside Air Moisture and Windshield Temperature Sensor (ASV - CE1) • E40 Air Heater (C32) • P16 Instrument Panel Cluster Control Module • P43 Forward Collision Alert Display ((UEU / UHX) - UV6) • X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary (9L7)
F38	SEAT FAN IGN	F38UA	10A	• M73A Front Seat Back Ventilation Blower - Driver (KQV) • M73B Front Seat Back Ventilation Blower - Passenger (KQV) • M73D Front Seat Cushion Ventilation Blower - Driver (KQV) • M73P Front Seat Cushion Ventilation Blower - Passenger (KQV)
F39	TIM IGN	F39UA	10A	• K68 Trailer Lamp Control Module (UET)
F40	MISC BODY IGN	F40UA	10A	• K36 Restraints Control Module • K160 Brake System Control Module • K212 Gear Shift Control Module (MHS / MQC) • K219 Lighting Control Module • T1 DC/AC Converter Control Module (KI4 / KI5)
F41	TRLR PRK LAMP	F41UA	20A	• X88B Tow Vehicle Electrical Receptacle (Z82 - UET)
F42	NOT USED	F42UA	—	• Not Used
F44	TIM / DEFC / ICCM IGN	F44UA	10A	• K38 Chassis Control Module (G93 / G94) • K115 Reductant Control Module (FHX)
F45	SECD AXLE MTR	F45UA	10A	• M26 Front Drive Axle Actuator (NP0 / NQH)
F46	ECM / TCM / TCCM IGN	F46UA	10A	• K20 Engine Control Module • K69 Transfer Case Control Module (NP0 / NQH) • K71 Transmission Control Module
F47	NOT USED	F47UA	—	• Not Used
F48	NOT USED	F48UA	—	• Not Used
F49	TRANS AUX OIL PUMP	F49UA	25A	• G5 Automatic Transmission Auxiliary Fluid Pump (MQB / MQC / MHT / MHS)
F50	A/C CLTCH	F50UA	10A	• Q2 Air Conditioning Clutch
F51	TCCM	F51UA	30A	• K69 Transfer Case Control Module (NP0 / NQH)
F52	FRT WPR	F52UA	30A	• M75 Windshield Wiper Motor
F53	CHMSL	F53UA	10A	• E6A High Mount Stop and Cargo Lamp (Regular Cab)
F54	NOT USED	F54UA	—	• Not Used
F55	TRLR REV LAMP	F55UA	10A	• X88B Tow Vehicle Electrical Receptacle (Z82 - UET)
F56	SADS	F56UA	15A	• K19 Suspension Control Module (Z45)

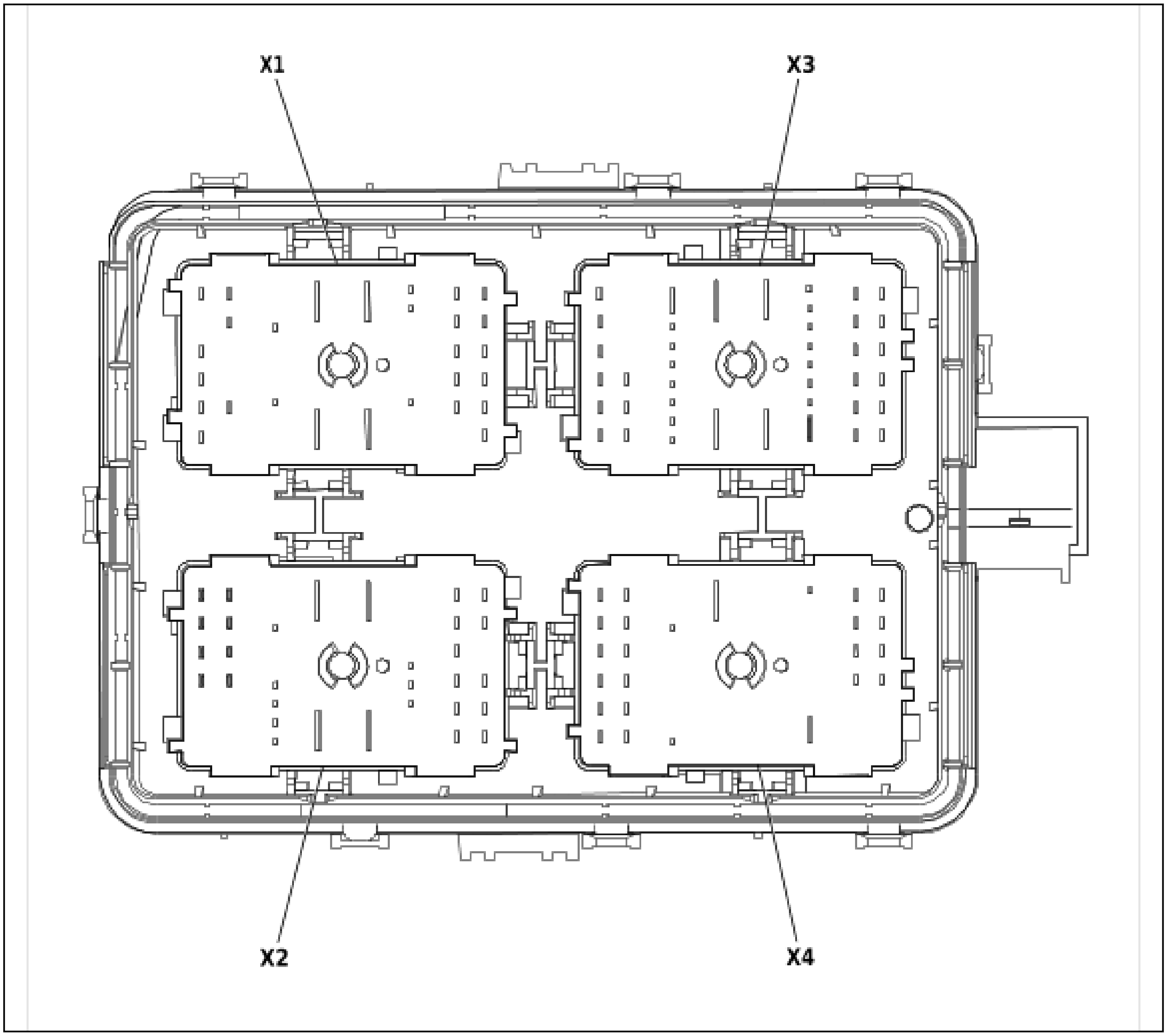
No.	Device Label Name	Device Assigned Name	Rating	Description
F57	TTPM/SBZA	F57UA	10A	• B218L Side Obstacle Detection Control Module - Left (UKC / UKV) • B218R Side Obstacle Detection Control Module - Right (UKC / UKV) • K214 Trailer Tire Pressure Indicator Module (UET)
F58	STRTR MTR	F58UA	30A	• M64 Starter Motor
F60	PWR/TRN SNSR2	F60UA	10A	• B195A Nitrogen Oxides Sensor 1 (LZ0) • K212 Gear Shift Control Module (LZ0 and (MHS / MQC)) • T19 Multifunction Power Supply Converter (LZ0)
F61	NOT USED	F61UA	—	• Not Used
F62	DEFC BATT1 / ICCM / CNSTR VENT SOL	F62UA	15A	• K115 Reductant Control Module (LZ0) • Q13 Evaporative Emission Canister Vent Solenoid Valve (L3B / L84 / L87)
F63	TRLR BRK CNTRL MOD	F63UA	40A	• K67 Trailer Brake Control Module (JL1) • W24 Blunt Cut - Trailer Brakes Provision (Z82 - JL1)
F65	NOT USED	F65UA	—	• Not Used
F66	COOL FAN MTR LT	F66UA	50A	• G10L Cooling Fan Motor - Left
F67	NOT USED	F67UA	—	• Not Used
F68	DEFC BATT2	F68UA	40A	• K115 Reductant Control Module (LZ0)
F69	STRTR PINION	F69UA	40A	• M64 Starter Motor (L3B / L84 / L87)
F71	COOL FAN MTR LWR	F71UA	50A	• G10LW Cooling Fan Motor - Lower (L3B / LZ0)
F72	COOL FAN MTR RT	F72UA	50A	• G10R Cooling Fan Motor - Right (L3B / L84 / L87)
F73	TRLR STP/TRN LAMP LT	F73UA	10A	• X88B Tow Vehicle Electrical Receptacle (Z82 - UET)
F74	TIM 2	F74UA	30A	• K68 Trailer Lamp Control Module (UET)
F75	ICCM	F75UA	20A	• K38 Chassis Control Module (G93 / G94)
F76	ARB	F76UA	30A	• K4 Running Board Control Module (BRS)
F78	ECM BATT	F78UA	10A	• K20 Engine Control Module
F79	CABIN COOL PUMP 17W	F79UA	10A	• G8 Engine Coolant Pump - Auxiliary (L84 / L87 / LZ0)
F80	PWR/TRN SNSR1	F80UA	20A	• B195B Nitrogen Oxides Sensor 2 (LZ0) • B195C Nitrogen Oxides Sensor 3 (LZ0) • B136 Exhaust Particulate Matter Sensor (LZ0) • K111 Fuel Pump Power Control Module (LZ0) • R29 Fuel Filter (LZ0)
F81	TRLR STP/TRN LAMP RT	F81UA	10A	• X88B Tow Vehicle Electrical Receptacle (Z82 - UET)
F82	TIM 1	F82UA	30A	• K68 Trailer Lamp Control Module (UET)
F83	FTZM	F83UA	30A	• K111 Fuel Pump Power Control Module
F84	TRLR BATT	F84UA	30A	• X88B Tow Vehicle Electrical Receptacle (Z82)
F85	NOT USED	F85UA	—	• Not Used
F86	ECM	F86UA	30A	• K20 Engine Control Module

No.	Device Label Name	Device Assigned Name	Rating	Description
F87	EVEN INJ / ECM	F87UA	20A	• K20 Engine Control Module (L84 / L87) • T8B Ignition Coil 2 (L84 / L87) • T8D Ignition Coil 4 (L84 / L87) • T8F Ignition Coil 6 (L84 / L87) • T8H Ignition Coil 8 (L84 / L87)
F88	O2 B SNSR / MAF / ECM / EVAP / CWP / BCV	F88UA	15A	• B75 Mass Airflow Sensor • B52B Heated Oxygen Sensor 2 (L3B) • B52D Heated Oxygen Sensor - Bank 1 Sensor 2 (L84 / L87) • B52F Heated Oxygen Sensor - Bank 2 Sensor 2 (L84 / L87) • G58 Evaporative Emission Canister Purge Pump (L3B) • K20 Engine Control Module • M10 Charge Air Cooler Coolant Pump (LZ0) • Q97B Engine Coolant Flow Control Valve - Block (L3B / LZ0)
F89	O2 A SNSR / CNSTR PRGE / EPWR / WRAF / TURBO BYPASS / STEP CAM	F89UA	15A	• B52C Heated Oxygen Sensor - Bank 1 Sensor 1 (L3B / L84 / L87) • B52E Heated Oxygen Sensor - Bank 2 Sensor 1 (L84 / L87) • M129A Intake Camshaft Profile Actuator 1 (L3B) • M129B Intake Camshaft Profile Actuator 2 (L3B) • M129C Intake Camshaft Profile Actuator 3 (L3B) • M129D Intake Camshaft Profile Actuator 4 (L3B) • M130B Exhaust Camshaft Profile Actuator 2 (L3B) • M130C Exhaust Camshaft Profile Actuator 3 (L3B) • Q12 Evaporative Emission Canister Purge Solenoid Valve (L3B / L84 / L87) • Q40 Turbocharger Bypass Valve Solenoid (L3B) • Q44 Engine Oil Pressure Control Solenoid Valve (L3B / L84 / L87)
F90	ODD INJ / ECM	F90UA	20A	• K20 Engine Control Module • T8A Ignition Coil 1 (L3B / L84 / L87) • T8B Ignition Coil 2 (L3B) • T8C Ignition Coil 3 (L3B / L84 / L87) • T8D Ignition Coil 4 (L3B) • T8E Ignition Coil 5 (L84 / L87) • T8G Ignition Coil 7 (L84 / L87)
F91	NOT USED	F91UA	—	• Not Used
F92	AERO SHUTTER	F92UA	10A	• M96 Active Grille Air Shutter Actuator (VTI / WMI) • M96B Active Grille Air Shutter Actuator 2 (WMI)
Relays				
K5	REAR DEFOG	KR5 Rear Window Defogger Relay	—	• F12UA

No.	Device Label Name	Device Assigned Name	Rating	Description
K18	DC/AC INV	KR202 Accessory AC and DC Power Control Module Relay	—	• F19UA
K23	FUEL HTR	KR22 Fuel Heater Relay	—	• R29 Fuel Filter (LZ0 / FHX)
K35	TRLR PRK LAMP/FRT GRILLE LAMP	KR53 Parking Lamp Relay	—	• F28UA • F41UA
K36	RUN/CRNK	KR73 Ignition Main Relay	—	• F33UA • F37UA • F38UA • F39UA • F40UA • F44UA • F46UA
K43	SECD AXLE MTR	KR203 Front Drive Axle Actuator Relay	—	• F45UA (NP0 / NQH)
K59	A/C CLTCH	KR29 A/C Compressor Clutch Relay	—	• F50UA
K64	STRTR MTR	KR27 Starter Motor	—	• M64 Starter Motor
K70	STRTR PINION	KR27C Engine Restart Relay	—	• M64 Starter Motor (L3B / L84 / L87)
K77	PWR/TRN	KR75 Engine Controls Ignition Relay	—	• F86UA • F87UA • F88UA • F89UA • F90UA • F92UA • KR29 Air Conditioning Compressor Relay
Note: Relays listed below are non-serviceable Printed Circuit Board (PCB) relays and are internal to the block.				
—	—	KR3 Horn Relay	—	• F27UA
—	—	KR11 Windshield Washer Pump Relay	—	• G24 Windshield Washer Pump
—	—	KR12B Windshield Wiper Motor Relay	—	• M75 Windshield Wiper Motor
—	—	KR12C Windshield Wiper Motor Speed Control Relay	—	• M75 Windshield Wiper Motor
—	—	KR41 High Mount Stop Lamp Relay	—	• F53UA
—	—	KR61 Trailer Backup Lamp Relay	—	• F55UA
—	—	KR63L Trailer Stop/ Turn Signal Lamp Relay - Left	—	• F73UA

No.	Device Label Name	Device Assigned Name	Rating	Description
—	—	KR63R Trailer Stop/ Turn Signal Lamp Relay - Right	—	• F81UA
—	—	KR200 Engine Controls Sensor Supply Voltage Relay	—	• F60UA • F80UA

X50A Engine Wiring Harness Junction Block Bottom View



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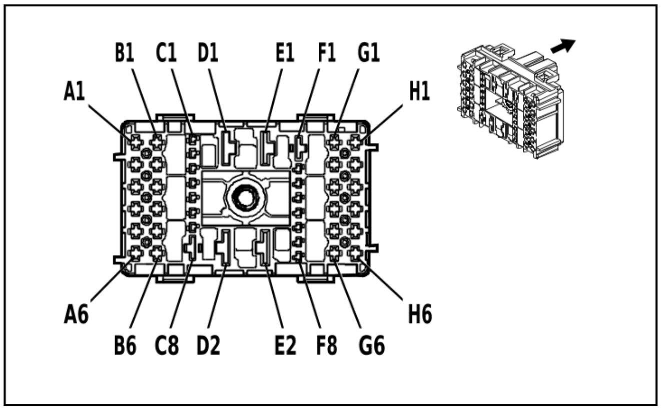
X50A Engine Wiring Harness Junction Block X1



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Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 33384590
- Service Connector: 19370824
- Description: 44-Way F 1.5, 2.8, 6.3 CTS, 9.5 MCON-LL Series(BU)

Terminal Part Information

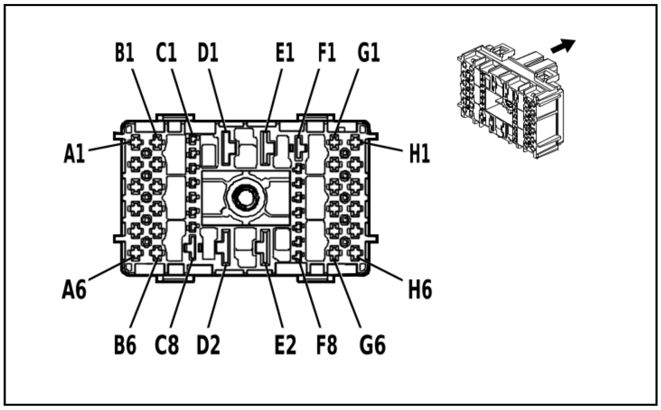
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19369711	J-35616-14 (GN)	J-38125-557
II	84764079	J-35616-45 (YE)	J-38125-11A
III	84779405	J-35616-35 (VT)	J-38125-212
IV	Not required	J-35616-22 (RD)	No Tool Required

X50A Engine Wiring Harness Junction Block X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A1	—	—	—	Not Occupied	—	—
A2	1.5	RD / BU	540	Battery Positive Voltage	III	—
A3	0.35	BN / VT	193	Rear Defogger Relay Control	III	—
A4	0.5	BK	650	Ground	III	—
A5	0.75	GY / VT	228	Windshield Washer Pump Control	III	—
A6 - B1	—	—	—	Not Occupied	—	—
B2	2.5	BN / VT	293	Rear Defogger Grid Control	III	—
B3 - C2	—	—	—	Not Occupied	—	—
C3	0.5	WH / GN	4628	DC/AC Inverter Relay Control	I	—
C4	0.35	BN / GY	2268	Windshield Washer Relay Control	I	—
C5 - C8	—	—	—	Not Occupied	—	—
D1	5	BN / BK	4629	DC/AC Inverter Control	II	—
D2	10	RD / WH	342	Battery Positive Voltage	IV	—
E1	—	—	—	Not Occupied	—	—
E2	6	RD / WH	1040	Battery Positive Voltage	II	—
F1 - F5	—	—	—	Not Occupied	—	—
F6	0.35	WH / VT	860	Windshield Wiper Switch High Signal	I	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
F7 - G2	—	—	—	Not Occupied	—	—
G3	0.35	BU / VT	807	Ignition Off/Accessory Ignition Voltage	III	—
G4	0.5	GN / VT	5199	Run/Crank Relay Coil Control	III	—
G5	2	BK	150	Ground	III	—
G6	0.35	GY	91	Windshield Wiper Motor Relay Coil Control	III	—
H1	0.5	VT / BK	339	Run/Crank Ignition 1 Voltage	III	—
H2	0.75	VT / WH	1139	Run/Crank Ignition 1 Voltage	III	—
H3	0.5	VT / WH	639	Run/Crank Ignition 1 Voltage	III	—
H4	0.5	VT / WH	239	Run/Crank Ignition 1 Voltage	III	—
H5	2	WH	92	Windshield Wiper Motor High Speed Control	III	—
H6	2	YE / BN	95	Windshield Wiper Motor Low Speed Control	III	—

X50A Engine Wiring Harness Junction Block X2



4994132

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 33384594
- Service Connector: 19371174
- Description: 44-Way F 1.5, 2.8, 6.3 CTS, 9.5 MCON-LL Series(GN)

Terminal Part Information

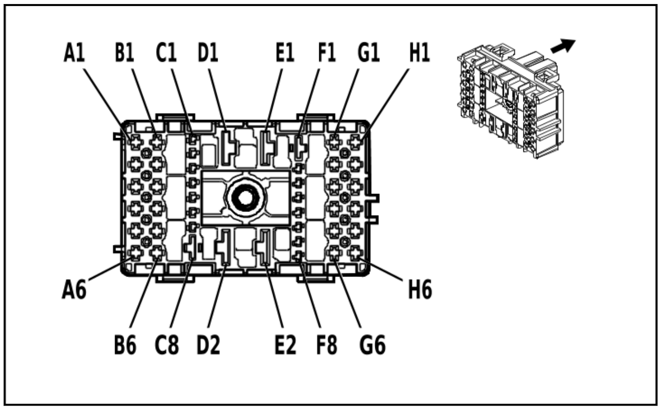
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19369711	J-35616-14 (GN)	J-38125-557
II	84779405	J-35616-35 (VT)	J-38125-212
III	Not required	J-35616-22 (RD)	No Tool Required

X50A Engine Wiring Harness Junction Block X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A1 - A4	—	—	—	Not Occupied	—	—
A5	1.5	RD / WH	640	Battery Positive Voltage	II	—
A6	1.5	RD / YE	740	Battery Positive Voltage	II	—
B1 - B4	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
B5	0.5	RD / BU	840	Battery Positive Voltage	II	—
B6	1	GN / YE	6840	Auxiliary Device 2 Switched Voltage	II	—
C1	0.35	YE / BU	318	Left Rear Trailer Stop/Turn Lamp Control	I	—
C2	0.35	GN / BN	319	Right Rear Trailer Stop/Turn Lamp Control	I	—
C3 - D1	—	—	—	Not Occupied	—	—
D2	10	RD / GY	142	Battery Positive Voltage	III	—
E1	—	—	—	Not Occupied	—	—
E2	10	RD / GN	242	Battery Positive Voltage	III	—
F1	—	—	—	Not Occupied	—	—
F2	0.35 0.5	BN / YE BN / YE	820 820	Center High Mounted Stop Lamp Supply Voltage Center High Mounted Stop Lamp Supply Voltage	I	— —
F3	0.35	BU / BN	38	Backup Lamp Relay Control	I	—
F4	0.35	BN / WH	28	Horn Relay Control	I	—
F5 - F8	—	—	—	Not Occupied	—	—
G1	0.75	BN / GY	29	Horn Control	II	—
G2	—	—	—	Not Occupied	—	—
G3	1.5	BN / GN	4246	Identification Lamp Control	II	—
G4	—	—	—	Not Occupied	—	—
G5	1.5	RD / BN	1440	Battery Positive Voltage	II	—
G6	1	RD / BN	1140	Battery Positive Voltage	II	—
H1	0.5	BU / BK	1053	Center High Mounted Stop Lamp Control 3	II	—
H2	—	—	—	Not Occupied	—	—
H3	0.5	RD / GN	3140	Battery Positive Voltage	II	—
H4 - H5	—	—	—	Not Occupied	—	—
H6	0.35	WH / BN	7055	Auxiliary Park Lamp Relay Control	II	—

X50A Engine Wiring Harness Junction Block X3



4992608

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 33384584
- Service Connector: 19371176
- Description: 44-Way F 1.5, 2.8, 6.3 CTS, 9.5 MCON-LL Series(GY)

Terminal Part Information

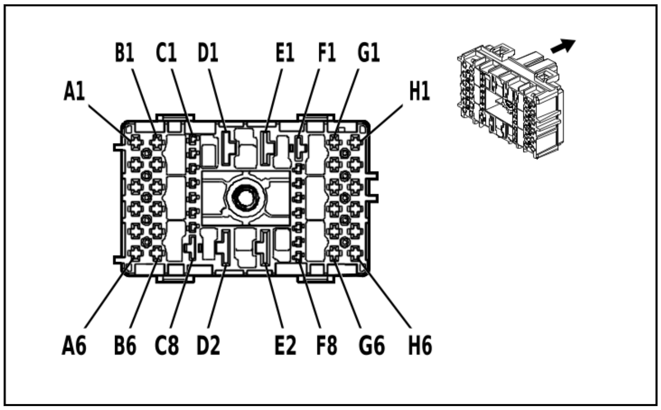
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19369711	J-35616-14 (GN)	J-38125-557
II	84764078	J-35616-42 (RD)	J-38125-221
III	84764079	J-35616-45 (YE)	J-38125-11A
IV	84779405	J-35616-35 (VT)	J-38125-212

X50A Engine Wiring Harness Junction Block X3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A1	0.75	VT / GN	439	Run/Crank Ignition 1 Voltage	IV	—
A2 - A3	—	—	—	Not Occupied	—	—
A4	0.75	BN / GN	59	Air Conditioning Compressor Clutch Control	IV	—
A5	1.5	RD / GY	8540	Battery Positive Voltage	IV	—
A6	0.5	GN	8016	Secondary Axle Motor Control	IV	—
B1	2.5	YE	6	Starter Solenoid Crank Ignition Voltage	IV	—
B2	0.5	YE / BK	625	Starter Enable Relay Control	IV	—
B3	0.5	VT / GY	8017	Secondary Axle Motor Relay Control	IV	—
B4 - B5	—	—	—	Not Occupied	—	—
B6	3	GN / RD	6042	Battery Positive Voltage	IV	—
C1	0.5	BU	3017	Fuel Heater Relay 1 Control	I	—
C2	—	—	—	Not Occupied	—	—
C3	0.5 1 0.75	BK BK BK	450 450 450	Ground Ground Ground	I I I	L3B L84 / L87 LZ0
C4	0.5	WH / GY	459	Air Conditioning Compressor Clutch Relay Control	I	—
C5	0.5	GN / BU	3889	Powertrain Sensor Bus Relay Control	I	—
C6	1	VT / GN	4320	Powertrain Sensor Bus Enable	I	—
C7 - D1	—	—	—	Not Occupied	—	—
D2	5	RD / GN	3840	Battery Positive Voltage	III	—
E1	5	RD / GY	4140	Battery Positive Voltage	III	—
E2	5	RD / VT	4040	Battery Positive Voltage	III	—
F1	2.5	YE / GN	4358	Starter Pinion Solenoid Voltage	II	—
F2	0.5	YE / VT	4325	Starter Pinion Solenoid Actuator Relay Control	I	—
F3	0.5 0.75	RD / BN RD / BN	440 440	Battery Positive Voltage Battery Positive Voltage	I I	L3B LZ0
F4	0.5	YE	5991	Powertrain Relay Coil Control	I	—
F5	0.5	RD / BU	6040	Battery Positive Voltage	I	—
F6	—	—	—	Not Occupied	—	—
F7	0.5	VT / BU	5705	Powertrain Main Relay Control	I	—
F8 - G1	—	—	—	Not Occupied	—	—
G2	2	VT / BU	5292	Powertrain Main Relay Fused Supply Voltage 3	IV	—
G3	—	—	—	Not Occupied	—	—
G4	0.75	VT / BU	5293	Powertrain Main Relay Fused Supply Voltage 4	IV	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
G5	1.5	VT / GN	4320	Powertrain Sensor Bus Enable	IV	—
G6	1	VT / BU	5291	Powertrain Main Relay Fused Supply Voltage 2	IV	—
H1	2.5	VT / BU	5290	Powertrain Main Relay Fused Supply Voltage 1	IV	—
H2	0.75	VT / BU	5292	Powertrain Main Relay Fused Supply Voltage 3	IV	—
H3	1	VT / BU	5294	Powertrain Main Relay Fused Supply Voltage 5	IV	—
H4	0.75	VT / BU	5293	Powertrain Main Relay Fused Supply Voltage 4	IV	—
H5	2.5	VT / BU	5291	Powertrain Main Relay Fused Supply Voltage 2	IV	—
H6	—	—	—	Not Occupied	—	—

X50A Engine Wiring Harness Junction Block X4 - Double Cab / Crew Cab



4993031

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 33384574
- Service Connector: 19371188
- Description: 44-Way F 1.5, 2.8, 6.3 CTS, 9.5 MCON-LL Series(BK)

Terminal Part Information

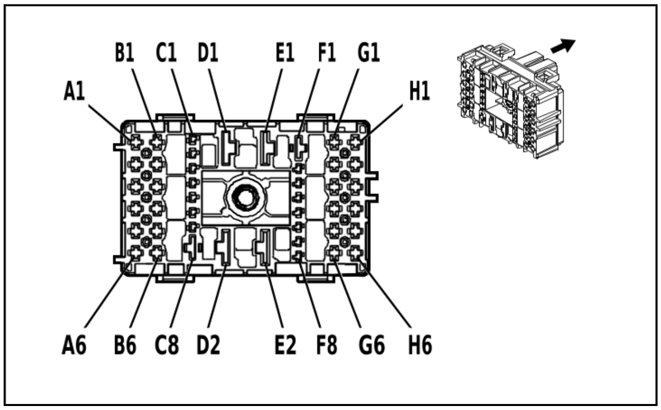
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19369711	J-35616-14 (GN)	J-38125-557
II	84764078	J-35616-42 (RD)	J-38125-221
III	84764079	J-35616-45 (YE)	J-38125-11A
IV	84779405	J-35616-35 (VT)	J-38125-212

X50A Engine Wiring Harness Junction Block X4 - Double Cab / Crew Cab

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A1	—	—	—	Not Occupied	—	—
A2	0.5	RD / BU	5240	Battery Positive Voltage	IV	—
A3	1.5	BN	2109	Trailer Park Lamp Control	IV	—
A4 - A5	—	—	—	Not Occupied	—	—
A6	0.5	VT / WH	639	Run/Crank Ignition 1 Voltage	IV	—
B1	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
B2	1	GY	1624	Trailer Backup Lamp Control	IV	—
B3	0.75	RD / GN	2440	Battery Positive Voltage	IV	—
B4	0.5	RD / GN	6940	Battery Positive Voltage	IV	—
B5 - C6	—	—	—	Not Occupied	—	—
C7	1.5 0.5	RD / WH RD / WH	3440 3440	Battery Positive Voltage Battery Positive Voltage	I I	FHX FWJ
C8	2.5	BN / YE	2996	Fuel Heater Control 1	II	—
D1	—	—	—	Not Occupied	—	—
D2	4	OG	3640	Battery Positive Voltage	III	—
E1 - E2	—	—	—	Not Occupied	—	—
F1	2.5	RD / WH	2040	Battery Positive Voltage	II	—
F2 - G2	—	—	—	Not Occupied	—	—
G3	1	YE	1618	Left Rear Trailer Stop/Turn Lamp Control	IV	—
G4	2.5	RD / YE	5840	Battery Positive Voltage	IV	—
G5	1.5	RD / WH	5940	Battery Positive Voltage	IV	—
G6	2.5	RD / WH	1040	Battery Positive Voltage	IV	—
H1 - H2	—	—	—	Not Occupied	—	—
H3	1	GN	1619	Right Rear Trailer Stop/Turn Lamp Control	IV	—
H4	2.5	RD / VT	5640	Battery Positive Voltage	IV	—
H5	2.5	RD / VT	1940	Battery Positive Voltage	IV	—
H6	4	OG	3940	Battery Positive Voltage	IV	—

X50A Engine Wiring Harness Junction Block X4 - Regular Cab



4993031

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 33384574
- Service Connector: 19371188
- Description: 44-Way F 1.5, 2.8, 6.3 CTS, 9.5 MCON-LL Series(BK)

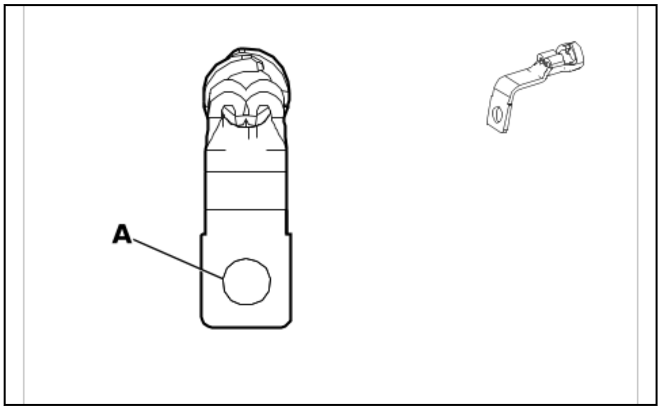
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19369711	J-35616-14 (GN)	J-38125-557
II	84764079	J-35616-45 (YE)	J-38125-11A
III	84779405	J-35616-35 (VT)	J-38125-212

X50A Engine Wiring Harness Junction Block X4 - Regular Cab

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A1 - A2	—	—	—	Not Occupied	—	—
A3	1.5	BN	2109	Trailer Park Lamp Control	III	—
A4 - B1	—	—	—	Not Occupied	—	—
B2	1	GY	1624	Trailer Backup Lamp Control	III	—
B3	—	—	—	Not Occupied	—	—
B4	0.5	RD / GN	6940	Battery Positive Voltage	III	—
B5 - C6	—	—	—	Not Occupied	—	—
C7	0.5	RD / WH	3440	Battery Positive Voltage	I	—
C8 - D1	—	—	—	Not Occupied	—	—
D2	4	OG	3640	Battery Positive Voltage	II	—
E1 - G2	—	—	—	Not Occupied	—	—
G3	1	YE	1618	Left Rear Trailer Stop/Turn Lamp Control	III	—
G4	2.5	RD / YE	5840	Battery Positive Voltage	III	—
G5 - H2	—	—	—	Not Occupied	—	—
H3	1	GN	1619	Right Rear Trailer Stop/Turn Lamp Control	III	—
H4	2.5	RD / VT	5640	Battery Positive Voltage	III	—
H5	2.5	RD / VT	1940	Battery Positive Voltage	III	—
H6	4	OG	3940	Battery Positive Voltage	III	—

X50A Engine Wiring Harness Junction Block X5 ((L84 / L87) & KW5)



5525767

Connector Part Information

- Harness Type: Starter Solenoid Cable
- OEM Connector: 84386513
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

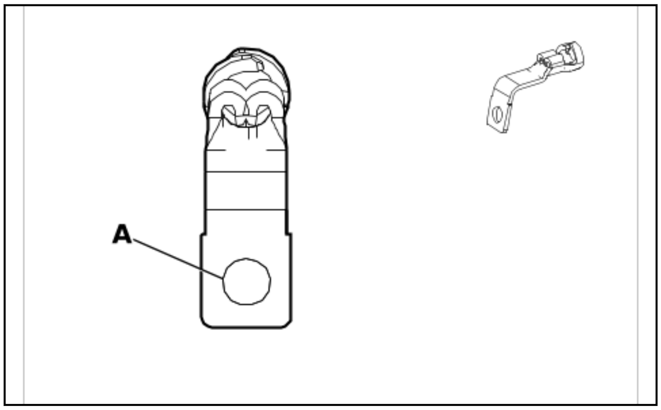
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50A Engine Wiring Harness Junction Block X5 ((L84 / L87) & KW5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35	RD / BU	42	Battery Positive Voltage	I	LM2 or L84 or KW5+ L87 or L3B

X50A Engine Wiring Harness Junction Block X5 ((L84 / L87) & KW7)



5525767

Connector Part Information

- Harness Type: Generator Battery Jumper Cable
- OEM Connector: 84386513
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

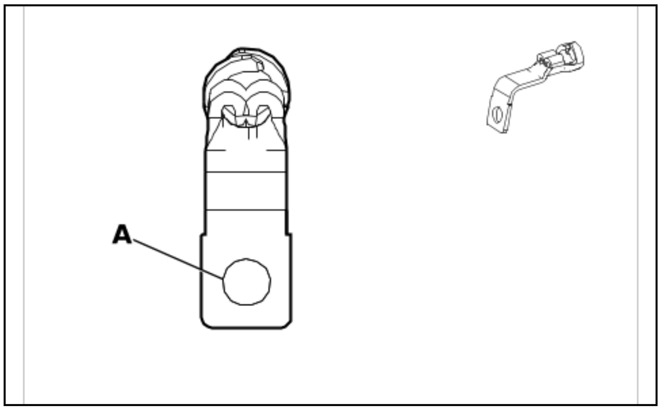
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50A Engine Wiring Harness Junction Block X5 ((L84 / L87) & KW7)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35 35	RD / BU RD / BU	42 42	Battery Positive Voltage Battery Positive Voltage	I I	KW7+ L84/ L87 LM2 or L84 or KW5+ L87 or L3B

X50A Engine Wiring Harness Junction Block X5 (L3B / LZ0)



5525767

Connector Part Information

- Harness Type: Power Steering Wiring Harness
- OEM Connector: 84386513
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

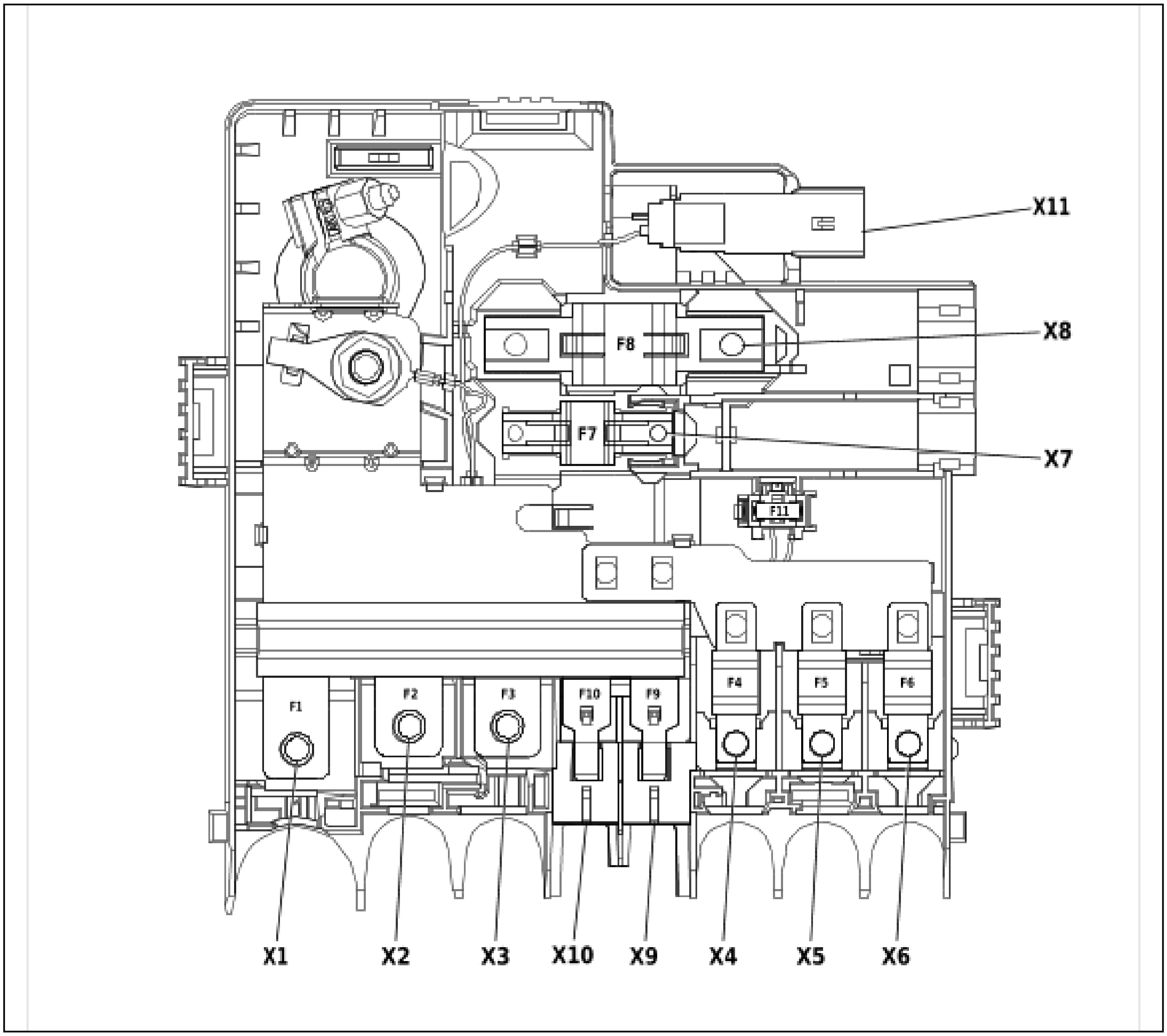
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50A Engine Wiring Harness Junction Block X5 (L3B / LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35	RD / BU	42	Battery Positive Voltage	I	—

X50B Battery Distribution Engine Compartment Fuse Block Top View



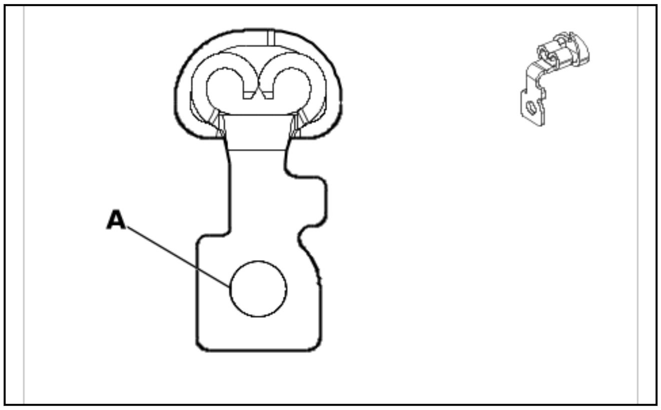
6951643

Usage Table

No.	Device Label Name	Device Assigned Name	Rating	Description
Fuses				
F1	—	F1BA	250A	• G13 Generator • X50A Engine Wiring Harness Junction Block
F2	—	F2BA	175A	• K43 Power Steering Control Module
F3	—	F3BA	400A	• M64 Starter Motor
F4	—	F4BA	100A	• E40 Air Heater (C32)
F5	—	F5BA	70A	• K20 Engine Control Module (LZ0)
F6	—	F6BA	80A	• G10R Cooling Fan Motor - Right (LZ0) • G59 Engine Coolant Pump (L3B)

No.	Device Label Name	Device Assigned Name	Rating	Description
F7	—	F7BA	60A	• X51AX Instrument Panel Wiring Harness Junction Block - Right (9L7)
F8	—	F8BA	200A	• Not Used (Snow Plow)
F9	—	F9BA	60A	• X51R Instrument Panel Wiring Harness Junction Block - Right
F10	—	F10BA	60A	• K160 Brake System Control Module • X410
F11	—	F11BA	5A	• B110 Battery Sensor Module

X50B Battery Distribution Engine Compartment Fuse Block X1 ((L84 / L87) & KW5)



5911326

Connector Part Information

- Harness Type: Starter Solenoid Cable
- OEM Connector: 84386516
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

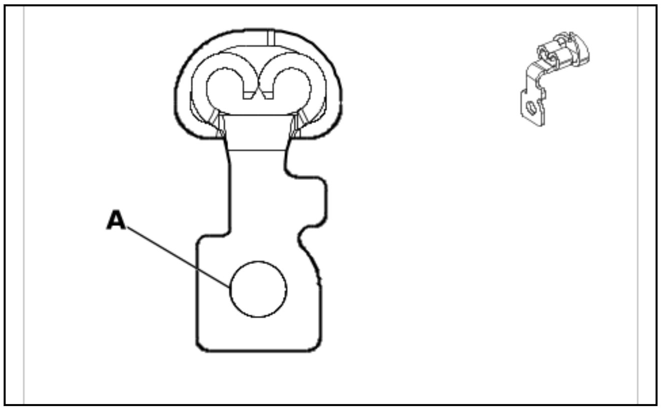
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X1 ((L84 / L87) & KW5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35	RD / BU	42	Battery Positive Voltage	I	L3B or LM2 or KW5+ L84/ L87
	35	RD / BU	42	Battery Positive Voltage	I	LM2 or L84 or KW5+ L87 or L3B

X50B Battery Distribution Engine Compartment Fuse Block X1 ((L84 / L87) & KW7)



5911326

Connector Part Information

- Harness Type: Generator Battery Jumper Cable
- OEM Connector: 84386516
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

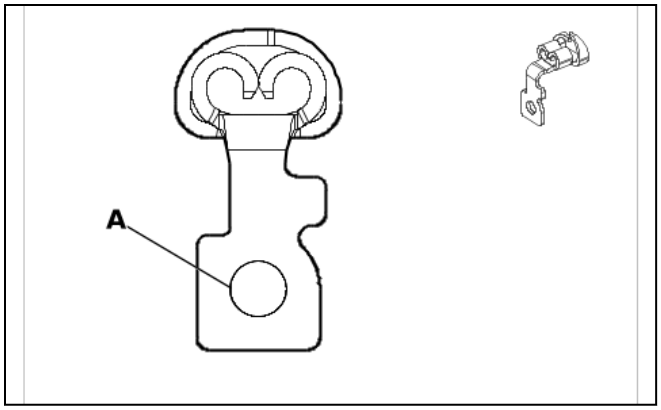
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X1 ((L84 / L87) & KW7)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	25	RD / YE	42	Battery Positive Voltage	I	(L84 / L87) & KW7
	35	RD / BU	42	Battery Positive Voltage	I	L3B / LZ0/ (L84 / L87 & KW5)

X50B Battery Distribution Engine Compartment Fuse Block X1 (L3B)



5911326

Connector Part Information

- Harness Type: Power Steering Wiring Harness
- OEM Connector: 84386516
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

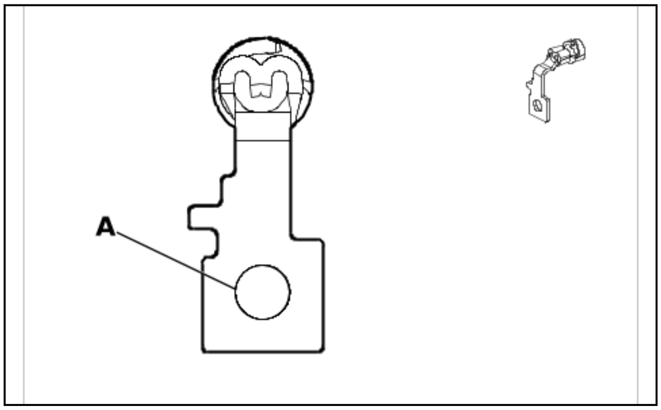
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X1 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35	RD / BU	42	Battery Positive Voltage	I	—

X50B Battery Distribution Engine Compartment Fuse Block X2



5664311

Connector Part Information

- Harness Type: Power Steering Wiring Harness
- OEM Connector: 84386514
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

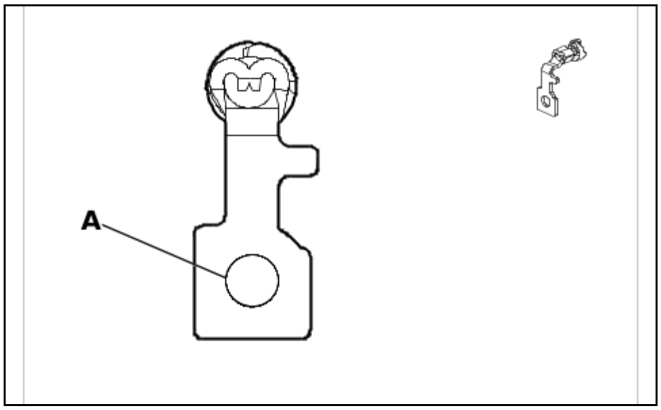
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	25	RD / VT	3542	Battery Positive Voltage	I	—

X50B Battery Distribution Engine Compartment Fuse Block X3 ((L84 / L87) & KW5)



5881244

Connector Part Information

- Harness Type: Starter Solenoid Cable
- OEM Connector: 84386515
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

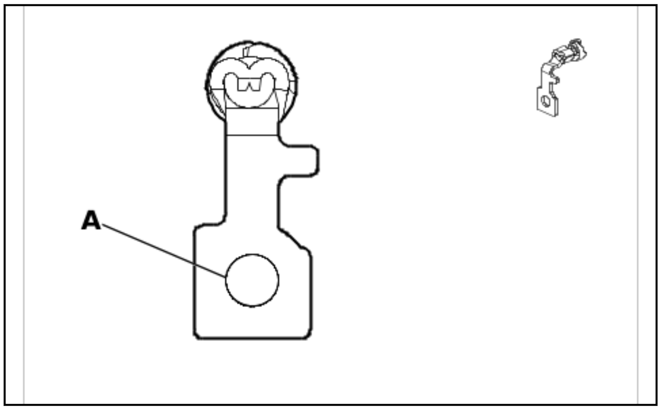
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X3 ((L84 / L87) & KW5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35	RD / YE	2	Battery Positive Voltage	I	L84/ L87

X50B Battery Distribution Engine Compartment Fuse Block X3 ((L84 / L87) & KW7)



5881244

Connector Part Information

- Harness Type: Generator Battery Jumper Cable
- OEM Connector: 84386515
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

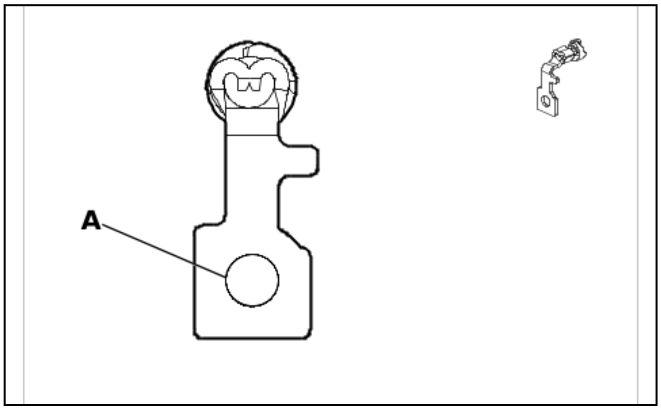
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X3 ((L84 / L87) & KW7)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35	RD / YE	2	Battery Positive Voltage	I	L84/ L87

X50B Battery Distribution Engine Compartment Fuse Block X3 (L3B)



5881244

Connector Part Information
- Harness Type: Power Steering Wiring Harness
- OEM Connector: 84386515
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

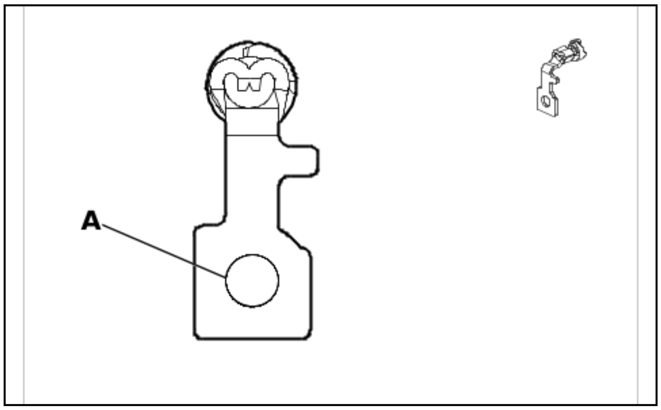
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X3 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35	RD / YE	2	Battery Positive Voltage	I	—

X50B Battery Distribution Engine Compartment Fuse Block X3 (LZ0 & KL9)



5881244

Connector Part Information

- Harness Type: Starter Solenoid Cable
- OEM Connector: 84386515
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

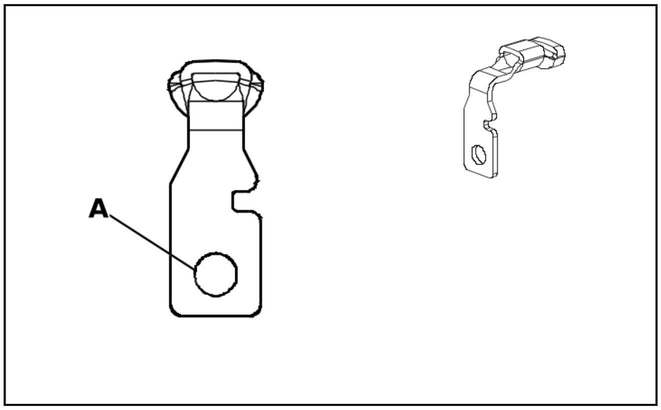
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X3 (LZ0 & KL9)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35	RD / YE	2	Battery Positive Voltage	I	LZ0

X50B Battery Distribution Engine Compartment Fuse Block X4 (C32)



5194789

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 84385485
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

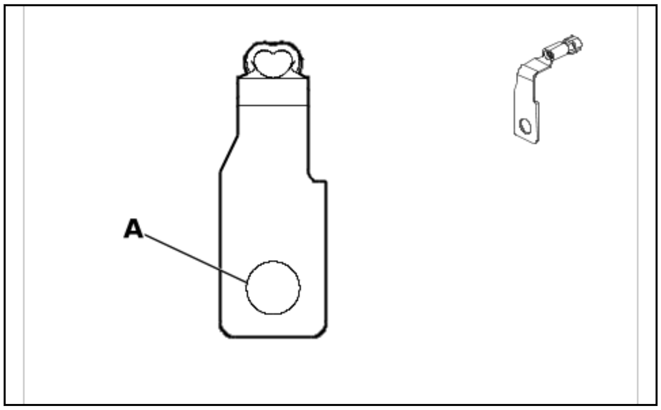
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X4 (C32)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	10	RD / GY	642	Battery Positive Voltage	I	—

X50B Battery Distribution Engine Compartment Fuse Block X5 (LZ0)



5373306

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 84472882
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

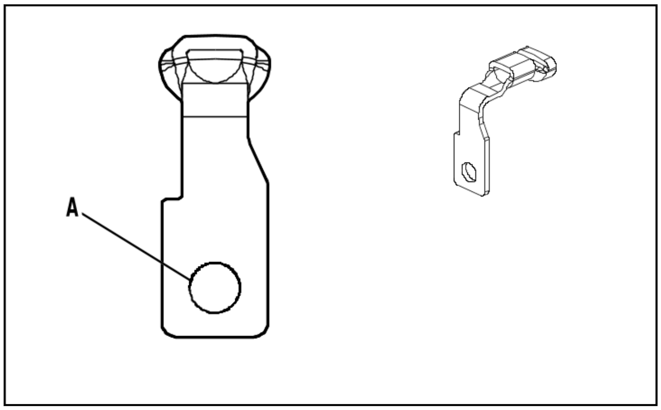
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X5 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	6	BN / BU	104	Glow Plug Control	I	—

X50B Battery Distribution Engine Compartment Fuse Block X6 (L3B / LZ0)



4994507

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 84385486
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

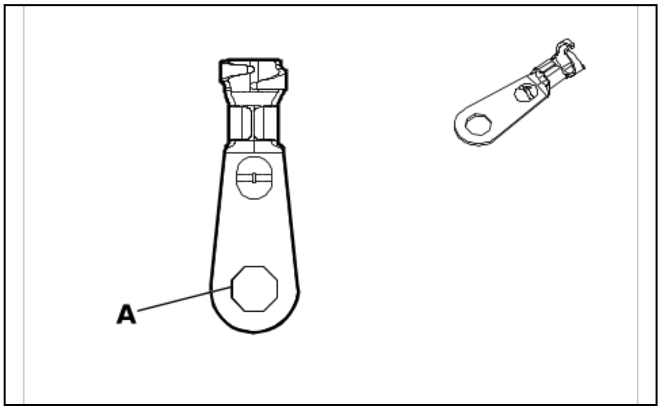
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X6 (L3B / LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	10	RD / BN	1742	Battery Positive Voltage	I	L3B
	8	RD / BN	1742	Battery Positive Voltage	I	LZ0

X50B Battery Distribution Engine Compartment Fuse Block X7 (9L7)



5920578

Connector Part Information
- Harness Type: Auxiliary Fuse Block Wiring Harness
- OEM Connector: 13624367
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

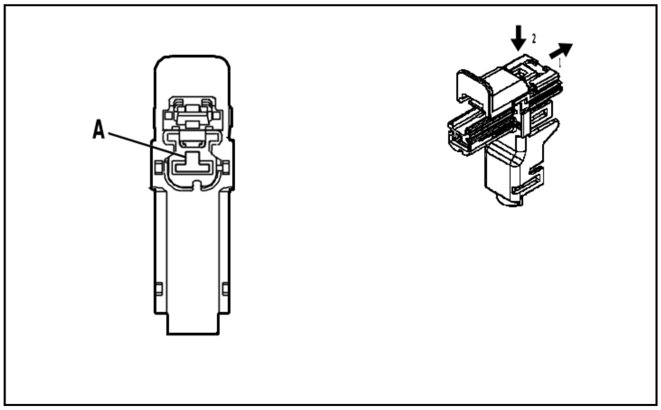
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X7 (9L7)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	10	RD / VT	542	Battery Positive Voltage	I	9L7

X50B Battery Distribution Engine Compartment Fuse Block X9



4994171

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 33297579
- Service Connector: Service by Harness - See Part Catalog
- Description: 1-Way F 6.3 Series(BU)

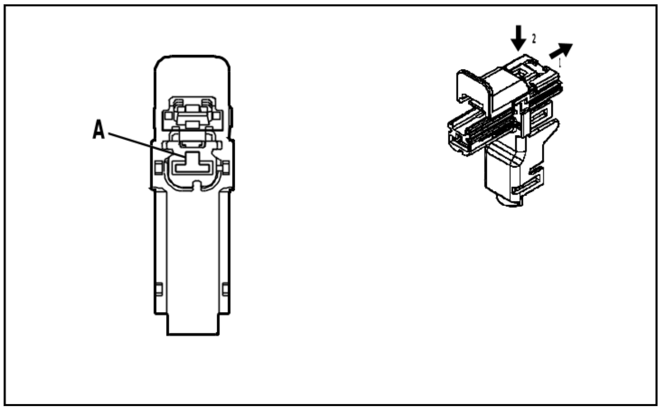
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-42 (RD)	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X9

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	5	RD / YE	1442	Battery Positive Voltage	I	—

X50B Battery Distribution Engine Compartment Fuse Block X10



4994183

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 33297578
- Service Connector: Service by Harness - See Part Catalog
- Description: 1-Way F 6.3 Series(BK)

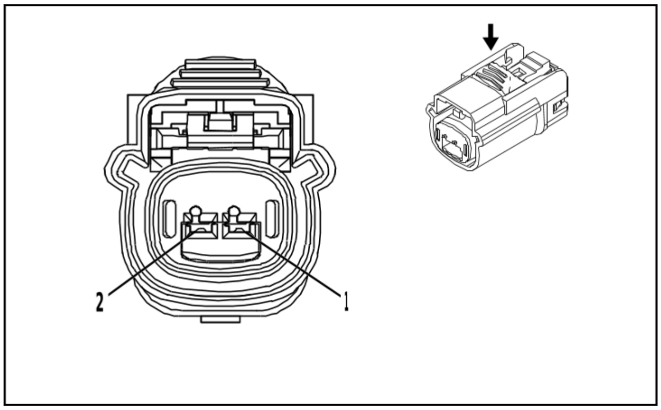
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-42 (RD)	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X10

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	6	RD / WH	1642	Battery Positive Voltage	I	—

X50B Battery Distribution Engine Compartment Fuse Block X11



4332222

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 33314786
- Service Connector: 19368124
- Description: 2-Way F 1.5 OCS Series, Sealed(BK)

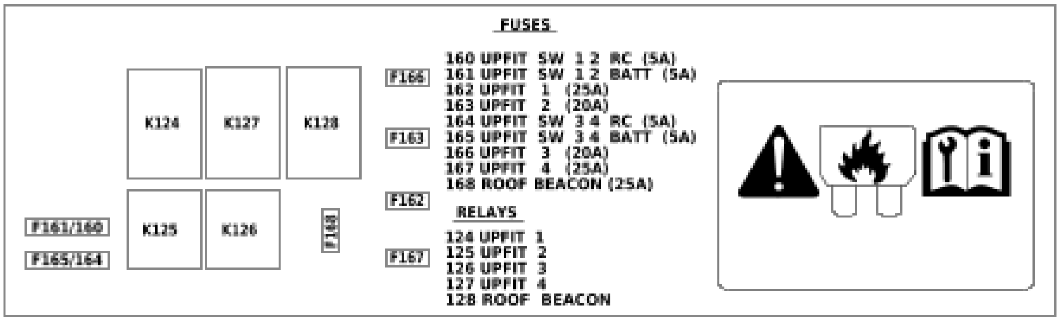
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

X50B Battery Distribution Engine Compartment Fuse Block X11

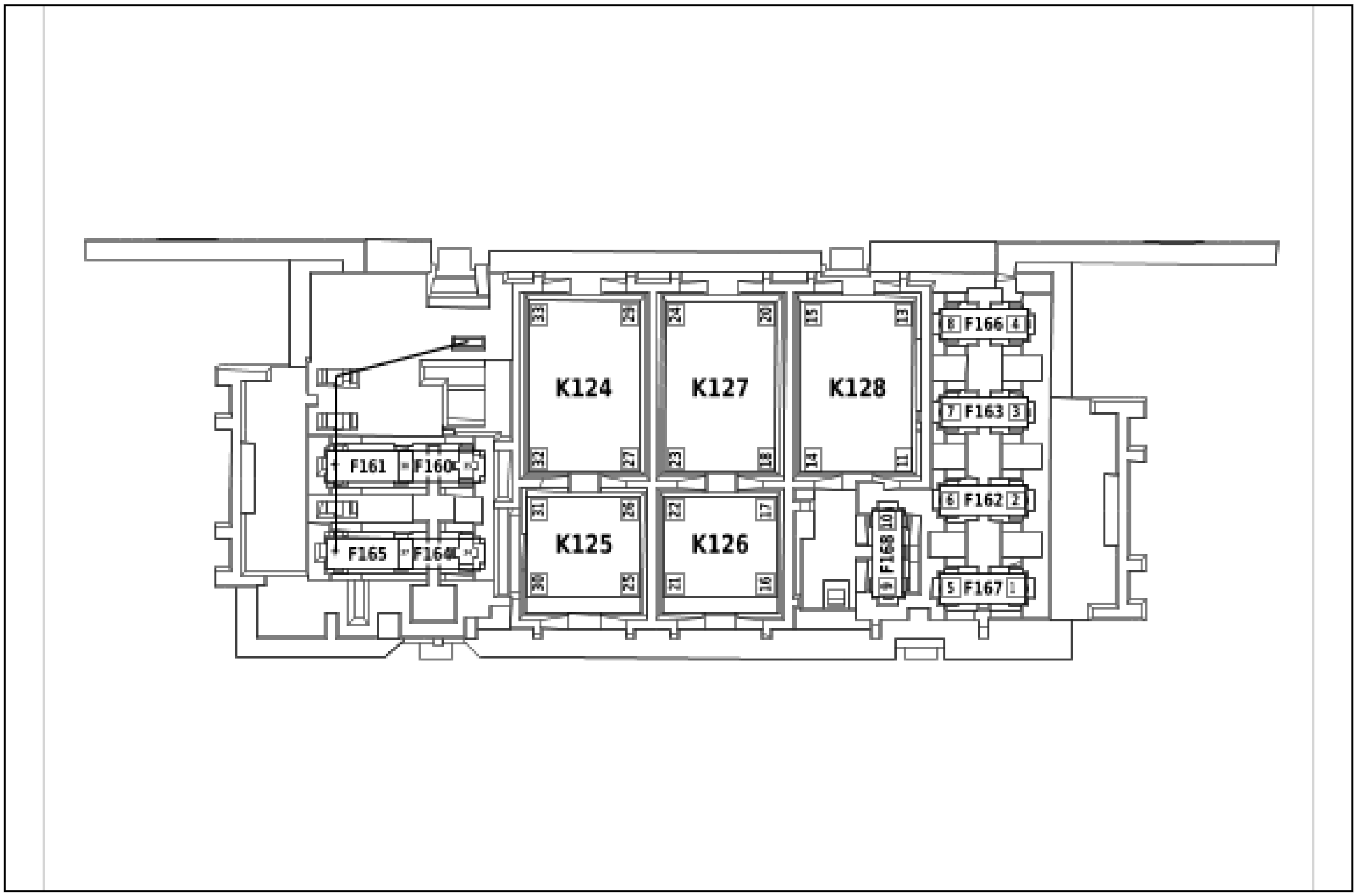
Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) RD / YE	(1) 2340	(1) Battery Positive Voltage	(1) I	(1) —
2	—	—	—	Not Occupied	—	—

X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary Label (9L7)


FUSES
160 UPFIT SW 1 2 RC (5A)
161 UPFIT SW 1 2 BATT (5A)
162 UPFIT 1 (25A)
163 UPFIT 2 (20A)
164 UPFIT SW 3 4 RC (5A)
165 UPFIT SW 3 4 BATT (5A)
166 UPFIT 3 (20A)
167 UPFIT 4 (25A)
168 ROOF BEACON (25A)
RELAYS
124 UPFIT 1
125 UPFIT 2
126 UPFIT 3
127 UPFIT 4
128 ROOF BEACON
K124
K127
K128
K125
K126
F166
F163
F162
F167
F168
F161/160
F165/164

5969422

X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary Top View (9L7)



5988611

Usage Table

No.	Device Label Name	Device Assigned Name	Rating	Description
Fuses				
F160	UPFIT SW 1 2 RC	F160DA	5A	• KR161AA Configurable/Accessory Provision Relay 1 • KR161BA Configurable/Accessory Provision Relay 2
F161	UPFIT SW 1 2 BATT	F161DA	5A	• KR161AA Configurable/Accessory Provision Relay 1 • KR161BA Configurable/Accessory Provision Relay 2
F162	UPFIT 1	F162DA	25A	• X79A Configurable/Accessory Provision Supply Connector
F163	UPFIT 2	F163DA	20A	• X79A Configurable/Accessory Provision Supply Connector
F164	UPFIT SW 3 4 RC	F164DA	5A	• KR161CA Configurable/Accessory Provision Relay 3 • KR161DA Configurable/Accessory Provision Relay 4 • KR161EA Configurable/Accessory Provision Relay 5
F165	UPFIT SW 3 4 BATT	F165DA	5A	• KR161CA Configurable/Accessory Provision Relay 3 • KR161DA Configurable/Accessory Provision Relay 4 • KR161EA Configurable/Accessory Provision Relay 5
F166	UPFIT 3	F166DA	20A	• X79A Configurable/Accessory Provision Supply Connector

No.	Device Label Name	Device Assigned Name	Rating	Description
F167	UPFIT 4	F167DA	25A	- X79A Configurable/Accessory Provision Supply Connector
F168	ROOF BEACON	F168DA	25A	- X79A Configurable/Accessory Provision Supply Connector
Relays				
K124	UPFIT 1	KR161AA Configurable/ Accessory Provision Relay 1	—	- F162DA
K125	UPFIT 2	KR161BA Configurable/ Accessory Provision Relay 2	—	- F163DA
K126	UPFIT 3	KR161CA Configurable/ Accessory Provision Relay 3	—	- F166DA
K127	UPFIT 4	KR161DA Configurable/ Accessory Provision Relay 4	—	- F167DA
K128	ROOF BEACON	KR161EA Configurable/ Accessory Provision Relay 5	—	- F168DA

X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary (9L7)

—

Connector Part Information
- Harness Type: Auxiliary Fuse Block Wiring Harness
- OEM Connector: 33323307
- Service Connector: Service by Component Assembly - See Part Catalog
- Description: Wire Entry Fuse Block

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19332366	J-35616-4A (PU)	J-38125-212
II	Not required	J-35616-22 (RD)	No Tool Required

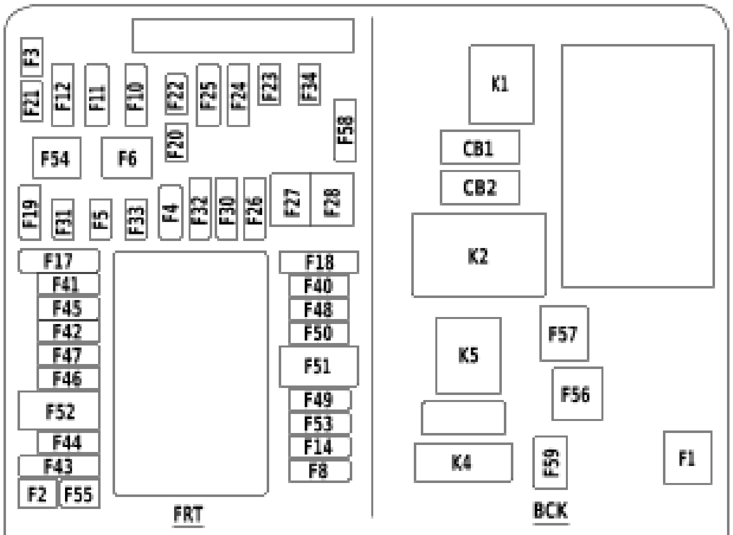
X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary (9L7)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) YE / BN	(1) 10734	(1) Upfitter Accessory 4 Supply Voltage	(1) I	(1) —
(2) 2	(2) 2.5	(2) BU	(2) 10731	(2) Upfitter Accessory 1 Supply Voltage	(2) I	(2) —
(3) 3	(3) 2.5	(3) GY / BK	(3) 10732	(3) Upfitter Accessory 2 Supply Voltage	(3) I	(3) —
(4) 4	(4) 2.5	(4) BN / WH	(4) 10733	(4) Upfitter Accessory 3 Supply Voltage	(4) I	(4) —
(5) 5	(5) 2.5	(5) YE	(5) 10729	(5) Upfitter Accessory Fuse 4 Supply Voltage	(5) I	(5) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(6) 6	(6) 2.5	(6) BU / GN	(6) 10726	(6) Upfitter Accessory Fuse 1 Supply Voltage	(6) I	(6) —
(7) 7	(7) 2.5	(7) GY	(7) 10727	(7) Upfitter Accessory Fuse 2 Supply Voltage	(7) I	(7) —
(8) 8	(8) 2.5	(8) BN	(8) 10728	(8) Upfitter Accessory Fuse 3 Supply Voltage	(8) I	(8) —
(9) 9	(9) 2.5	(9) VT / BU	(9) 10735	(9) Upfitter Accessory 5 Supply Voltage	(9) I	(9) —
(10) 10	(10) 2.5	(10) VT	(10) 10730	(10) Upfitter Accessory Fuse 5 Supply Voltage	(10) I	(10) —
(11) 11	(11) 2.5	(11) VT	(11) 10730	(11) Upfitter Accessory Fuse 5 Supply Voltage	(11) I	(11) —
(13) 13	(13) 0.35	(13) VT / BN	(13) 10723	(13) Upfitter Accessory Relay 3 Coil Supply Voltage	(13) I	(13) —
(14) 14	(14) 0.35	(14) GY / VT	(14) 10720	(14) Upfitter Accessory Relay 5 Coil Control	(14) I	(14) —
(15) 15	(15) 2.5	(15) RD / VT	(15) 542	(15) Battery Positive Voltage	(15) I	(15) —
(16) 16	(16) 2.5	(16) RD / VT	(16) 542	(16) Battery Positive Voltage	(16) I	(16) —
(17) 17	(17) 0.35	(17) GN / BN	(17) 10718	(17) Upfitter Accessory Relay 3 Coil Control	(17) I	(17) —
(18) 18	(18) 2.5	(18) YE	(18) 10729	(18) Upfitter Accessory Fuse 4 Supply Voltage	(18) I	(18) —
(20) 20	(20) 0.35	(20) VT / BN	(20) 10723	(20) Upfitter Accessory Relay 3 Coil Supply Voltage	(20) I	(20) —
(21) 21	(21) 0.35	(21) VT / BN	(21) 10723	(21) Upfitter Accessory Relay 3 Coil Supply Voltage	(21) I	(21) —
(22) 22	(22) 2.5	(22) BN	(22) 10728	(22) Upfitter Accessory Fuse 3 Supply Voltage	(22) I	(22) —
(23) 23	(23) 0.35	(23) WH / YE	(23) 10719	(23) Upfitter Accessory Relay 4 Coil Control	(23) I	(23) —
(24) 24	(24) 2.5	(24) RD / VT	(24) 542	(24) Battery Positive Voltage	(24) I	(24) —
(25) 25	(25) 2.5	(25) RD / VT	(25) 542	(25) Battery Positive Voltage	(25) I	(25) —
(26) 26	(26) 0.35	(26) VT / GY	(26) 10717	(26) Upfitter Accessory Relay 2 Coil Control	(26) I	(26) —
(27) 27	(27) 2.5	(27) BU / GN	(27) 10726	(27) Upfitter Accessory Fuse 1 Supply Voltage	(27) I	(27) —
(29) 29	(29) 0.35	(29) BU / VT	(29) 10721	(29) Upfitter Accessory Relay 1 Coil Supply Voltage	(29) I	(29) —
(30) 30	(30) 0.35	(30) BU / VT	(30) 10721	(30) Upfitter Accessory Relay 1 Coil Supply Voltage	(30) I	(30) —
(31) 31	(31) 2.5	(31) GY	(31) 10727	(31) Upfitter Accessory Fuse 2 Supply Voltage	(31) I	(31) —
(32) 32	(32) 0.35	(32) BU / WH	(32) 10716	(32) Upfitter Accessory Relay 1 Coil Control	(32) I	(32) —
(33) 33	(33) 2.5	(33) RD / VT	(33) 542	(33) Battery Positive Voltage	(33) I	(33) —
(34) 34	(34) 0.5	(34) VT / BK	(34) 339	(34) Run/Crank Ignition 1 Voltage	(34) I	(34) —
(35) 35	(35) 0.5	(35) VT / BK	(35) 339	(35) Run/Crank Ignition 1 Voltage	(35) I	(35) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(36) 36	(36) 10	(36) RD / VT	(36) 542	(36) Battery Positive Voltage	(36) II	(36) —
(37) 37	(37) 0.35	(37) VT / BN	(37) 10723	(37) Upfitter Accessory Relay 3 Coil Supply Voltage	(37) I	(37) —
(38) 38	(38) 0.35	(38) BU / VT	(38) 10721	(38) Upfitter Accessory Relay 1 Coil Supply Voltage	(38) I	(38) —
(39) 39	(39) 2.5	(39) RD / VT	(39) 542	(39) Battery Positive Voltage	(39) I	(39) —
(40) 40	(40) 2.5	(40) RD / VT	(40) 542	(40) Battery Positive Voltage	(40) I	(40) —
(41) 41	(41) 2.5	(41) RD / VT	(41) 542	(41) Battery Positive Voltage	(41) I	(41) —
(42) 42	(42) 2.5	(42) RD / VT	(42) 542	(42) Battery Positive Voltage	(42) I	(42) —
(43) 43	(43) 2.5	(43) RD / VT	(43) 542	(43) Battery Positive Voltage	(43) I	(43) —

X51R Instrument Panel Wiring Harness Junction Block - Right Label


F3
F21
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F46
F52
F44
F43
F2
F55
F18
F40
F48
F50
F51
F49
F53
F14
F8
FRT
K1
CB1
CB2
K2
K5
F57
F56
K4
F59
F1
BCK

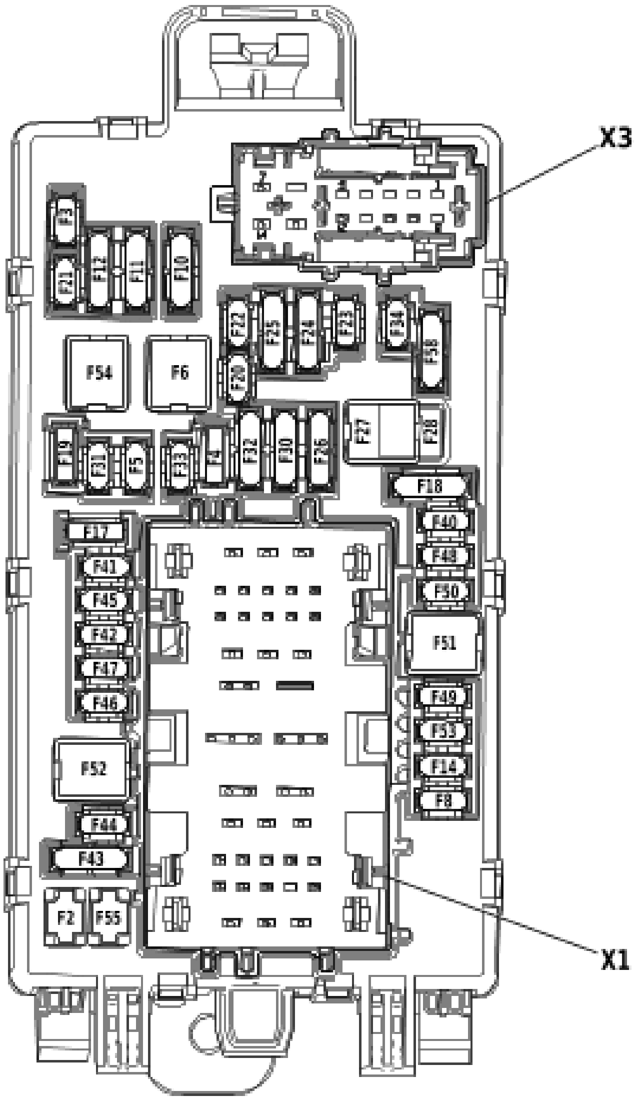
CB1 -15A-APO1
CB2-NOT USED
CB4-NOT USED
F1 -30A-RF RR WINDOW MTR
F2-30A-LF LR WINDOW MTR
F3-NOT USED
F4-15A-ELM 2
F5-15A-HDLM IPC HUD DSPLY/HMDTY/ICS
F6-40A-FRT BLWR
F8-15A-LF WINDOW SWITCH
F10-15A-STR TILT/UVM
F11 -10A-VPM/OHC CAMERA
F12-10A-CGM/TCP/COL LCK/DMS
F14-NOT USED
F17-2A-STR WHL CNTRL

F18-NOT USED
F19-NOT USED
F20-NOT USED
F21 -NOT USED
F22-7.5A-HTD WHL
F23-NOT USED
F24-NOT USED
F25-15A-SPOT LAMP LT/RT
F26-10A-SEO/USB CHARGE
F27-50A-APO/RAP
F28-50A-APO/BATT
F30-10A-SDM/AOS
F31 -20A-BCM 3
F32-15A-RFA WCM AUX JACK/ CSM AUX JACK/TBCS
F33-30A-BCM 4
F34-NOT USED
F40-NOT USED
F41 -NOT USED
F42-10A-EPBS
F43-NOT USED

F44-10A-SIB
F45-15A-RADIO LO
F46-NOT USED
F47-NOT USED
F48-20A-TCM
F49-15A-BCM1
F50-NOT USED
F51 -40A-BATT 1
F52-40A-BATT 2
F53-NOT USED
F54-40A-SUNROOF
F55-30A-DRVR PWR SEAT
F56-40A-DC/DC CONVERTER BATT 1
F57-40A-DC/DC CONVERTER BATT 2
F58-NOT USED
F59-NOT USED
K1 -NOT USED
K2-RAP/ACCY1
K4-NOT USED
K5-NOT USED

6791659

X51R Instrument Panel Wiring Harness Junction Block - Right Top View


X3
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F8
F44
F43
F2
F55
X1

5041376

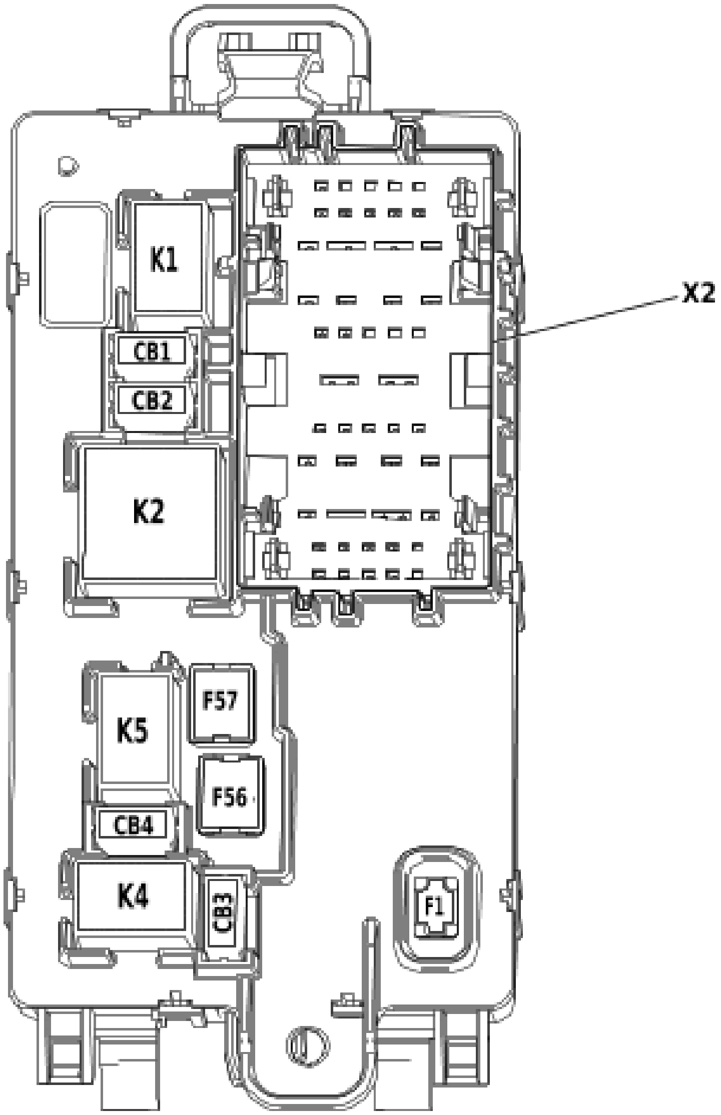
Usage Table

No.	Device Label Name	Device Assigned Name	Rating	Description
Fuses				
F2	LF LR WINDOW MTR	F2DR	30A	• M74D Front Side Door Window Regulator Motor - Driver • S79LR Rear Side Door Window Switch - Left
F3	NOT USED	F3DR	—	• Not Used
F4	ELM 2	F4DR	15A	• K219 Lighting Control Module
F5	HDLM IPC HUD DSPLY/ HMDTY/ICS	F5DR	15A	• K219 Lighting Control Module
F6	FRT BLWR	F6DR	40A	• M8 Blower Motor

No.	Device Label Name	Device Assigned Name	Rating	Description
F8	LF WINDOW SWITCH	F8DR	15A	• S79D Front Side Door Window Control Switch - Driver • S32R Rear Seat Heater Switch (KA6)
F10	STR TILT/UVM	F10DR	15A	• K99 Steering Column Tilt Wheel and Telescope Control Module (N38) • K219 Lighting Control Module
F11	VPM/OHC CAMERA	F11DR	10A	• A103 Roof Console • B174W Front View Camera - Windshield (UGN / UHY) • K157 Video Processing Module (UV2)
F12	CGM/TCP/COL LCK/DMS	F12DR	10A	• K56 Serial Data Gateway Module • K60 Column Lock Module • K73 Telematic Control Module (UDA / UE1) • K180 Driver Monitoring System Module (UKL)
F14	NOT USED	F14DR	—	• Not Used
F17	STR WHL CNTRL	F17DR	2A	• S70L Cruise Control Switch (KI3) • S70R Radio Control Switch - Steering Wheel (KI3)
F18	NOT USED	F18DR	—	• Not Used
F19	NOT USED	F19DR	—	• Not Used
F20	NOT USED	F20DR	—	• Not Used
F21	NOT USED	F21DR	—	• Not Used
F22	HTD WHL	F22DR	7.5A	• K32 Steering Wheel Heating Control Module (KI3 - UKL) • K180S Driver Monitoring System Module - Steering Wheel (KI3 and UKL)
F23	NOT USED	F23DR	—	• Not Used
F24	NOT USED	F24DR	—	• Not Used
F25	SPOT LAMP LT/RT	F25DR	15A	• X219 (5W4) • X220 (5W4)
F26	SEO/USB CHARGE	F26DR	10A	• X92CD Dual Charge Only Receptacle - Floor Console Rear (D07 and UBI) • X92FSR Dual Charge Only Receptacle - Front Center Seat Rear Cover (AZ3 and UBI)
F27	APO/RAP	F27DR	50A	• Not Used
F28	APO/BATT	F28DR	50A	• Not Used
F30	SDM/AOS	F30DR	10A	• A22 Radio Control (IOK) • A26 Heater and Air Conditioning User Interface Control - Front • K36 Restraints Control Module • K85P Restraints Occupant Classification System Module - Passenger • K179 Automated Driving Mapping Module (UKL) • P16 Instrument Panel Cluster Control Module • P29 Head-Up Display (UV6)
F31	BCM 3	F31DR	20A	• K9 Body Control Module

No.	Device Label Name	Device Assigned Name	Rating	Description
F32	RFA WCM AUX JACK/CSM AUX JACK/TBCS	F32DR	15A	• A11 Radio (IOK) • K77 Remote Function Actuator Module • S76 Trailer Brake Control Switch • T22 Wireless Accessory Charging Module (K4C) • X83B Audio/Video Receptacle (IOR / D07) • X92CF USB 2 Port Receptacle - Floor Console - Front (GA4 / GFG / GFW / GFY) • X92IP USB 2 Port Receptacle - Instrument Panel
F33	BCM 4	F33DR	30A	• K9 Body Control Module
F34	NOT USED	F34DR	—	• Not Used
F40	NOT USED	F40DR	—	• Not Used
F41	NOT USED	F41DR	—	• Not Used
F42	EPBS	F42DR	10A	• S91 Parking Brake Control Switch
F43	NOT USED	F43DR	—	• Not Used
F44	SIB	F44DR	10A	• K212 Gear Shift Control Module (MHS / MQC)
F45	RADIO LO	F45DR	15A	• A11 Radio (IOR)
F46	NOT USED	F46DR	—	• Not Used
F47	NOT USED	F47DR	—	• Not Used
F48	TCM	F48DR	20A	• K71 Transmission Control Module
F49	BCM 1	F49DR	15A	• K9 Body Control Module
F50	NOT USED	F50DR	—	• Not Used
F51	BATT 1	F51DR	40A	• Not Used
F52	BATT 2	F52DR	40A	• Not Used
F53	NOT USED	F53DR	—	• Not Used
F54	SUNROOF	F54DR	40A	• K61 Sunroof Control Module (CF5)
F55	DRVR PWR SEAT	F55DR	30A	• K40D Driver Seat Adjuster Memory Module (A45) • S64D Front Seat Adjuster Switch - Driver (-A45)
F58	NOT USED	F58DR	—	• Not Used
F59	NOT USED	F59DR	—	• Not Used

X51R Instrument Panel Wiring Harness Junction Block - Right Bottom View



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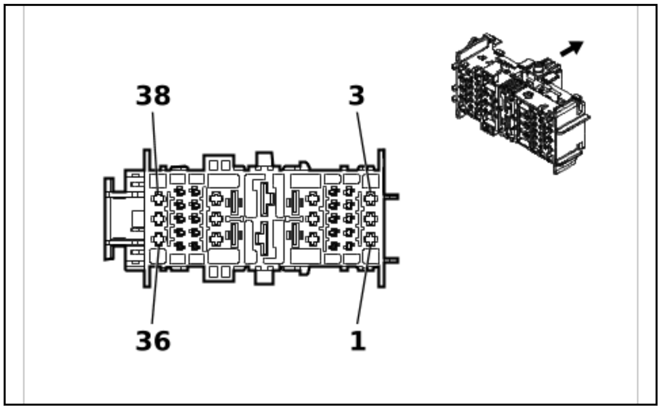
Usage Table

No.	Device Label Name	Device Assigned Name	Rating	Description
Fuses				
F1	RF RR WINDOW MTR	F1DR	30A	• M74P Front Side Door Window Regulator Motor - Passenger (AEF) • S79P Front Side Door Window Switch - Passenger (AED / AEF) • S79RR Rear Side Door Window Switch - Right
F56	DC/DC CONVERTER BATT 1	F56DR	40A	• T19 Multifunction Power Supply Transformer

No.	Device Label Name	Device Assigned Name	Rating	Description
F57	DC/DC CONVERTER BATT 2	F57DR	40A	• T19 Multifunction Power Supply Transformer
Circuit Breakers				
CB1	APO 1	CB1DR	15A	• X80G Accessory Power Receptacle - Instrument Panel (KC5)
CB2	NOT USED	—	—	• Not Used
CB3	NOT USED	—	—	• Not Used
CB4	NOT USED	—	—	• Not Used
Relays				
K1	NOT USED	—	—	• Not Used
K2	RAP/ACCY 1	KR76 Accessory Time Delay Cutoff Relay	—	• CB1DR • F26DR
K4	NOT USED	—	—	• Not Used
K5	NOT USED	—	—	• Not Used

X51R Instrument Panel Wiring Harness Junction Block - Right X1



5402140

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 35729471
- Service Connector: 85791494
- Description: 38-Way F 1.5, 2.8, 6.3 MCP, 9.5 MCON-LL Series(BU)

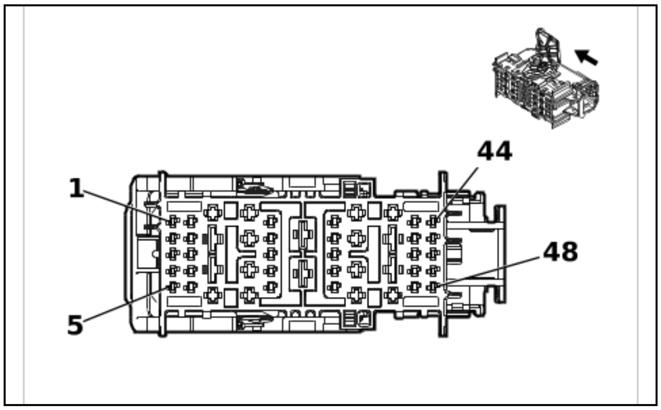
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19332366	J-35616-35 (VT)	J-38125-212
II	19371175	J-35616-2A (GY)	EL-38125-560A
III	84764078	J-35616-42 (RD)	J-38125-221
IV	84764079	J-35616-45 (YE)	J-38125-11A
V	Not required	J-35616-22 (RD)	No Tool Required

X51R Instrument Panel Wiring Harness Junction Block - Right X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 1.5	(3) RD / GN	(3) 1840	(3) Battery Positive Voltage	(3) I	(3) —
(4) 4	(4) 0.75	(4) RD / VT	(4) 2640	(4) Battery Positive Voltage	(4) II	(4) —
(5) 5	(5) 0.5	(5) RD / GN	(5) 4440	(5) Battery Positive Voltage	(5) II	(5) —
(6) 6	(6) 0.35	(6) VT	(6) 4701	(6) Retained Accessory Power Control	(6) II	(6) —
7 - 13	—	—	—	Not Occupied	—	—
(14) 14	(14) 0.5	(14) RD / VT	(14) 1640	(14) Battery Positive Voltage	(14) I	(14) —
15 - 16	—	—	—	Not Occupied	—	—
(17) 17	(17) 2.5	(17) RD / GN	(17) 2173	(17) 12V Regulated Supply Voltage 2	(17) III	(17) —
(18) 18	(18) 2.5	(18) RD / YE	(18) 8140	(18) Battery Positive Voltage	(18) III	(18) —
(19) 19	(19) 5	(19) RD / YE	(19) 1442	(19) Battery Positive Voltage	(19) IV	(19) —
(20) 20	(20) 10	(20) RD / WH	(20) 342	(20) Battery Positive Voltage	(20) V	(20) —
(21) 21	(21) 2.5	(21) RD / YE	(21) 2172	(21) 12V Regulated Supply Voltage 1	(21) III	(21) —
(22) 22	(22) 2.5	(22) RD / WH	(22) 8040	(22) Battery Positive Voltage	(22) III	(22) —
(23) 23	(23) 2.5	(23) RD / GY	(23) 4840	(23) Battery Positive Voltage	(23) I	(23) —
(24) 24	(24) 2.5	(24) RD / BN	(24) 4240	(24) Battery Positive Voltage	(24) I	(24) —
(25) 25	(25) 2.5	(25) RD / BU	(25) 3240	(25) Battery Positive Voltage	(25) I	(25) —
26	—	—	—	Not Occupied	—	—
(27) 27	(27) 0.5	(27) RD / WH	(27) 5440	(27) Battery Positive Voltage	(27) II	(27) —
28 - 29	—	—	—	Not Occupied	—	—
(30) 30	(30) 0.5	(30) RD / BU	(30) 1240	(30) Battery Positive Voltage	(30) II	(30) —
31 - 35	—	—	—	Not Occupied	—	—
(36) 36	(36) 2.5	(36) RD / YE	(36) 5040	(36) Battery Positive Voltage	(36) I	(36) —
(37) 37	(37) 2.5	(37) RD / GY	(37) 3540	(37) Battery Positive Voltage	(37) I	(37) —
38	—	—	—	Not Occupied	—	—

X51R Instrument Panel Wiring Harness Junction Block - Right X2



5403539

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35264616
- Service Connector: 19371180
- Description: 48-Way F 1.5, 2.8, 6.3 CTS Series(GN)

Terminal Part Information

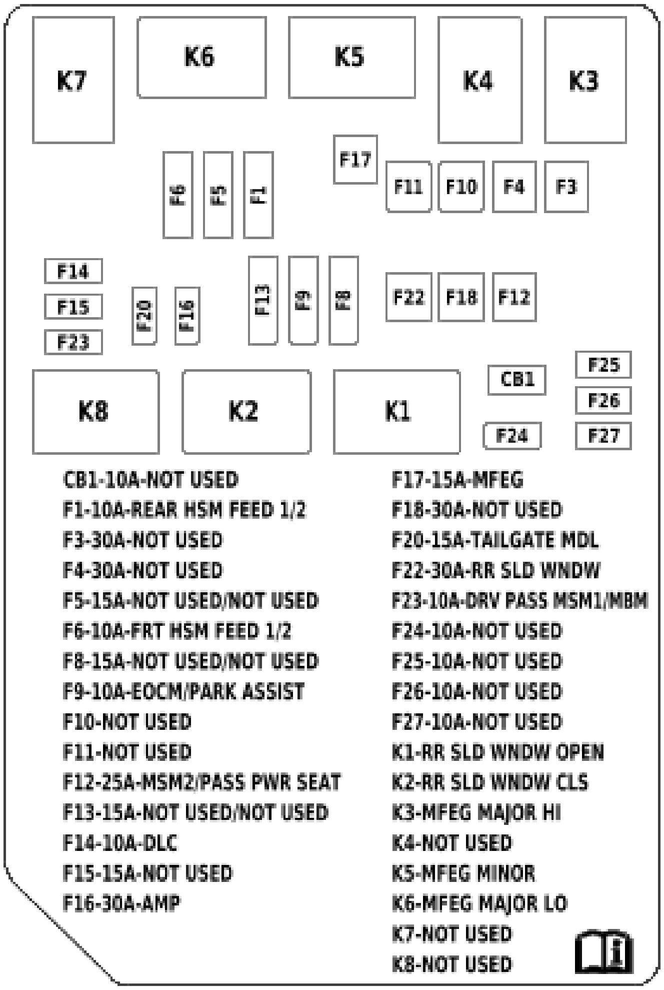
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19369711	J-35616-14 (GN)	J-38125-557
II	84764078	J-35616-42 (RD)	J-38125-221
III	84779405	J-35616-35 (VT)	J-38125-212

X51R Instrument Panel Wiring Harness Junction Block - Right X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 1050	(1) Ground	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) GY / GN	(3) 4083	(3) Retained Accessory Power Relay 2 Coil Control	(3) I	(3) —
4 - 7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.5	(8) RD / BK	(8) 7740	(8) Battery Positive Voltage	(8) I	(8) —
(9) 9	(9) 0.5	(9) RD / YE	(9) 240	(9) Battery Positive Voltage	(9) I	(9) —
10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.75	(11) RD / GN	(11) 10240	(11) Battery Positive Voltage Police	(11) III	(11) —
12 - 13	—	—	—	Not Occupied	—	—
(14) 14	(14) 0.35 (14) 0.5	(14) RD / YE (14) RD / YE	(14) 3040 (14) 3040	(14) Battery Positive Voltage (14) Battery Positive Voltage	(14) III	(14) — (14) —
(15) 15	(15) 0.5	(15) RD / BN	(15) 10040	(15) Battery Positive Voltage	(15) III	(15) —
(16) 16	(16) 0.75	(16) RD / VT	(16) 4640	(16) Battery Positive Voltage	(16) III	(16) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
17	—	—	—	Not Occupied	—	—
(18) 18	(18) 0.35	(18) RD / BN	(18) 4940	(18) Battery Positive Voltage	(18) III	(18) —
19	—	—	—	Not Occupied	—	—
(20) 20	(20) 0.75	(20) RD / GY	(20) 10340	(20) Battery Positive Voltage Police	(20) I	(20) —
21 - 23	—	—	—	Not Occupied	—	—
(24) 24	(24) 4	(24) RD / GY	(24) 1740	(24) Battery Positive Voltage	(24) II	(24) —
(25) 25	(25) 2.5	(25) RD / BU	(25) 4540	(25) Battery Positive Voltage	(25) II	(25) —
26	—	—	—	Not Occupied	—	—
(27) 27	(27) 0.5	(27) RD / YE	(27) 2340	(27) Battery Positive Voltage	(27) I	(27) —
(28) 28	(28) 0.5	(28) RD / WH	(28) 1340	(28) Battery Positive Voltage	(28) I	(28) —
29 - 30	—	—	—	Not Occupied	—	—
(31) 31	(31) 1.5	(31) VT	(31) 1001	(31) Retained Accessory Power Ignition Voltage	(31) III	(31) —
(32) 32	(32) 2	(32) RD / BU	(32) 2540	(32) Battery Positive Voltage	(32) III	(32) —
(33) 33	(33) 0.5	(33) RD / BK	(33) 7140	(33) Battery Positive Voltage	(33) III	(33) —
(34) 34	(34) 1	(34) RD / GY	(34) 2140	(34) Battery Positive Voltage	(34) III	(34) —
(35) 35	(35) 0.5	(35) RD / GN	(35) 1540	(35) Battery Positive Voltage	(35) III	(35) —
36	—	—	—	Not Occupied	—	—
(37) 37	(37) 1	(37) RD / GY	(37) 2840	(37) Battery Positive Voltage	(37) II	(37) —
38 - 40	—	—	—	Not Occupied	—	—
(41) 41	(41) 0.5	(41) RD / GN	(41) 5140	(41) Battery Positive Voltage	(41) I	(41) —
(42) 42	(42) 0.35	(42) RD / YE	(42) 4340	(42) Battery Positive Voltage	(42) I	(42) —
43 - 44	—	—	—	Not Occupied	—	—
(45) 45	(45) 0.5	(45) RD / WH	(45) 2740	(45) Battery Positive Voltage	(45) I	(45) —
46 - 48	—	—	—	Not Occupied	—	—

X53AF Body Wiring Harness Junction Block Label


K7
K6
K5
K4
K3
F17
F6
F5
F1
F11
F10
F4
F3
F14
F15
F23
F20
F16
F13
F9
F8
F22
F18
F12
F25
F26
F27
CB1
F24
K8
K2
K1

CB1-10A-NOT USED
F1-10A-REAR HSM FEED 1/2
F3-30A-NOT USED
F4-30A-NOT USED
F5-15A-NOT USED/NOT USED
F6-10A-FRT HSM FEED 1/2
F8-15A-NOT USED/NOT USED
F9-10A-EOCM/PARK ASSIST
F10-NOT USED
F11-NOT USED
F12-25A-MSM2/PASS PWR SEAT
F13-15A-NOT USED/NOT USED
F14-10A-DLC
F15-15A-NOT USED
F16-30A-AMP
F17-15A-MFEG
F18-30A-NOT USED
F20-15A-TAILGATE MDL
F22-30A-RR SLD WNDW
F23-10A-DRV PASS MSM1/MBM
F24-10A-NOT USED
F25-10A-NOT USED
F26-10A-NOT USED
F27-10A-NOT USED
K1-RR SLD WNDW OPEN
K2-RR SLD WNDW CLS
K3-MFEG MAJOR HI
K4-NOT USED
K5-MFEG MINOR
K6-MFEG MAJOR LO
K7-NOT USED
K8-NOT USED

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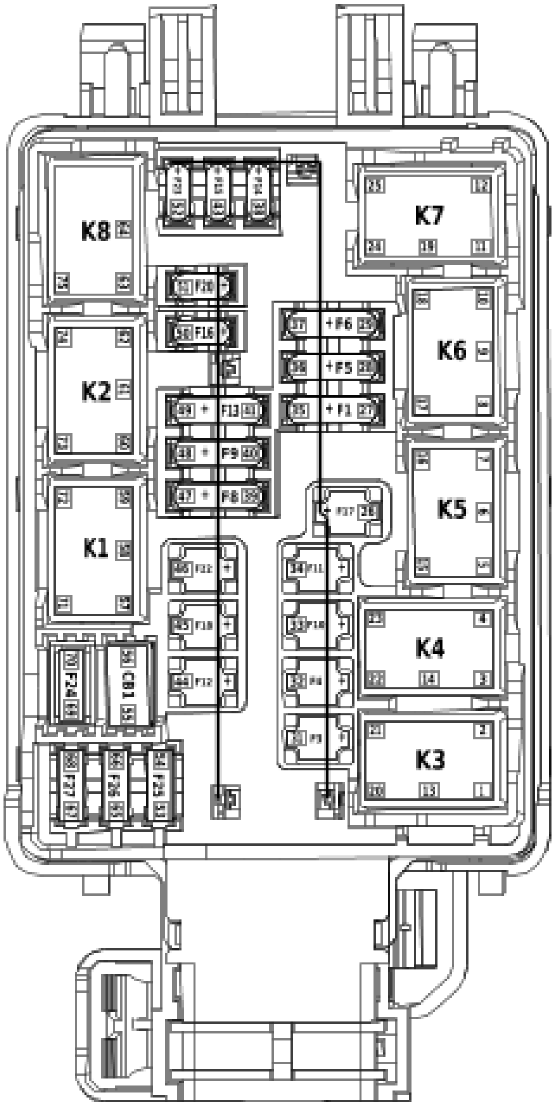
X53AF Body Wiring Harness Junction Block Top View


K8
K7
K6
K2
K5
K1
K4
K3
F20
F16
F6
F5
F1
F13
F9
F8
F37
F22
F11
F18
F10
F12
F4
F3
F24
CB1
F27
F26
F25

6094371

Usage Table

No.	Device Label Name	Device Assigned Name	Rating	Description
Fuses				
F1	REAR HSM FEED 1/2	F1DL	10A	• K29R Rear Seat Heater Control Module (KA6)
F3	NOT USED	F3DL	30A	• Not Used
F4	NOT USED	F4DL	30A	• Not Used
F5	NOT USED/NOT USED	F5DL	15A	• Not Used
F6	FRT HSM FEED 1/2	F6DL	10A	• K29FV Front Seat Heater Vent Control Module (KA1 / KQV)

No.	Device Label Name	Device Assigned Name	Rating	Description
F8	NOT USED/NOT USED	F8DL	15A	- Not Used
F9	EOCM/PARK ASSIST	F9DL	10A	- K124 Image Processing Module (UGN) - K182 Parking Assist Control Module (UD5 / UD7)
F10	NOT USED	F10DL	30A	- Not Used
F11	NOT USED	F11DL	30A	- Not Used
F12	MSM2/PASS PWR SEAT	F12DL	25A	- K40P Passenger Seat Adjuster Memory Module (AKE) - S64P Front Seat Adjuster Switch - Passenger (A7K - AKE)
F13	NOT USED/NOT USED	F13DL	15A	- Not Used
F14	DLC	F14DL	10A	- X84 Data Link Connector
F15	NOT USED	F15DL	15A	- Not Used
F16	AMP	F16DL	30A	- T3 Audio Amplifier (UQA)
F17	MFEG	F17DL	15A	- KR191G Pickup Box Endgate Latch Relay - Ground (QT5 - QK2) - KR192 Pickup Box Auxiliary Endgate Latch Relay (QK2 and QT5)
F18	NOT USED	F18DL	30A	- Not Used
F20	TAILGATE MDL	F20DL	15A	- K194 Rear Gate Module (QT6)
F22	RR SLD WNDW	F22DL	30A	- KR206C Rear Sliding Window Close Relay (A48) - KR206O Rear Sliding Window Open Relay (A48)
F23	DRV PASS MSM1/MBM	F23DL	10A	- K104D Front Seat Bladder Control Module - Driver (AVK - AF6) - K104DP Front Seat Bladder Control Module - Driver Primary (AF6) - K104DS Front Seat Bladder Control Module - Driver Secondary (AF6) - K40D Front Seat Adjuster Switch - Driver (A45) - K104P Front Seat Bladder Control Module - Passenger (AVU - AKE) - K104PP Front Seat Bladder Control Module - Passenger Primary (AKE) - K104PS Front Seat Bladder Control Module - Passenger Secondary (AKE) - K40P Passenger Seat Adjuster Memory Module (AKE) - S64D Front Seat Adjuster Switch - Driver (A45) - S64P Front Seat Adjuster Switch - Passenger (AKE) - S65D Front Seat Lumbar Switch - Driver (AVK - A45) - S65P Front Seat Lumbar Switch - Passenger (A7K - AVU - AKE)
F24	NOT USED	F24DL	10A	- Not Used
F25	NOT USED	F25DL	10A	- Not Used
F26	NOT USED	F26DL	10A	- Not Used
F27	NOT USED	F27DL	10A	- Not Used
Circuit Breakers				
CB1	NOT USED	CB1DL	10A	- Not Used

No.	Device Label Name	Device Assigned Name	Rating	Description
Relays				
K1	RR SLD WNDW OPEN	KR206O Rear Sliding Window Open Relay	—	• M63 Rear Sliding Window Motor (A48)
K2	RR WNDW CLS	KR206C Rear Sliding Window Close Relay	—	• M63 Rear Sliding Window Motor (A48)
K3	MFEG MAJOR HI	KR191G Pickup Box Endgate Latch Relay - Ground	—	• A99L Pickup Box Endgate Latch - Left (QK2 and QT5) • A99R Pickup Box Endgate Latch - Right (QK2 and QT5) • M14A Pickup Box Endgate Lock Actuator (QK1 and QT5)
K4	NOT USED	—	—	• Not Used
K5	MFEG MINOR	KR192 Pickup Box Auxiliary Endgate Latch Relay	—	• A100L Pickup Box Auxiliary Endgate Latch - Left (QK2 and QT5) • A100R Pickup Box Auxiliary Endgate Latch - Right (QK2 and QT5)
K6	MFEG MAJOR LO	KR191S Pickup Box Endgate Latch Relay - Supply Voltage	—	• A99L Pickup Box Endgate Latch - Left (QK2 and QT5) • A99R Pickup Box Endgate Latch - Right (QK2 and QT5) • M14A Pickup Box Endgate Lock Actuator (QK1 and QT5)
K7	NOT USED	—	—	• Not Used
K8	NOT USED	—	—	• Not Used

X53AF Body Wiring Harness Junction Block

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Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 35232561
- Service Connector: Service by Component Assembly - See Part Catalog
- Description: Wire Entry Fuse Block

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13575574	J-35616-5 (PU)	J-38125-215A
II	13578850	J-35616-5 (PU)	J-38125-215A
III	19332366	J-35616-35 (VT)	J-38125-212
IV	Not required	J-35616-22 (RD)	No Tool Required

X53AF Body Wiring Harness Junction Block

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) WH / GN	(1) 7728	(1) Major Endgate High Relay Control	(1) III	(1) —
(2) 2	(2) 1	(2) GN	(2) 1299	(2) Major Endgate Motor Control	(2) III	(2) —
(5) 5	(5) 1	(5) VT	(5) 7725	(5) Minor Endgate Motor Control	(5) III	(5) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(7) 7	(7) 0.75	(7) WH / GY	(7) 7297	(7) Minor Endgate High Relay Control	(7) III	(7) —
(8) 8	(8) 1	(8) BK	(8) 1550	(8) Ground	(8) III	(8) —
(10) 10	(10) 0.75	(10) BU / VT	(10) 7729	(10) Major Endgate Low Relay Control	(10) III	(10) —
(15) 15	(15) 0.5	(15) BK	(15) 1550	(15) Ground	(15) III	(15) —
(16) 16	(16) 1	(16) RD / BN	(16) 8240	(16) Battery Positive Voltage	(16) III	(16) —
(17) 17	(17) 0.5	(17) BK	(17) 1550	(17) Ground	(17) III	(17) —
(18) 18	(18) 1	(18) YE / BK	(18) 7730	(18) Major Endgate Motor Low Reference	(18) III	(18) —
(20) 20	(20) 1	(20) RD / BN	(20) 8240	(20) Battery Positive Voltage	(20) III	(20) —
(21) 21	(21) 0.5	(21) BK	(21) 1550	(21) Ground	(21) III	(21) —
(26) 26	(26) 1	(26) RD / BN	(26) 8240	(26) Battery Positive Voltage	(26) II	(26) —
(27) 27	(27) 0.75	(27) RD / WH	(27) 5740	(27) Battery Positive Voltage	(27) III	(27) —
(29) 29	(29) 0.75	(29) RD / BN	(29) 6640	(29) Battery Positive Voltage	(29) III	(29) —
(30) 30	(30) 10	(30) RD / GY	(30) 142	(30) Battery Positive Voltage	(30) IV	(30) —
(35) 35	(35) 0.75	(35) RD / BU	(35) 6740	(35) Battery Positive Voltage	(35) III	(35) —
(37) 37	(37) 0.75	(37) RD / GN	(37) 6140	(37) Battery Positive Voltage	(37) III	(37) —
(38) 38	(38) 0.5	(38) RD / YE	(38) 6540	(38) Battery Positive Voltage	(38) III	(38) —
(42) 42	(42) 10	(42) RD / GN	(42) 242	(42) Battery Positive Voltage	(42) IV	(42) —
(44) 44	(44) 2.5	(44) RD / YE	(44) 7440	(44) Battery Positive Voltage	(44) I	(44) —
(46) 46	(46) 2.5	(46) RD / VT	(46) 8640	(46) Battery Positive Voltage	(46) I	(46) —
(48) 48	(48) 0.5	(48) RD / WH	(48) 4740	(48) Battery Positive Voltage	(48) III	(48) —
(50) 50	(50) 2.5	(50) RD / YE	(50) 3740	(50) Battery Positive Voltage	(50) III	(50) —
(51) 51	(51) 2.5	(51) RD / VT	(51) 4442	(51) Primary Fused Battery Positive Voltage	(51) III	(51) —
(52) 52	(52) 0.5	(52) RD / BN	(52) 2240	(52) Battery Positive Voltage	(52) III	(52) —
(57) 57	(57) 2.5	(57) RD / VT	(57) 8640	(57) Battery Positive Voltage	(57) III	(57) —
(58) 58	(58) 2.5	(58) BK	(58) 1550	(58) Ground	(58) III	(58) —
(59) 59	(59) 0.5	(59) BK	(59) 1550	(59) Ground	(59) III	(59) —
(60) 60	(60) 2.5	(60) RD / VT	(60) 8640	(60) Battery Positive Voltage	(60) III	(60) —
(61) 61	(61) 2.5	(61) BK	(61) 1550	(61) Ground	(61) III	(61) —
(62) 62	(62) 0.5	(62) BK	(62) 1550	(62) Ground	(62) III	(62) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(71) 71	(71) 0.5	(71) YE / VT	(71) 6191	(71) Power Rear Window Switch Open Signal	(71) III	(71) —
(72) 72	(72) 2	(72) VT / YE	(72) 7453	(72) Window Motor Rear Auxiliary Open Control	(72) III	(72) —
(73) 73	(73) 0.5	(73) WH	(73) 6192	(73) Sliding Rear Window Switch Close Signal	(73) III	(73) —
(74) 74	(74) 2	(74) YE	(74) 7454	(74) Window Motor Rear Auxiliary Close Control	(74) III	(74) —

X54 Accessory Wiring Junction Block - Snow Plow (VYU)

—

Connector Part Information

- Harness Type: Accessory Wiring Harness
- OEM Connector: 35028846
- Service Connector: Service by Component Assembly - See Part Catalog
- Description: Wire Entry Fuse Block

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	85533337	J-35616-35 (VT)	J-38125-215A

X54 Accessory Wiring Junction Block - Snow Plow (VYU)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A4	0.5	BN	25	Charge Indicator Control	I	—
A6	0.75	RD	9026	Snow Plow Voltage	I	—
B4	0.75	WH / BU	9030	Snow Plow Switch Signal	I	—
B5	0.5	BN	9025	Charge Indicator Control Switch Signal	I	—

X55SP Wiring Harness Fuse Holder - Snow Plow (VYU)

—

Connector Part Information

- Harness Type: Accessory Wiring Harness
- OEM Connector: 33391084
- Service Connector: Service by Component Assembly - See Part Catalog
- Description: Wire Entry Fuse Holder

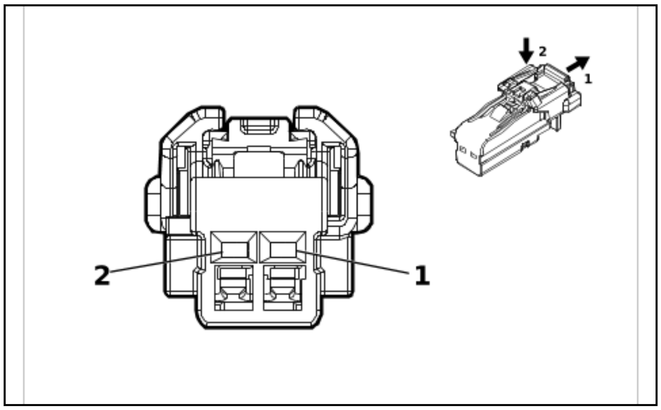
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X55SP Wiring Harness Fuse Holder - Snow Plow (VYU)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	1	OG	9026	Snow Plow Voltage	I	—
B	1	OG	9028	Snow Plow Voltage	I	—

A3L Sunshade - Left (DH6)



5377746

Connector Part Information

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 6098-8990
- Service Connector: 84867147
- Description: 2-Way F 1.2 MCON Series(BN)

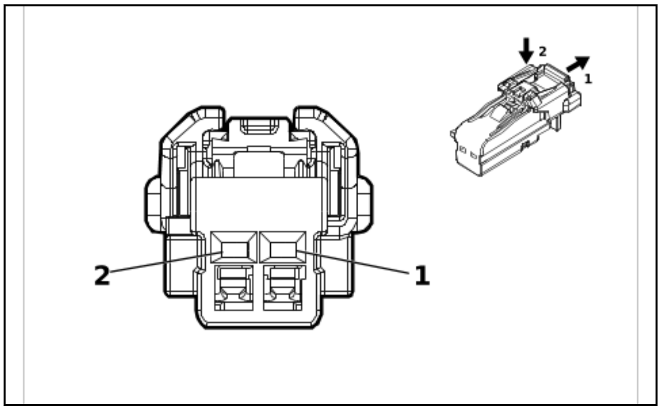
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-16 (L-GN)	No Tool Required

A3L Sunshade - Left (DH6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BU / GN	(1) 4785	(1) Interior Lamp Overhead Enable Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 1050	(2) Ground	(2) II	(2) —

A3R Sunshade - Right (DH6)



5377746

Connector Part Information

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 6098-8990
- Service Connector: 84867147
- Description: 2-Way F 1.2 MCON Series(BN)

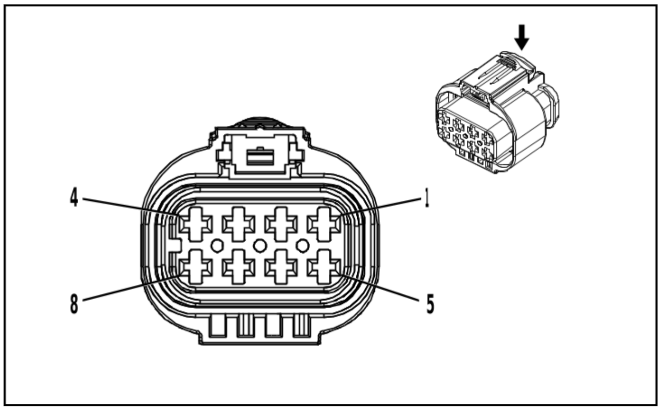
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-16 (L-GN)	No Tool Required

A3R Sunshade - Right (DH6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GY / WH	(1) 2369	(1) Interior Lamp Overhead 2 Enable Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 1050	(2) Ground	(2) II	(2) —

A7 Fuel Tank Fuel Pump Module



3749582

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 2-2109441-5
- Service Connector: 19354078
- Description: 8-Way F 2.8 Series, Sealed(L-GY)

Terminal Part Information

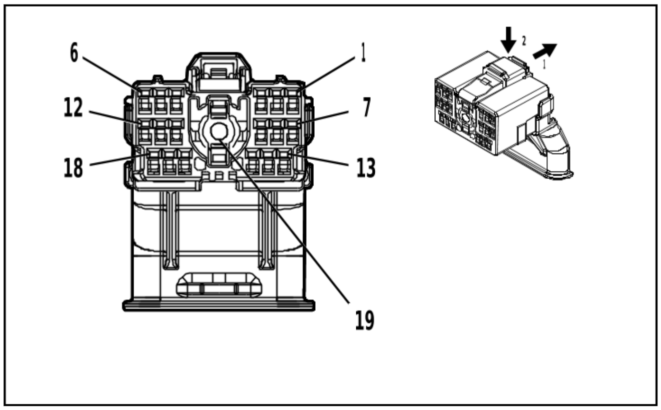
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required
II	Not required	J-35616-4A (PU)	No Tool Required

A7 Fuel Tank Fuel Pump Module

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) GY	(1) 120	(1) Fuel Pump Control	(1) I	(1) —
(2) 2	(2) 2.5	(2) YE / GY	(2) 4137	(2) Fuel Pump Supply Voltage Phase 2	(2) I	(2) —
(3) 3	(3) 2.5	(3) WH / BN	(3) 4138	(3) Fuel Pump Supply Voltage Phase 3	(3) I	(3) —
(4) 4	(4) 0.5	(4) WH	(4) 7444	(4) Fuel Pump Assembly Shield Ground	(4) II	(4) —
(5) 5	(5) 0.5	(5) BU / GN	(5) 1936	(5) Primary Fuel Level Sensor Signal	(5) II	(5) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(6) 6	(6) 0.5	(6) BK / GN	(6) 6281	(6) Fuel Level Sensor Low Reference	(6) II	(6) —
7 - 8	—	—	—	Not Occupied	—	—

A9A Outside Rearview Mirror - Driver



4991775

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness - Driver
- OEM Connector: 6098-8388
- Service Connector: Service by Harness - See Part Catalog
- Description: 19-Way F 1.2 MCON, Coaxial Series(BK)

Terminal Part Information

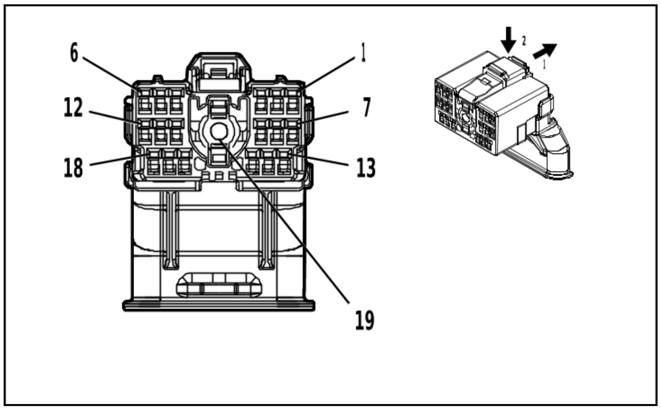
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Service by Cable	No Tool Required	No Tool Required

A9A Outside Rearview Mirror - Driver

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / BK	(1) 2790	(1) Left Front Mirror Motor Right [+] Left [-] Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / BU	(2) 2788	(2) Left Front Mirror Motor Up [+] Down [-] Control	(2) I	(2) —
(3) 3	(3) 0.5	(3) WH / GN	(3) 2786	(3) Left Front Mirror Motor Fold In Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) GY / YE	(4) 1760	(4) Left Side Object Detection LED Control	(4) I	(4) —
(5) 5	(5) 0.5 (5) 0.5	(5) YE / GY (5) WH / GN	(5) 2933 (5) 5966	(5) Task Lamp Control Left (5) Approach Lamp Control	(5) I (5) I	(5) DEZ (5) DQS
(6) 6	(6) 0.5	(6) WH / YE	(6) 2792	(6) Left Front Mirror Position Sensor Left [-] Right [+] Signal	(6) I	(6) —
(7) 7	(7) 0.5	(7) WH	(7) 606	(7) Left Outside Rearview Mirror Heater Control	(7) I	(7) —
(8) 8	(8) 0.5	(8) WH / GY	(8) 2114	(8) Left Turn Signal Lamp Control 2	(8) I	(8) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(9) 9	(9) 0.5	(9) BK	(9) 1550	(9) Ground	(9) I	(9) —
(10) 10	(10) 0.5	(10) VT / RD	(10) 2791	(10) Left Front Mirror Position Sensor High Reference	(10) I	(10) —
(11) 11	(11) 0.5	(11) GY / BN	(11) 2787	(11) Left Front Mirror Position Sensor Up [+] Down [-] Signal	(11) I	(11) —
(12) 12	(12) 0.5	(12) BK / YE	(12) 1691	(12) Automatic Day/Night Mirror Low Reference	(12) I	(12) —
(13) 13	(13) 0.5 (13) 0.5	(13) YE / GY (13) BN / GN	(13) 2933 (13) 4246	(13) Task Lamp Control Left (13) Identification Lamp Control	(13) I (13) I	(13) DLF/ DEZ (13) DPO/ DQS
(14) 14	(14) 0.5	(14) YE / BN	(14) 2789	(14) Left Front Mirror Motor Common Control	(14) I	(14) —
(15) 15	(15) 0.5	(15) GY / WH	(15) 2785	(15) Left Front Mirror Motor Fold Out Control	(15) I	(15) —
(16) 16	(16) 0.5	(16) BU / YE	(16) 7761	(16) Backup Illumination Lamp Control	(16) I	(16) —
(17) 17	(17) 0.5	(17) YE / WH	(17) 1690	(17) Mirror Dimming Signal	(17) I	(17) —
(18) 18	(18) 0.5	(18) BK / BN	(18) 673	(18) Left Outside Rearview Mirror Position Sensor Low Reference	(18) I	(18) —
(19) 19	(19) 0	(19) Coax Cable	(19) 4725	(19) Left Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal	(19) II	(19) —

A9B Outside Rearview Mirror - Passenger



4991775

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness - Passenger
- OEM Connector: 6098-8388
- Service Connector: Service by Harness - See Part Catalog
- Description: 19-Way F 1.2 MCON, Coaxial Series(BK)

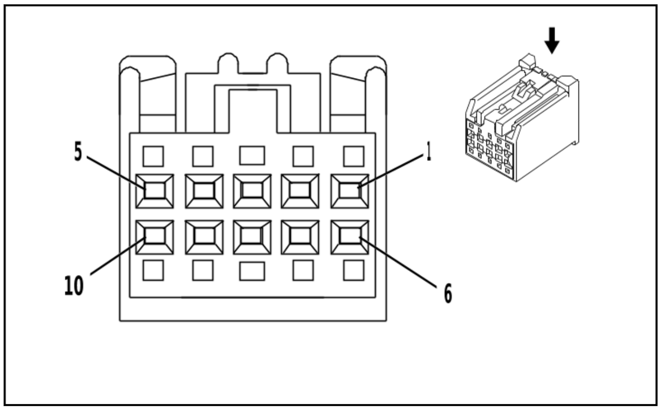
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Service by Cable	No Tool Required	No Tool Required

A9B Outside Rearview Mirror - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / BK	(1) 2798	(1) Right Front Mirror Motor Right [+] Left [-] Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / VT	(2) 2796	(2) Right Front Mirror Motor Up [+] Down [-] Control	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / GY	(3) 2794	(3) Right Front Mirror Motor Fold In Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) GY	(4) 1761	(4) Right Side Object Detection LED Control	(4) I	(4) —
(5) 5	(5) 0.5 (5) 0.5	(5) WH / GN (5) YE / WH	(5) 5966 (5) 2934	(5) Approach Lamp Control (5) Task Lamp Control Right	(5) I (5) I	(5) DEZ (5) DQS
(6) 6	(6) 0.5	(6) VT / WH	(6) 2800	(6) Right Front Mirror Position Sensor Left [-] Right [+] Signal	(6) I	(6) —
(7) 7	(7) 0.5	(7) BN / VT	(7) 607	(7) Right Outside Rearview Mirror Heater Control	(7) I	(7) —
(8) 8	(8) 0.5	(8) GN / GY	(8) 2115	(8) Right Turn Signal Lamp Control 2	(8) I	(8) —
(9) 9	(9) 0.5	(9) BK	(9) 1350	(9) Ground	(9) I	(9) —
(10) 10	(10) 0.5	(10) YE / RD	(10) 2799	(10) Right Front Mirror Position Sensor High Reference	(10) I	(10) —
(11) 11	(11) 0.5	(11) BU / YE	(11) 2795	(11) Right Front Mirror Position Sensor Up [+] Down [-] Signal	(11) I	(11) —
(12) 12	(12) 0.5	(12) BK / GY	(12) 626	(12) Engine Control Vehicle Sensors Low Reference 1	(12) I	(12) —
(13) 13	(13) 0.5 (13) 0.5	(13) YE / WH (13) BN / GN	(13) 2934 (13) 4246	(13) Task Lamp Control Right (13) Identification Lamp Control	(13) I (13) I	(13) DLF/ DEZ (13) DPO/ DQS
(14) 14	(14) 0.5	(14) WH	(14) 2797	(14) Right Front Mirror Motor Common Control	(14) I	(14) —
(15) 15	(15) 0.5	(15) YE / WH	(15) 2793	(15) Right Front Mirror Motor Fold Out Control	(15) I	(15) —
(16) 16	(16) 0.5	(16) BU / YE	(16) 7761	(16) Backup Illumination Lamp Control	(16) I	(16) —
(17) 17	(17) 0.5	(17) BU / GY	(17) 636	(17) Ambient Air Temperature Sensor Signal	(17) I	(17) —
(18) 18	(18) 0.5	(18) BK / GN	(18) 675	(18) Right Outside Rearview Mirror Position Sensor Low Reference	(18) I	(18) —
(19) 19	(19) 0	(19) Coax Cable	(19) 4724	(19) Right Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal	(19) II	(19) —

A10 Inside Rearview Mirror X1 (DD8 / DEZ / DRZ)



2180211

Connector Part Information

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: AIT2PB-10P-2AK
- Service Connector: 13577390
- Description: 10-Way F 0.64 Kaizen Series(BK)

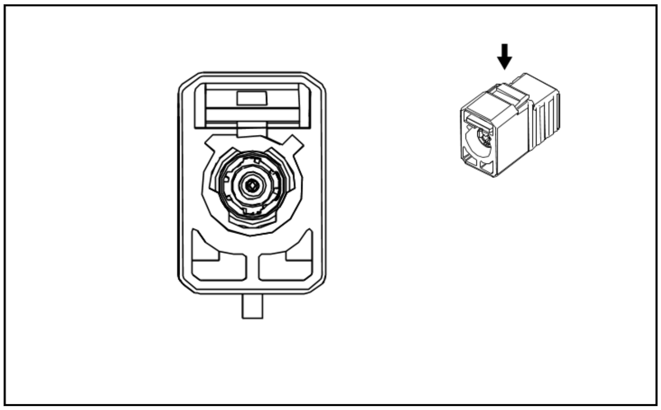
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13575742	J-35616-64B (L-BU)	J-38125-215A

A10 Inside Rearview Mirror X1 (DD8 / DEZ / DRZ)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / WH	(1) 24	(1) Backup Lamp Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / BK	(2) 339	(2) Run/Crank Ignition 1 Voltage	(2) I	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) BK / WH	(5) 851	(5) Signal Ground	(5) I	(5) —
6 - 7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.35	(8) BK / YE	(8) 1691	(8) Automatic Day/Night Mirror Low Reference	(8) I	(8) —
(9) 9	(9) 0.35	(9) YE / WH	(9) 1690	(9) Mirror Dimming Signal	(9) I	(9) —
10	—	—	—	Not Occupied	—	—

A10 Inside Rearview Mirror X2 (DRZ)



2893647

Connector Part Information

- Harness Type: Radio Antenna Cable Extension Cable COAX
- OEM Connector: 13581683
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BK)

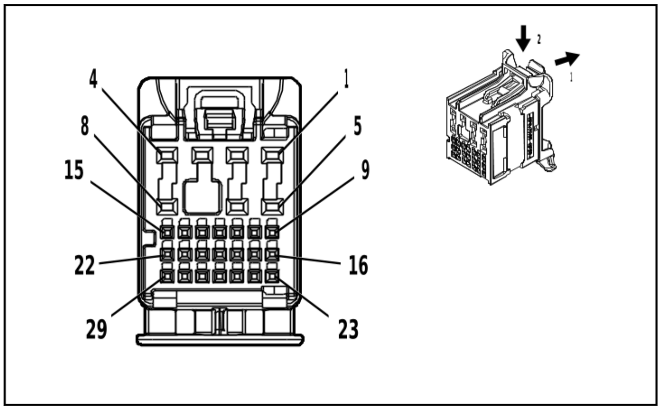
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A10 Inside Rearview Mirror X2 (DRZ)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	Full Display Mirror Rear Camera Coaxial Video Signal	I	—

A11 Radio X1 (IOR)



4584346

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160014-0012
- Service Connector: 13534972
- Description: 29-Way F 0.5 NANO, 1.2 MCON Series(GN)

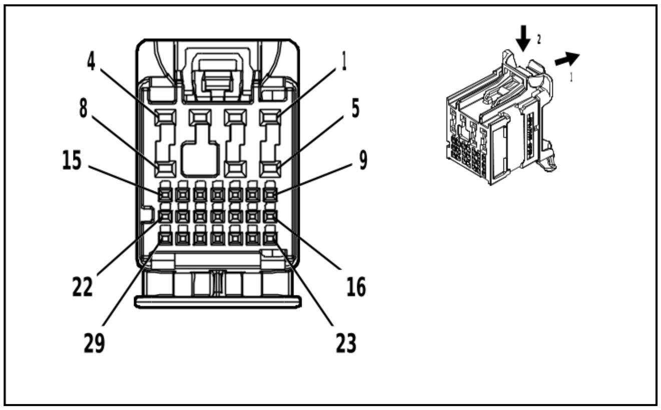
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	84729890	J-35616-12 (BU)	J-38125-215A

A11 Radio X1 (IOR)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) RD / GY	(1) 2840	(1) Battery Positive Voltage	(1) II	(1) —
(2) 2	(2) 0.75	(2) RD / GY	(2) 2840	(2) Battery Positive Voltage	(2) II	(2) —
(3) 3	(3) 0.75	(3) BK / WH	(3) 1051	(3) Signal Ground	(3) II	(3) —
(4) 4	(4) 0.35	(4) BU / RD	(4) 11246	(4) Infotainment Display 5 Volt Reference	(4) II	(4) —
(5) 5	(5) 0.35	(5) BK / WH	(5) 11252	(5) Infotainment Display Low Reference	(5) II	(5) —
(6) 6	(6) 0.75	(6) BK / WH	(6) 1051	(6) Signal Ground	(6) II	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.75	(8) GN / BK	(8) 116	(8) Left Rear Speaker [-] Control	(8) II	(8) —
(9) 9	(9) 0.35	(9) GY / BU	(9) 11247	(9) Infotainment Display LCD Enable Signal	(9) I	(9) —
10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.35	(11) GN / WH	(11) 24	(11) Backup Lamp Control	(11) I	(11) —
12 - 14	—	—	—	Not Occupied	—	—
(15) 15	(15) 0.35	(15) BU / GY	(15) 11244	(15) Radio Switch Dimming Control	(15) I	(15) —
16	—	—	—	Not Occupied	—	—
(17) 17	(17) 0.35	(17) BU / WH	(17) 4985	(17) AUTOSAR CAN Bus [+] 5 Serial Data	(17) I	(17) —
(18) 18	(18) 0.35	(18) BU / YE	(18) 4984	(18) AUTOSAR CAN Bus [-] 5 Serial Data	(18) I	(18) —
19 - 20	—	—	—	Not Occupied	—	—
(21) 21	(21) 0.35	(21) GY / VT	(21) 11249	(21) Infotainment Display Backlight Enable Control	(21) I	(21) —
(22) 22	(22) 0.35	(22) BU / GN	(22) 11248	(22) Infotainment Display Backlight Dimming Control	(22) I	(22) —
23	—	—	—	Not Occupied	—	—
(24) 24	(24) 0.35	(24) BN / WH	(24) 11233	(24) Radio Switch Power ON/OFF Switch Signal	(24) I	(24) —
(25) 25	(25) 0.35	(25) VT / WH	(25) 11245	(25) Radio Switch Buttons Signal	(25) I	(25) —
(26) 26	(26) 0.35	(26) BU	(26) 11235	(26) Radio Switch Volume Up Signal	(26) I	(26) —
(27) 27	(27) 0.35	(27) GY / BN	(27) 11234	(27) Radio Switch Volume Down Signal	(27) I	(27) —
28 - 29	—	—	—	Not Occupied	—	—

A11 Radio X2 (IOR)



4584398

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160014-0013
- Service Connector: 13534973
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series(LT GY with GY Inner Connector)

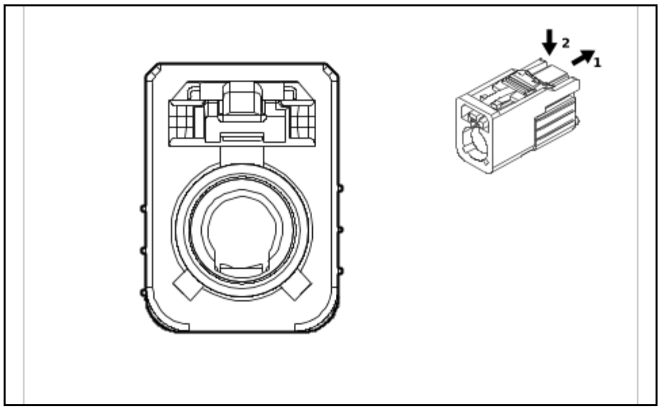
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	84729890	J-35616-12 (BU)	J-38125-215A

A11 Radio X2 (IOR)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) GN	(1) 199	(1) Left Rear Speaker [+] Control	(1) II	(1) —
(2) 2	(2) 0.75	(2) BU	(2) 201	(2) Left Front Speaker 1 [+] Control	(2) II	(2) —
(3) 3	(3) 0.75	(3) YE	(3) 200	(3) Right Front Speaker 1 [+] Control	(3) II	(3) —
(4) 4	(4) 0.75	(4) BU / BK	(4) 115	(4) Right Rear Speaker [-] Control	(4) II	(4) —
(5) 5	(5) 0.75	(5) BN / BU	(5) 118	(5) Left Front Speaker [-] Control 1	(5) II	(5) —
(6) 6	(6) 0.75	(6) YE / BK	(6) 117	(6) Right Front Speaker [-] Control 1	(6) II	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.75	(8) WH	(8) 46	(8) Right Rear Speaker [+] Control	(8) II	(8) —
(9) 9	(9) 0.35	(9) BK / GY	(9) 654	(9) Cellular Telephone Microphone Low Reference	(9) I	(9) IOR
(10) 10	(10) 0.35	(10) GY / YE	(10) 655	(10) Cellular Telephone Microphone Signal	(10) I	(10) IOR
11 - 29	—	—	—	Not Occupied	—	—

A11 Radio X3 (IOK)



5794617

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33340318
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(CU)

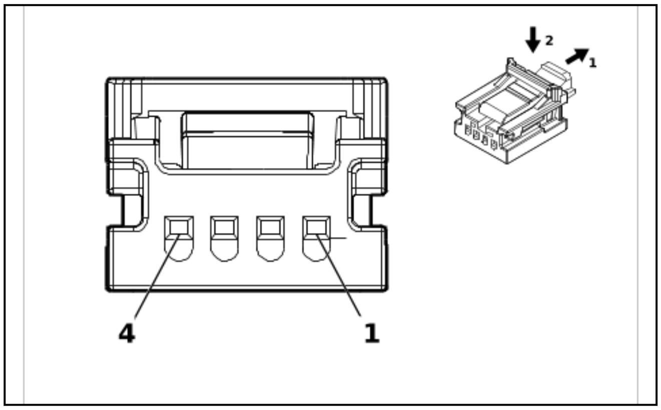
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A11 Radio X3 (IOK)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	(XM +/-HD) Coaxial Antenna XM Signal	I	—

A11 Radio X3 (IOR)



5493278

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 34791-5140
- Service Connector: 19354840
- Description: 4-Way F Mini 50 Series(BK)

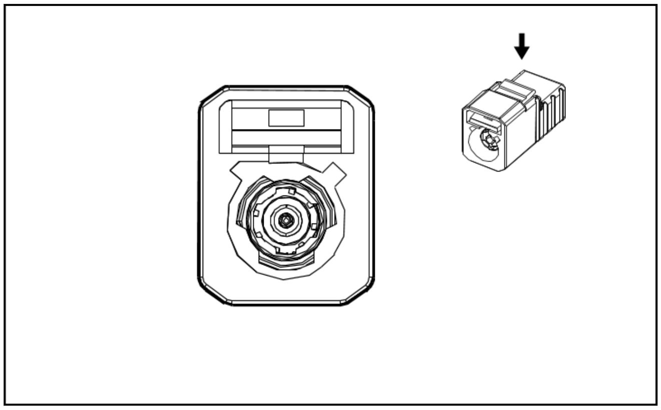
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Service by Cable	EL-35616-58 (BK)	No Tool Required

A11 Radio X3 (IOR)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.35	(2) YE	(2) 4758	(2) Ethernet Bus 2 [+]	(2) I	(2) —
(3) 3	(3) 0.35	(3) BU	(3) 4757	(3) Ethernet Bus 2 [-]	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

A11 Radio X4 (IOK)



5331855

Connector Part Information

- Harness Type: Radio Antenna Cable Extension Cable COAX
- OEM Connector: 13581682
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BK)

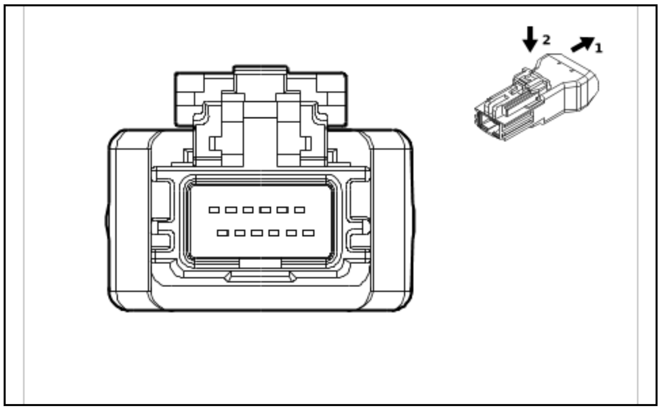
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A11 Radio X4 (IOK)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	(AM/FM) Antenna RF Signal	I	—

A11 Radio X4 (IOR)



6410264

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13581658
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 12-Way M 2.0 HSAL-2 Series(BK)

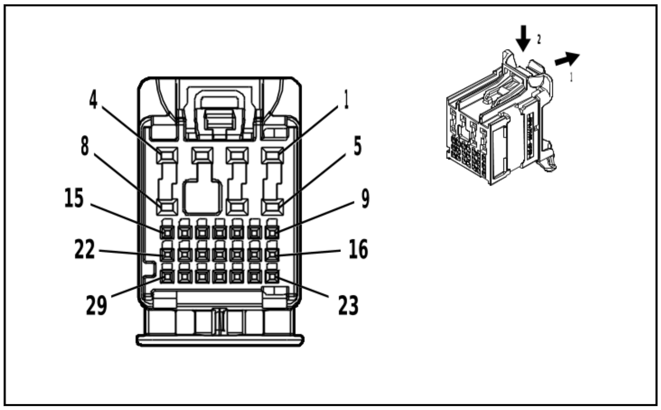
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A11 Radio X4 (IOR)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0	(1) BARE	(1) 4844	(1) Radio LVDS (Low Voltage Differential Signaling) Low Reference	(1) I	(1) —
(2) 2	(2) 0	(2) BARE	(2) 4845	(2) Radio LVDS (Low Voltage Differential Signaling) Signal [+]	(2) I	(2) —
(3) 3	(3) 0	(3) BARE	(3) 4846	(3) Radio LVDS (Low Voltage Differential Signaling) Signal [-]	(3) I	(3) —
4 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0	(7) BARE	(7) 7899	(7) Auxiliary Audio/Video Jack USB Serial Data Supply Voltage	(7) I	(7) —
8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0	(9) BARE	(9) 7896	(9) Auxiliary Audio/Video Jack USB [+] Serial Data	(9) I	(9) —
(10) 10	(10) 0	(10) BARE	(10) 7897	(10) Auxiliary Audio/Video Jack USB [-] Serial Data	(10) I	(10) —
11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0	(12) BARE	(12) 7898	(12) Auxiliary Audio/Video Jack USB Low Reference	(12) I	(12) —

A11 Radio X5 (IOK)



4496253

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160014-0014
- Service Connector: 13534974
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series(BK with GY Inner Connector)

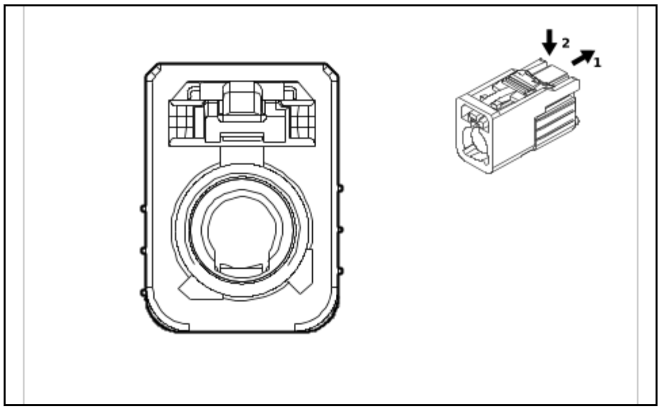
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	84729890	J-35616-12 (BU)	J-38125-215A
III	Not required	No Tool Required	No Tool Required

A11 Radio X5 (IOK)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / YE	(1) 2340	(1) Battery Positive Voltage	(1) II	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.75	(3) BK / WH	(3) 1051	(3) Signal Ground	(3) II	(3) —
4 - 7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.75	(8) GN / BK	(8) 116	(8) Left Rear Speaker [-] Control	(8) II	(8) —
(9) 9	(9) 0.35 (9) 0.35	(9) BU (9) GY / YE	(9) 655 (9) 5149	(9) Cellular Telephone Microphone Signal (9) Voice Recognition Audio Signal	(9) III (9) I	(9) UE0 (9) UE1
(10) 10	(10) 0.35 (10) 0.35	(10) BK / BN (10) BK / GY	(10) 654 (10) 5152	(10) Cellular Telephone Microphone Low Reference (10) Voice Recognition Audio [-] Control	(10) III (10) I	(10) UE0 (10) UE1
(11) 11	(11) 0.35	(11) VT / YE	(11) 7043	(11) Microphone [+] Signal	(11) I	(11) —
(12) 12	(12) 0.35	(12) BU / BK	(12) 7044	(12) Microphone [-] Signal	(12) I	(12) —
13 - 29	—	—	—	Not Occupied	—	—

A11 Radio X5 (IOR)



5191842

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33340320
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(OG)

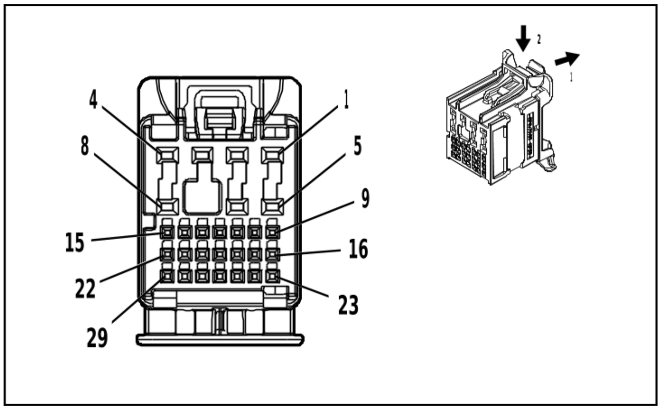
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A11 Radio X5 (IOR)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	Rear Vision Camera Coaxial Video Signal	I	—

A11 Radio X6 (IOK)



4578560

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160014-0011
- Service Connector: 13534971
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series(DK-GY with GY Inner Connector)

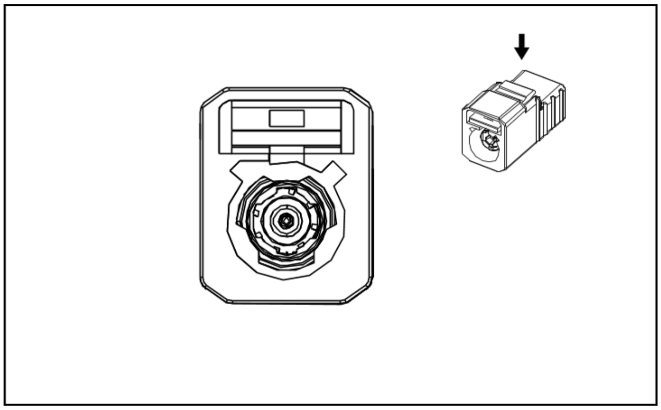
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	84729890	J-35616-12 (BU)	J-38125-215A

A11 Radio X6 (IOK)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) GN	(1) 199	(1) Left Rear Speaker [+] Control	(1) II	(1) —
(2) 2	(2) 0.75	(2) BU	(2) 201	(2) Left Front Speaker 1 [+] Control	(2) II	(2) —
(3) 3	(3) 0.75	(3) YE / BK	(3) 117	(3) Right Front Speaker [-] Control 1	(3) II	(3) —
(4) 4	(4) 0.75	(4) BU / BK	(4) 115	(4) Right Rear Speaker [-] Control	(4) II	(4) —
(5) 5	(5) 0.75	(5) BN / BU	(5) 118	(5) Left Front Speaker [-] Control 1	(5) II	(5) —
(6) 6	(6) 0.75	(6) YE	(6) 200	(6) Right Front Speaker 1 [+] Control	(6) II	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.75	(8) WH	(8) 46	(8) Right Rear Speaker [+] Control	(8) II	(8) —
(9) 9	(9) 0.35	(9) BU / WH	(9) 4985	(9) AUTOSAR CAN Bus [+] 5 Serial Data	(9) I	(9) —
(10) 10	(10) 0.35	(10) BU / YE	(10) 4984	(10) AUTOSAR CAN Bus [-] 5 Serial Data	(10) I	(10) —
11 - 12	—	—	—	Not Occupied	—	—
(13) 13	(13) 0.35	(13) GN / WH	(13) 24	(13) Backup Lamp Control	(13) I	(13) —
14 - 29	—	—	—	Not Occupied	—	—

A11 Radio X6 (IOR)



3420249

Connector Part Information
- Harness Type: Radio Antenna Cable Extension Cable COAX
- OEM Connector: 13581686
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BK)

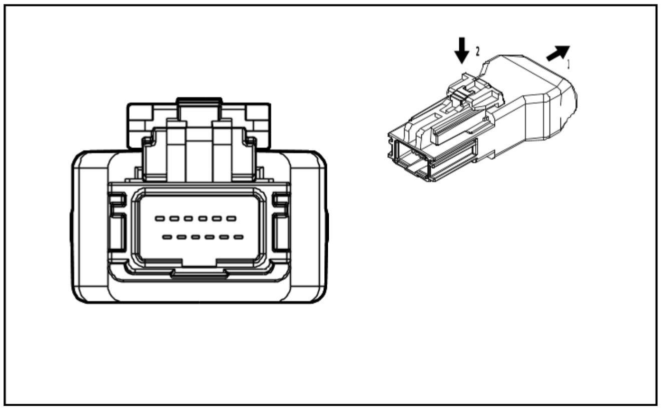
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A11 Radio X6 (IOR)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	(AM/FM) Antenna RF Signal	I	—

A11 Radio X7 (IOK)



4584321

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 111146-7100
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 12-Way M 2.0 HSAL-2 Series(GY)

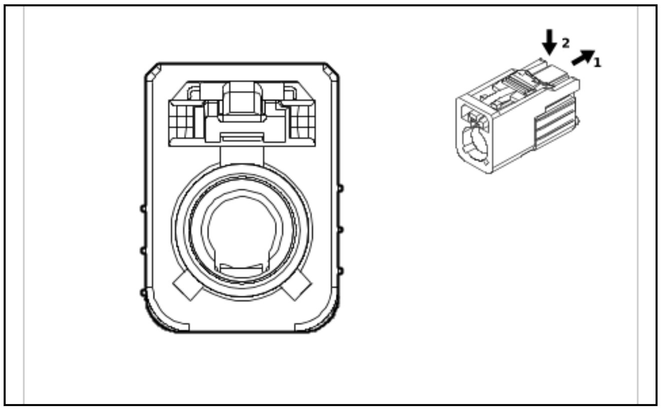
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A11 Radio X7 (IOK)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	LVDS	—	Center Stack LVDS (Low Voltage Differential Signaling) Low Reference	I	—

A11 Radio X7 (IOR)



5794617

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 13516053
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(CU)

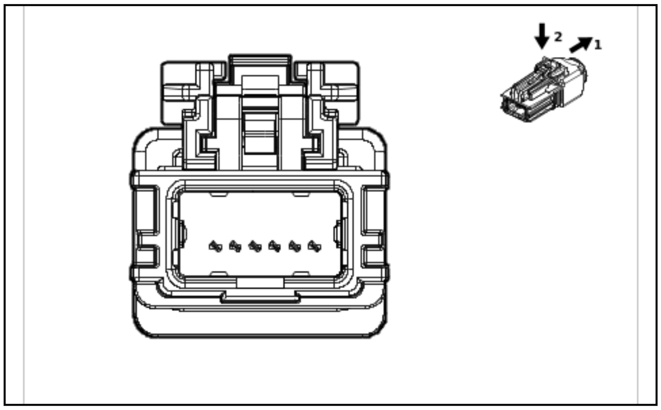
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A11 Radio X7 (IOR)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	(XM +/-HD) Coaxial Antenna XM Signal	I	—

A11 Radio X8 (IOK)



5987912

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness USB
- OEM Connector: 111146-7050
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 12-Way M 2.0 HSAL-2 Series(BK)

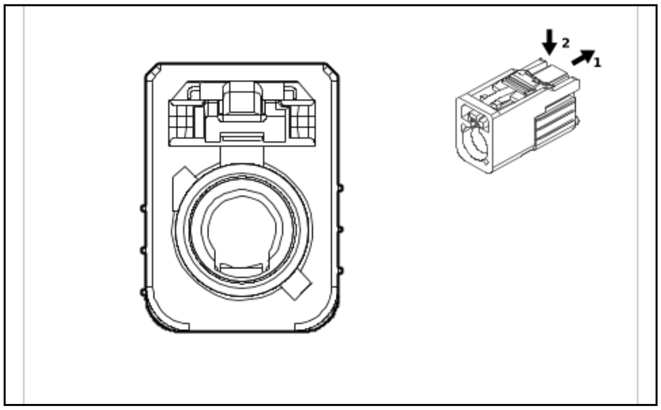
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A11 Radio X8 (IOK)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	USB	—	USB Serial Data	I	—

A11 Radio X8 (IOR)



5518456

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33340317
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BG)

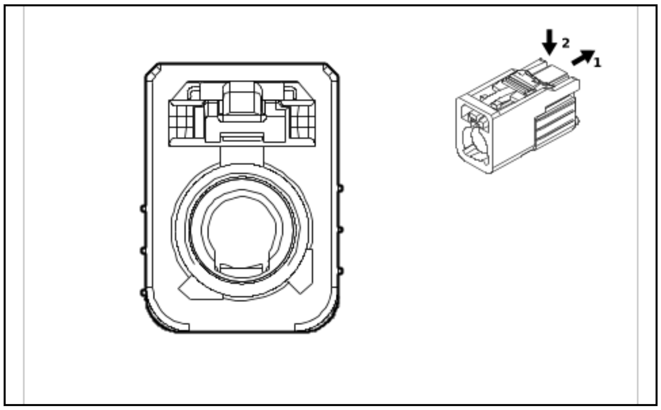
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A11 Radio X8 (IOR)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	WiFi Antenna Coaxial Signal	I	—

A11 Radio X9 (IOK)



5191842

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33340320
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(OG)

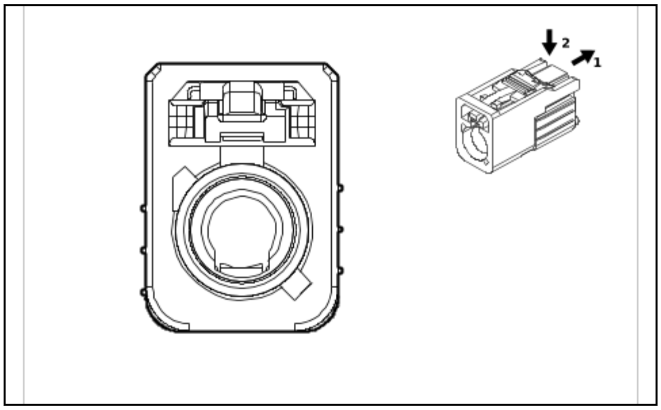
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A11 Radio X9 (IOK)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	Video Processing Module Coaxial Video Signal	I	—

A11 Radio X10 (IOK)



5518456

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33340317
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BG)

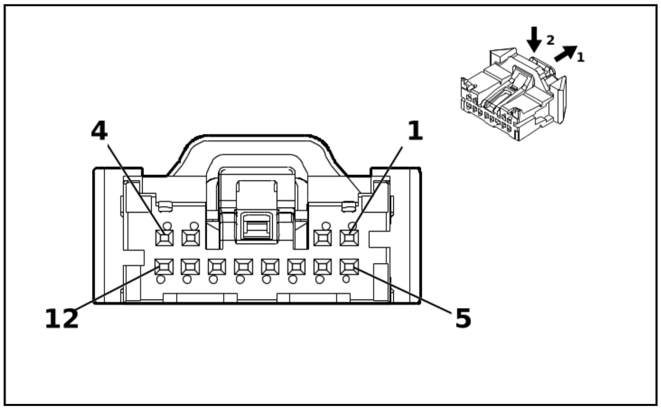
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A11 Radio X10 (IOK)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	WiFi Antenna Coaxial Signal	I	—

A11 Radio X11 (IOK)



5360826

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35068239
- Service Connector: 13529935
- Description: 12-Way F 050 CTS Series(BK)

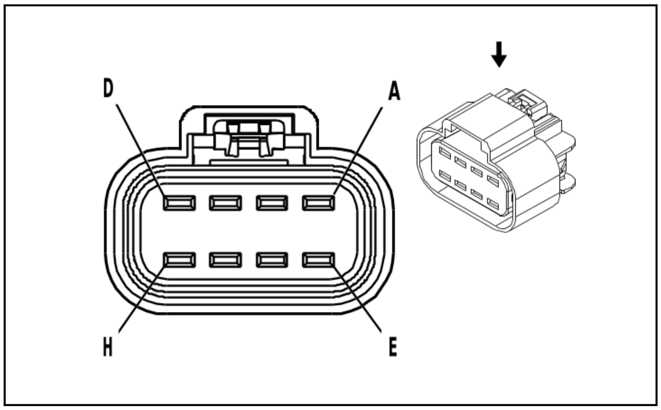
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Service by Cable	EL-35616-58 (BK)	EL-38125-58

A11 Radio X11 (IOK)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) YE	(3) 4758	(3) Ethernet Bus 2 [+]	(3) I	(3) —
(4) 4	(4) 0.35	(4) BU	(4) 4757	(4) Ethernet Bus 2 [-]	(4) I	(4) —
5 - 7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.35	(8) YE	(8) 7215	(8) Ethernet Bus 6 [+]	(8) I	(8) —
(9) 9	(9) 0.35	(9) GN	(9) 7214	(9) Ethernet Bus 6 [-]	(9) I	(9) —
10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.35	(11) BN	(11) 7211	(11) Ethernet Bus 4 [+]	(11) I	(11) —
(12) 12	(12) 0.35	(12) GY	(12) 7210	(12) Ethernet Bus 4 [-]	(12) I	(12) —

A16 Transfer Case Four Wheel Drive Actuator (NP0 / NQH)



646372

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 13538370
- Service Connector: 19369184
- Description: 8-Way F 280 GT Series, Sealed(BK)

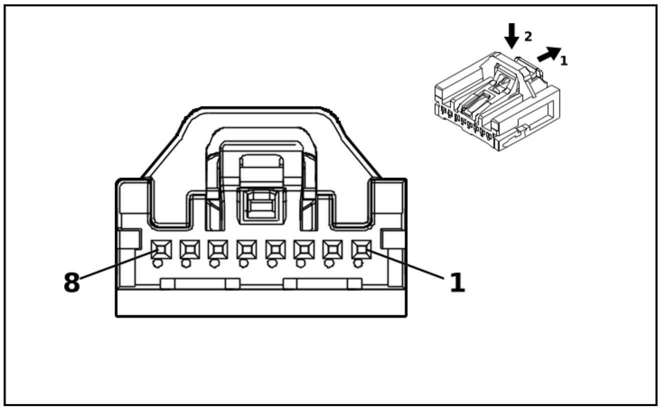
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

A16 Transfer Case Four Wheel Drive Actuator (NP0 / NQH)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	2.5	YE / GY	1552	Transfer Case Motor Clockwise Control	I	—
B	0.75	BU	8013	Transfer Case Lock Solenoid Control 2	I	—
C	0.75	YE / BN	1569	Transfer Case Lock Solenoid Valve Control	I	—
D	2.5	YE / VT	1553	Transfer Case Motor Counter Clockwise Control	I	—
E	0.5	YE	7474	Incremental Encoder Direction Signal	I	—
F	0.5	BU / GY	7473	Incremental Encoder Impulse Signal	I	—
G	0.5	WH / GN	7475	Incremental Encoder Sensor Voltage Reference	I	—
H	0.5	VT	7476	Incremental Encoder Sensor Low Reference	I	—

A22 Radio Control X1



5200269

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35068228
- Service Connector: 84769201
- Description: 8-Way F Mini 50 Series(BK)

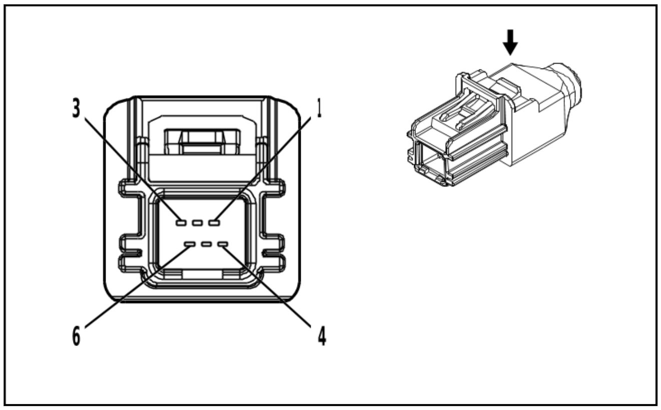
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

A22 Radio Control X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / WH	(1) 1340	(1) Battery Positive Voltage	(1) I	(1) —
2 - 7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.35	(8) BK / WH	(8) 1051	(8) Signal Ground	(8) I	(8) —

A22 Radio Control X2



4806625

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 100337-1020
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 6-Way M HSAL-2 Series(BK)

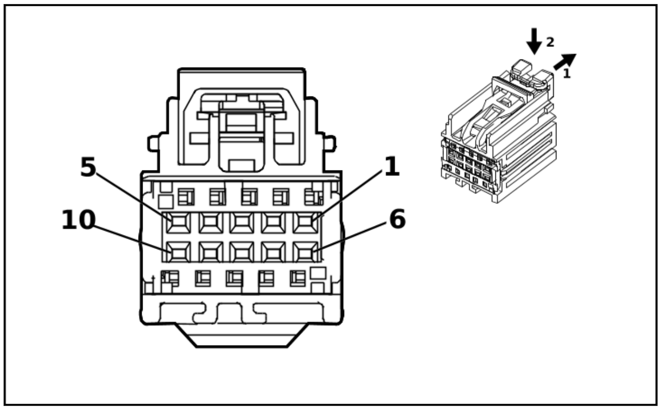
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

A22 Radio Control X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	LVDS	—	Center Stack LVDS (Low Voltage Differential Signaling) Low Reference	I	—

A23D Front Side Door Latch - Driver



4622549

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness - Driver
- OEM Connector: 7289-5068-60
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 Kaizen Series(GN)

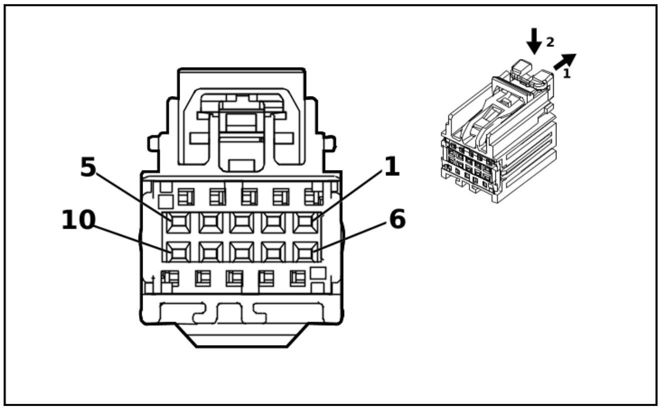
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

A23D Front Side Door Latch - Driver

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY	(1) 745	(1) Left Front Door Ajar Switch Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / GY	(2) 126	(2) Left Front Door Open Switch Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK	(3) 1550	(3) Ground	(3) I	(3) —
(4) 4	(4) 0.5	(4) WH / VT	(4) 4258	(4) Left Front Door Lock Status Signal	(4) I	(4) —
5 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.75	(7) GY	(7) 2681	(7) Left Front Door Lock Actuator Lock Control	(7) I	(7) —
(8) 8	(8) 0.75	(8) WH	(8) 2679	(8) Lock Actuators Unlock Control 1	(8) I	(8) —
9 - 10	—	—	—	Not Occupied	—	—

A23LR Rear Side Door Latch - Left



4622549

Connector Part Information

- Harness Type: Rear Side Door Door Wiring Harness - Left Rear
- OEM Connector: 7289-5068-60
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 Kaizen Series(GN)

Terminal Part Information

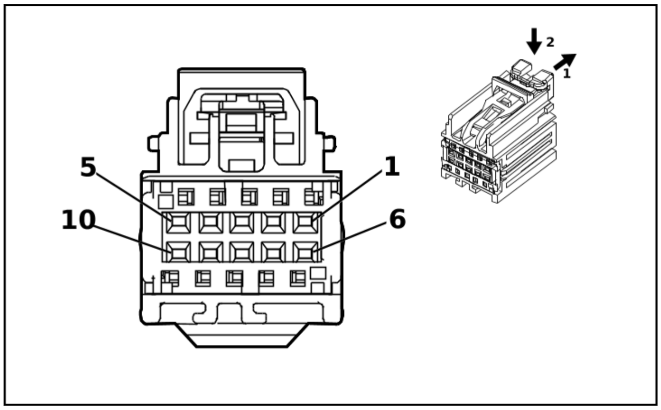
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

A23LR Rear Side Door Latch - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY	(1) 747	(1) Left Rear Door Ajar Switch Signal	(1) I	(1) —
2	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(3) 3	(3) 0.5	(3) BK	(3) 1550	(3) Ground	(3) I	(3) —
4 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.75	(7) BU / YE	(7) 1091	(7) Left Rear Door Lock Actuator Lock Control	(7) I	(7) —
(8) 8	(8) 0.75	(8) WH	(8) 2679	(8) Lock Actuators Unlock Control 1	(8) I	(8) —
9 - 10	—	—	—	Not Occupied	—	—

A23P Front Side Door Latch - Passenger



4622549

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness - Passenger
- OEM Connector: 7289-5068-60
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 Kaizen Series(GN)

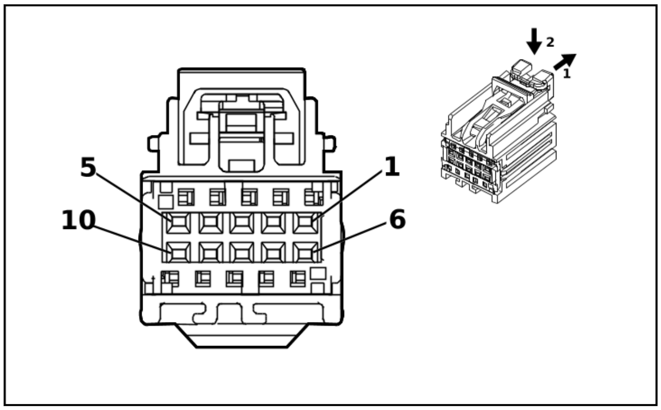
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

A23P Front Side Door Latch - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) BK	(3) 1350	(3) Ground	(3) I	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) GY	(5) 746	(5) Right Front Door Ajar Switch Signal	(5) I	(5) —
6 - 7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.75	(8) GY / BK	(8) 2680	(8) Lock Actuators Unlock Control 2	(8) I	(8) —
(9) 9	(9) 0.75	(9) YE / GN	(9) 2682	(9) Right Front Door Lock Actuator Lock Control	(9) I	(9) —
10	—	—	—	Not Occupied	—	—

A23RR Rear Side Door Latch - Right



4622549

Connector Part Information

- Harness Type: Rear Side Door Door Wiring Harness - Right Rear
- OEM Connector: 7289-5068-60
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 Kaizen Series(GN)

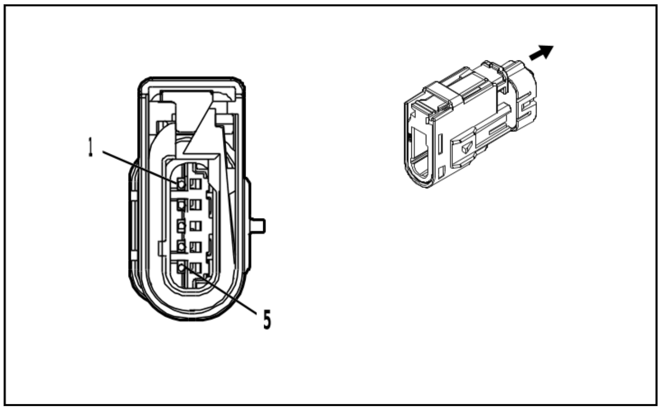
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

A23RR Rear Side Door Latch - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) BK	(3) 1350	(3) Ground	(3) I	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) GY	(5) 748	(5) Right Rear Door Ajar Switch Signal	(5) I	(5) —
6 - 7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.75	(8) GY / BK	(8) 2680	(8) Lock Actuators Unlock Control 2	(8) I	(8) —
(9) 9	(9) 0.75	(9) VT / WH	(9) 1094	(9) Right Rear Door Lock Actuator Lock Control	(9) I	(9) —
10	—	—	—	Not Occupied	—	—

A24D Front Side Door Outside Handle - Left (AVJ)



4808321

Connector Part Information
- Harness Type: Front Side Door Door Wiring Harness - Driver
- OEM Connector: 13519366
- Service Connector: Service by Harness - See Part Catalog
- Description: 5-Way M 1.2 Series, Sealed(NA)

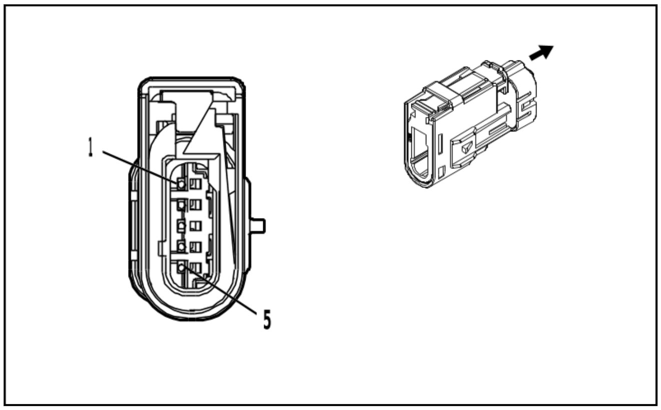
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

A24D Front Side Door Outside Handle - Left (AVJ)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU	(1) 2675	(1) Left Front Exterior Door Handle Switch Unlock Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT	(2) 4301	(2) Passive Entry Left Antenna Signal High	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.5	(4) VT / GY	(4) 4302	(4) Passive Entry Left Antenna Signal Low	(4) I	(4) —
(5) 5	(5) 0.5	(5) BK / WH	(5) 1551	(5) Signal Ground	(5) I	(5) —

A24P Front Side Door Outside Handle - Right (AVJ)



4808321

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness - Passenger
- OEM Connector: 13519366
- Service Connector: Service by Harness - See Part Catalog
- Description: 5-Way M 1.2 Series, Sealed(NA)

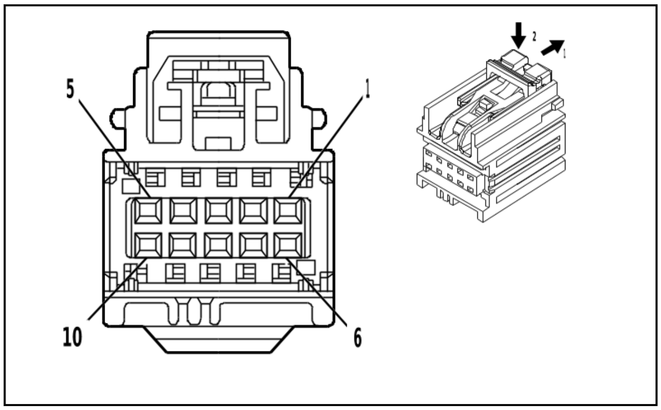
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

A24P Front Side Door Outside Handle - Right (AVJ)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / VT	(1) 2676	(1) Right Front Door Exterior Switch Unlock Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / YE	(2) 4303	(2) Passive Entry Right Antenna Signal High	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.5	(4) GN / BK	(4) 4304	(4) Passive Entry Right Antenna Signal Low	(4) I	(4) —
(5) 5	(5) 0.5	(5) BK / WH	(5) 1451	(5) Signal Ground	(5) I	(5) —

A26 Heater and Air Conditioning User Interface Control - Front (IOK / IOR)



4891168

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 7289-4885
- Service Connector: 13509649
- Description: 10-Way F 0.64 Kaizen Series(NA)

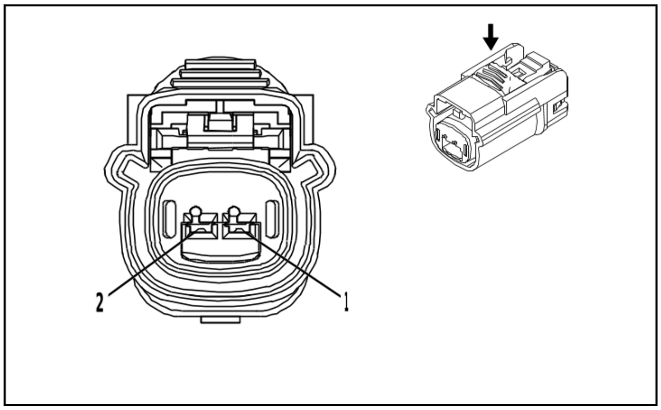
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19300629	J-35616-64B (L-BU)	J-38125-215A

A26 Heater and Air Conditioning User Interface Control - Front (IOK / IOR)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / WH	(1) 1340	(1) Battery Positive Voltage	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) BU / WH	(3) 4985	(3) AUTOSAR CAN Bus [+] 5 Serial Data	(3) I	(3) —
(4) 4	(4) 0.35	(4) BU / WH	(4) 4985	(4) AUTOSAR CAN Bus [+] 5 Serial Data	(4) I	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.35	(6) GY / GN	(6) 4636	(6) HVAC System Enable Signal	(6) I	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.35	(8) BU / YE	(8) 4984	(8) AUTOSAR CAN Bus [-] 5 Serial Data	(8) I	(8) —
(9) 9	(9) 0.35	(9) BU / VT	(9) 4984	(9) AUTOSAR CAN Bus [-] 5 Serial Data	(9) I	(9) —
(10) 10	(10) 0.5	(10) BK / WH	(10) 851	(10) Signal Ground	(10) I	(10) —

A99L Pickup Box Endgate Latch - Left (QK2 & QT5)



4332222

Connector Part Information
- Harness Type: Endgate Wiring Harness
- OEM Connector: 15514573
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 OCS Series, Sealed(BK)

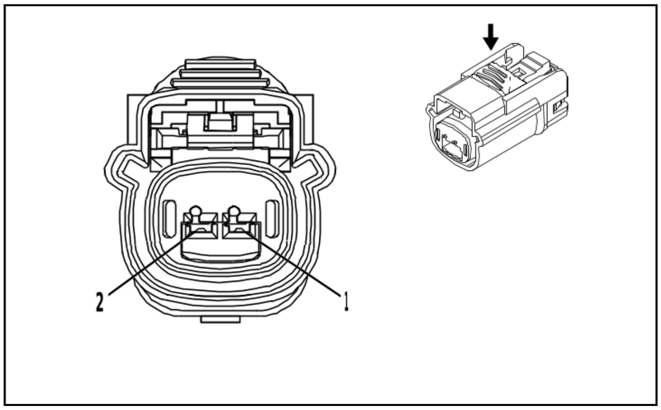
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

A99L Pickup Box Endgate Latch - Left (QK2 & QT5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) GN	(1) 1299	(1) Major Endgate Motor Control	(1) I	(1) —
(2) 2	(2) 1	(2) YE / BK	(2) 7730	(2) Major Endgate Motor Low Reference	(2) I	(2) —

A99R Pickup Box Endgate Latch - Right (QK2 & QT5)



4332222

Connector Part Information
- Harness Type: Endgate Wiring Harness
- OEM Connector: 15514573
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 OCS Series, Sealed(BK)

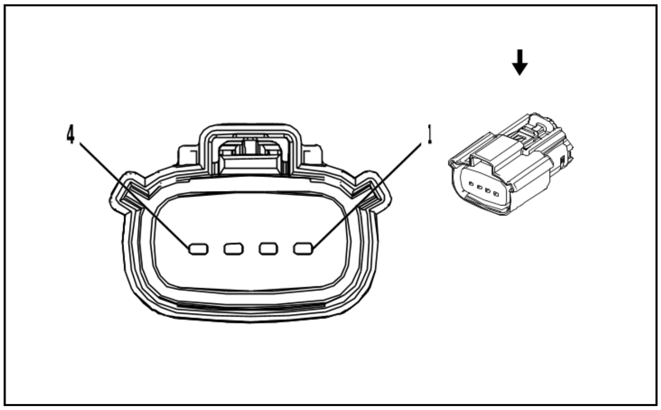
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

A99R Pickup Box Endgate Latch - Right (QK2 & QT5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) GN	(1) 1299	(1) Major Endgate Motor Control	(1) I	(1) —
(2) 2	(2) 1	(2) YE / BK	(2) 7730	(2) Major Endgate Motor Low Reference	(2) I	(2) —

A100L Pickup Box Auxiliary Endgate Latch - Left (QK2 & QT5)



2474747

Connector Part Information
- Harness Type: Endgate Wiring Harness
- OEM Connector: 33471-0406
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.5 Series, Sealed(BK)

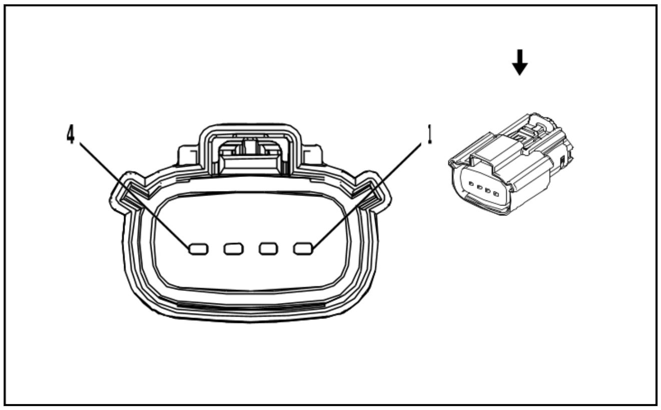
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

A100L Pickup Box Auxiliary Endgate Latch - Left (QK2 & QT5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) YE / BU	(1) 7295	(1) Left Minor Endgate Ajar Signal	(1) I	(1) —
(2) 2	(2) 0.75	(2) BK	(2) 1850	(2) Ground	(2) I	(2) —
(3) 3	(3) 1	(3) YE / BK	(3) 7730	(3) Major Endgate Motor Low Reference	(3) I	(3) —
(4) 4	(4) 1	(4) VT	(4) 7725	(4) Minor Endgate Motor Control	(4) I	(4) —

A100R Pickup Box Auxiliary Endgate Latch - Right (QK2 & QT5)



2474747

Connector Part Information

- Harness Type: Endgate Wiring Harness
- OEM Connector: 33471-0406
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.5 Series, Sealed(BK)

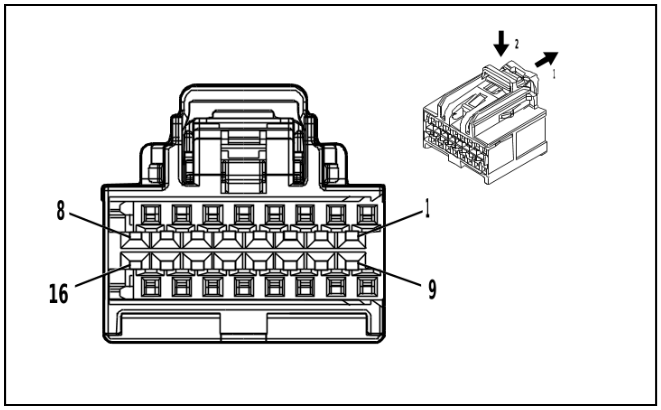
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

A100R Pickup Box Auxiliary Endgate Latch - Right (QK2 & QT5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) YE / BK	(1) 7730	(1) Major Endgate Motor Low Reference	(1) I	(1) —
(2) 2	(2) 1	(2) VT	(2) 7725	(2) Minor Endgate Motor Control	(2) I	(2) —
3 - 4	—	—	—	Not Occupied	—	—

A103 Roof Console X1 - Double Cab / Crew Cab



4873254

Connector Part Information

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 35016344
- Service Connector: 13519739
- Description: 16-Way F 0.64 OCS Series(GY)

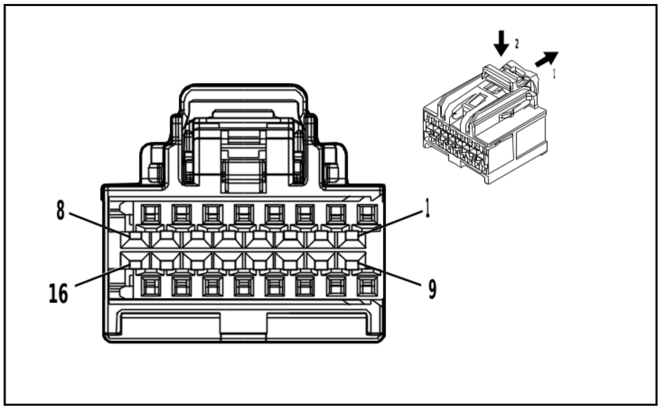
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84619127	J-35616-64B (L-BU)	J-38125-215A

A103 Roof Console X1 - Double Cab / Crew Cab

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK	(1) 1050	(1) Ground	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) YE	(3) 6817	(3) LED Backlight Dimming Control 1	(3) I	(3) —
4 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.35	(7) WH / BN	(7) 2904	(7) Row 2 Dome Reading Lamp Switch Signal	(7) I	(7) —
(8) 8	(8) 0.35	(8) VT / GY	(8) 2906	(8) Row 2 Dome Reading Lamp 2 Switch Signal	(8) I	(8) —
(9) 9	(9) 0.5	(9) RD / YE	(9) 240	(9) Battery Positive Voltage	(9) I	(9) —
(10) 10	(10) 0.5	(10) GN / WH	(10) 2854	(10) Body Control Module LIN Bus 8	(10) I	(10) —
(11) 11	(11) 0.35	(11) BU / GN	(11) 4785	(11) Interior Lamp Overhead Enable Signal	(11) I	(11) —
(12) 12	(12) 0.35	(12) GY / WH	(12) 2369	(12) Interior Lamp Overhead 2 Enable Signal	(12) I	(12) —
(13) 13	(13) 0.35	(13) GN / YE	(13) 2903	(13) Row 2 Dome Reading Lamp Interior Lamp Control	(13) I	(13) —
(14) 14	(14) 0.35	(14) BN / BU	(14) 2905	(14) Row 2 Dome Reading Lamp 2 Interior Lamp Control	(14) I	(14) —
15	—	—	—	Not Occupied	—	—
(16) 16	(16) 0.5	(16) BK	(16) 1050	(16) Ground	(16) I	(16) —

A103 Roof Console X1 - Regular Cab



4873254

Connector Part Information

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 35016344
- Service Connector: 13519739
- Description: 16-Way F 0.64 OCS Series(GY)

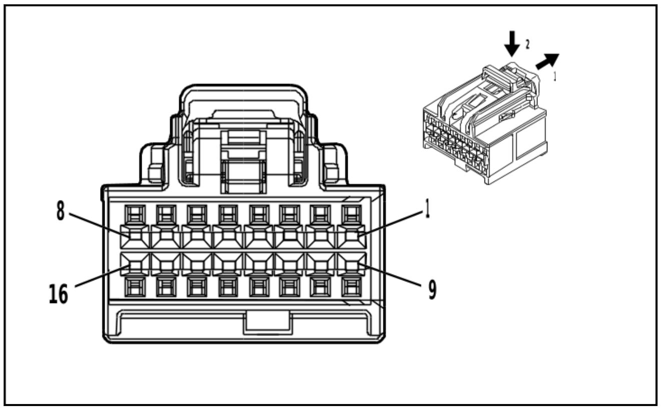
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84619127	J-35616-64B (L-BU)	J-38125-215A

A103 Roof Console X1 - Regular Cab

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK	(1) 1050	(1) Ground	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) YE	(3) 6817	(3) LED Backlight Dimming Control 1	(3) I	(3) —
4 - 8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.5	(9) RD / YE	(9) 240	(9) Battery Positive Voltage	(9) I	(9) —
(10) 10	(10) 0.5	(10) GN / WH	(10) 2854	(10) Body Control Module LIN Bus 8	(10) I	(10) —
(11) 11	(11) 0.35	(11) BU / GN	(11) 4785	(11) Interior Lamp Overhead Enable Signal	(11) I	(11) —
(12) 12	(12) 0.35	(12) GY / WH	(12) 2369	(12) Interior Lamp Overhead 2 Enable Signal	(12) I	(12) —
13 - 15	—	—	—	Not Occupied	—	—
(16) 16	(16) 0.5	(16) BK	(16) 1050	(16) Ground	(16) I	(16) —

A103 Roof Console X2 - Double Cab / Crew Cab



4873243

Connector Part Information

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 35016343
- Service Connector: 13519738
- Description: 16-Way F 0.64 OCS Series(BK)

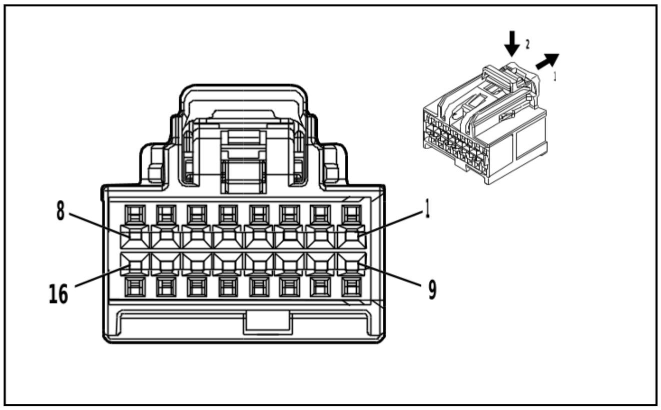
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84619127	J-35616-64B (L-BU)	J-38125-215A

A103 Roof Console X2 - Double Cab / Crew Cab

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) YE / VT	(1) 2516	(1) Telematics Switch Green LED Indicator Control	(1) I	(1) —
(2) 2	(2) 0.35	(2) BN / WH	(2) 2517	(2) Telematics Switch Red LED Indicator Control	(2) I	(2) —
(3) 3	(3) 0.35	(3) GN / WH	(3) 2514	(3) Telematics Switch Signal	(3) I	(3) —
(4) 4	(4) 0.35	(4) GN / BK	(4) 2515	(4) Telematics Switch Supply Voltage	(4) I	(4) —
(5) 5	(5) 0.35	(5) BK / WH	(5) 851	(5) Signal Ground	(5) I	(5) —
(6) 6	(6) 0.35	(6) YE / VT	(6) 6191	(6) Power Rear Window Switch Open Signal	(6) I	(6) —
(7) 7	(7) 0.35	(7) WH	(7) 6192	(7) Sliding Rear Window Switch Close Signal	(7) I	(7) —
(8) 8	(8) 0.5	(8) VT	(8) 801	(8) Retained Accessory Power Control	(8) I	(8) —
9 - 16	—	—	—	Not Occupied	—	—

A103 Roof Console X2 - Regular Cab



4873243

Connector Part Information

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 35016343
- Service Connector: 13519738
- Description: 16-Way F 0.64 OCS Series(BK)

Terminal Part Information

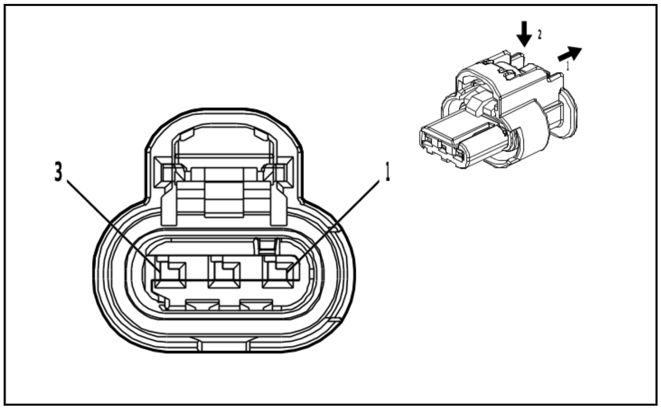
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84619127	J-35616-64B (L-BU)	J-38125-215A

A103 Roof Console X2 - Regular Cab

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) YE / VT	(1) 2516	(1) Telematics Switch Green LED Indicator Control	(1) I	(1) —
(2) 2	(2) 0.35	(2) BN / WH	(2) 2517	(2) Telematics Switch Red LED Indicator Control	(2) I	(2) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(3) 3	(3) 0.35	(3) GN / WH	(3) 2514	(3) Telematics Switch Signal	(3) I	(3) —
(4) 4	(4) 0.35	(4) GN / BK	(4) 2515	(4) Telematics Switch Supply Voltage	(4) I	(4) —
(5) 5	(5) 0.35	(5) BK / WH	(5) 851	(5) Signal Ground	(5) I	(5) —
6 - 16	—	—	—	Not Occupied	—	—

B1 Air Conditioning Refrigerant Pressure Sensor (L3B / L84 / L87)



4581126

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

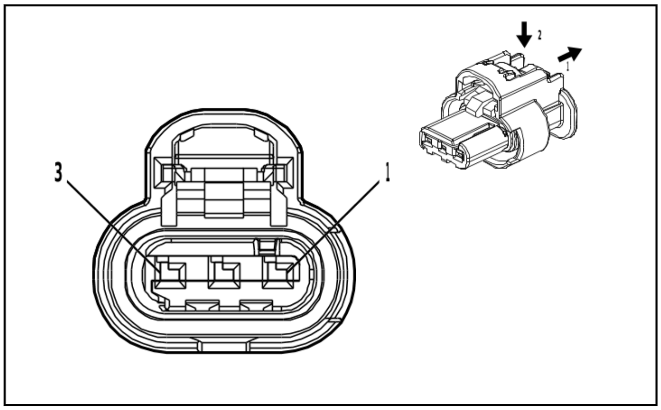
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B1 Air Conditioning Refrigerant Pressure Sensor (L3B / L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / RD	(1) 480	(1) Engine Control Vehicle Sensors 5 Volt Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN	(2) 380	(2) Air Conditioning Refrigerant Pressure Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / GY	(3) 626	(3) Engine Control Vehicle Sensors Low Reference 1	(3) I	(3) —

B1 Air Conditioning Refrigerant Pressure Sensor (LZ0)



4581126

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

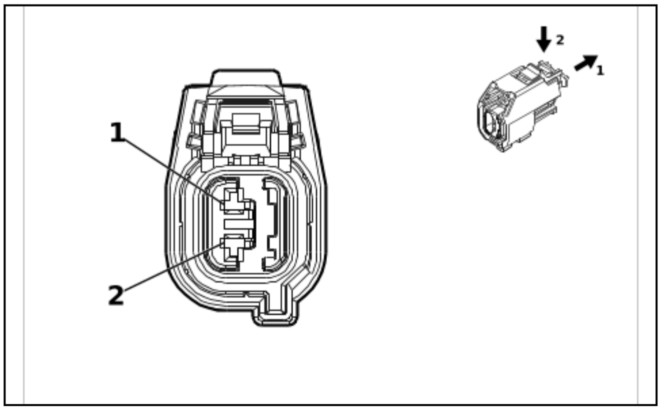
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B1 Air Conditioning Refrigerant Pressure Sensor (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / RD	(1) 480	(1) Engine Control Vehicle Sensors 5 Volt Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN	(2) 380	(2) Air Conditioning Refrigerant Pressure Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / GY	(3) 626	(3) Engine Control Vehicle Sensors Low Reference 1	(3) I	(3) —

B5LF Front Wheel Speed Sensor - Left



5666214

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 33189092
- Service Connector: 85526683
- Description: 2-Way F 1.5 OCS Series, Sealed(GY)

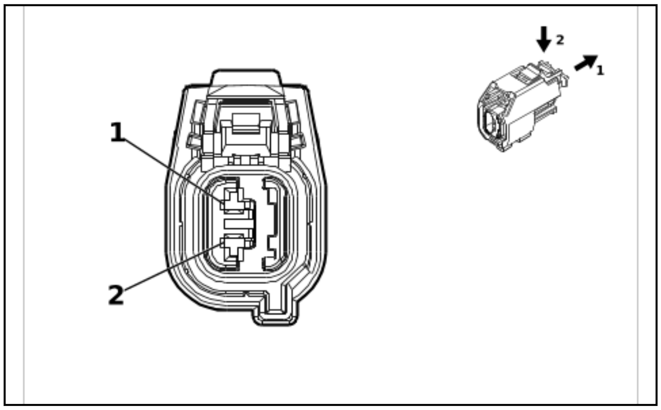
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B5LF Front Wheel Speed Sensor - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / WH	(1) 7064	(1) Left Front Wheel Speed Sensor Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY	(2) 830	(2) Left Front Wheel Speed Sensor Signal	(2) I	(2) —

B5LR Rear Wheel Speed Sensor - Left



5666214

Connector Part Information
- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 85039848
- Service Connector: Service by Harness - See Part Catalog
- Description: WHEEL SPEED SENSOR

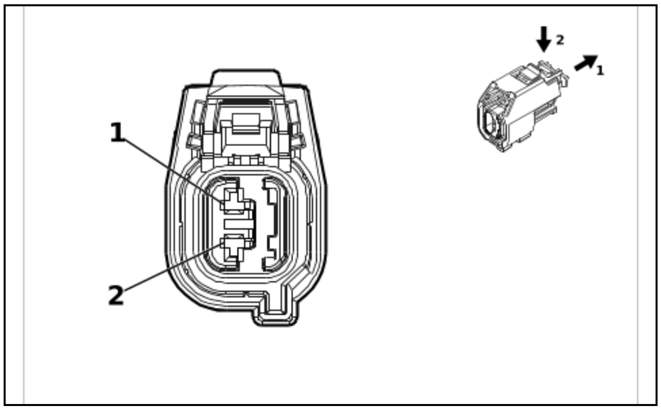
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B5LR Rear Wheel Speed Sensor - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) GY / BK	(1) 7127	(1) Left Rear Wheel Speed Sensor Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) BU	(2) 884	(2) Left Rear Wheel Speed Sensor Signal	(2) I	(2) —

B5RF Front Wheel Speed Sensor - Right



5666214

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 33189092
- Service Connector: 85526683
- Description: 2-Way F 1.5 OCS Series, Sealed(GY)

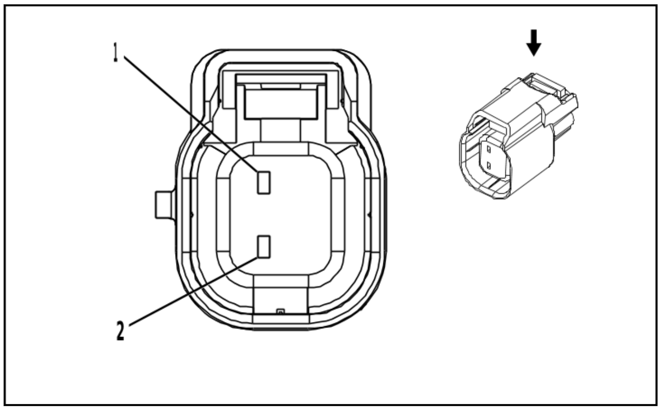
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B5RF Front Wheel Speed Sensor - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BN	(1) 7065	(1) Right Front Wheel Speed Sensor Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE	(2) 872	(2) Right Front Wheel Speed Sensor Signal	(2) I	(2) —

B5RR Rear Wheel Speed Sensor - Right



4115616

Connector Part Information

- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 85039849
- Service Connector: Service by Harness - See Part Catalog
- Description: WHEEL SPEED SENSOR

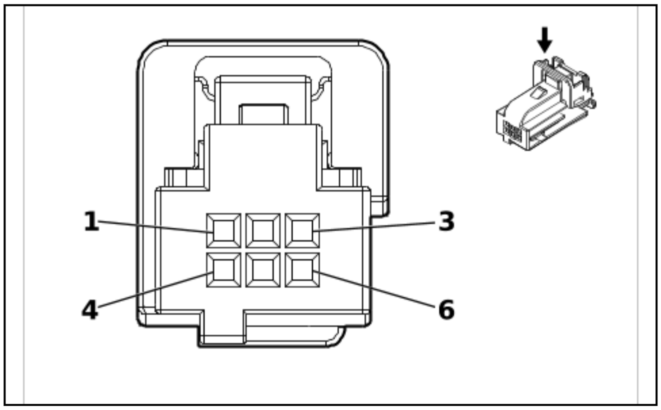
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B5RR Rear Wheel Speed Sensor - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) GY / YE	(1) 7128	(1) Right Rear Wheel Speed Sensor Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) VT	(2) 882	(2) Right Rear Wheel Speed Sensor Signal	(2) I	(2) —

B10D Sun Load and Ambient Light and Security Indicator Sensor



2282896

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2294663-1
- Service Connector: 85587649
- Description: 6-Way F 0.64 Micro-Quadlock Series(BK)

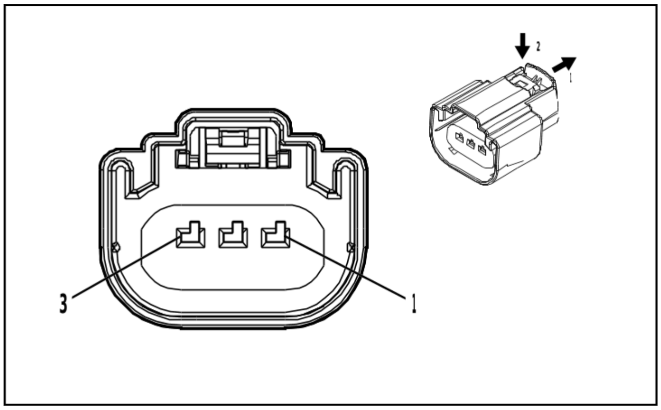
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B10D Sun Load and Ambient Light and Security Indicator Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GY	(1) 590	(1) Driver Solar Sensor Signal	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) WH / BU	(3) 278	(3) Ambient Light Sensor Signal	(3) I	(3) —
(4) 4	(4) 0.35	(4) BU / WH	(4) 734	(4) Inside Air Temperature Sensor Signal	(4) I	(4) —
(5) 5	(5) 0.35	(5) GY	(5) 728	(5) Security Indicator Control	(5) I	(5) —
(6) 6	(6) 0.35	(6) BK / YE	(6) 407	(6) Sensor Low Reference	(6) I	(6) —

B11RF Front Suspension 4 Corner Leveling System Position Sensor - Right (Z45)



4569745

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 160073-3105
- Service Connector: 19179750
- Description: 3-Way F 1.5 MX Series, Sealed(BK)

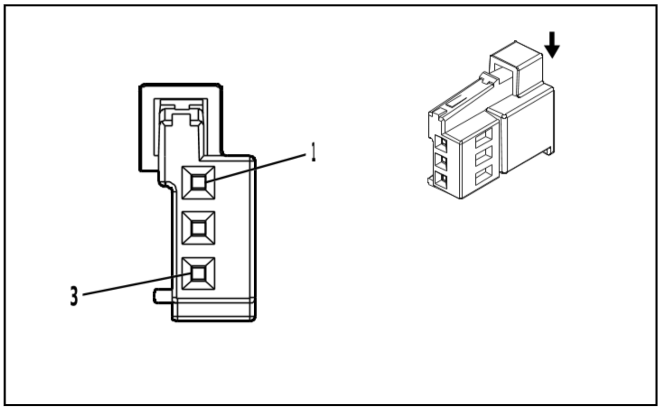
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B11RF Front Suspension 4 Corner Leveling System Position Sensor - Right (Z45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / RD	(1) 1211	(1) Right Front Suspension Position Sensor Voltage Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GY	(2) 1212	(2) Right Front Suspension Position Sensor Low Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / WH	(3) 1213	(3) Right Front Suspension Position Sensor Signal	(3) I	(3) —

B12B Automatic Transmission Fluid Pressure Sensor (MFC)



4829276

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2293842-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 0.64 Series(BU)

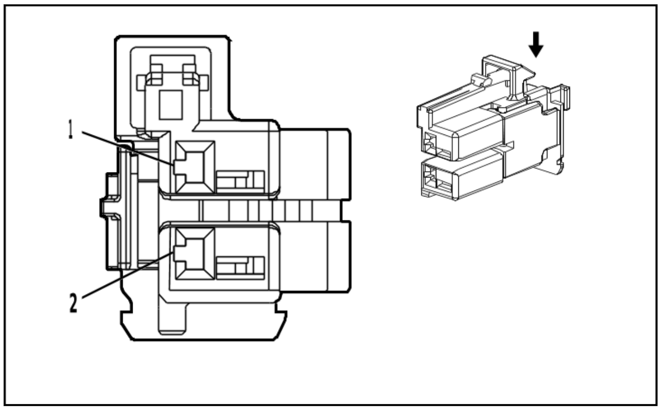
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B12B Automatic Transmission Fluid Pressure Sensor (MFC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / RD	(1) 10817	(1) Lubricant Circuit Pressure Sensor 5 Volt Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / BK	(2) 10819	(2) Lubricant Circuit Pressure Sensor Low Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) GN / YE	(3) 10816	(3) Lubricant Circuit Pressure Sensor Signal	(3) I	(3) —

B13 Automatic Transmission Fluid Temperature Sensor (MFC)



4672650

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 312004A
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BN)

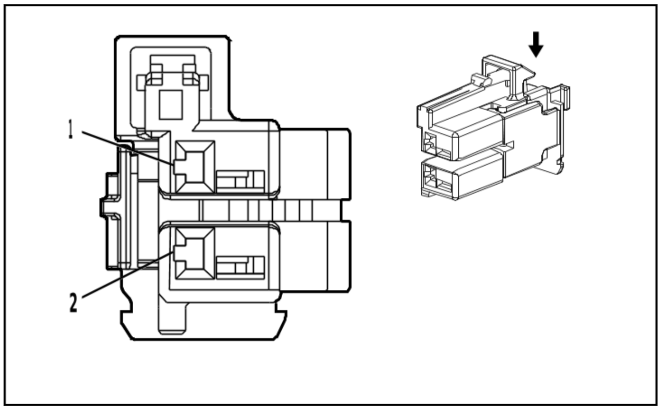
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-65B (L-BU)	No Tool Required

B13 Automatic Transmission Fluid Temperature Sensor (MFC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / BN	(1) 586	(1) Transmission Fluid Temperature Sensor Low Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / BN	(2) 585	(2) Transmission Fluid Temperature Sensor Signal	(2) I	(2) —

B13 Automatic Transmission Fluid Temperature Sensor (MI2 / MHS / MHT / MQB / MQC)



4672650

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356394-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BN)

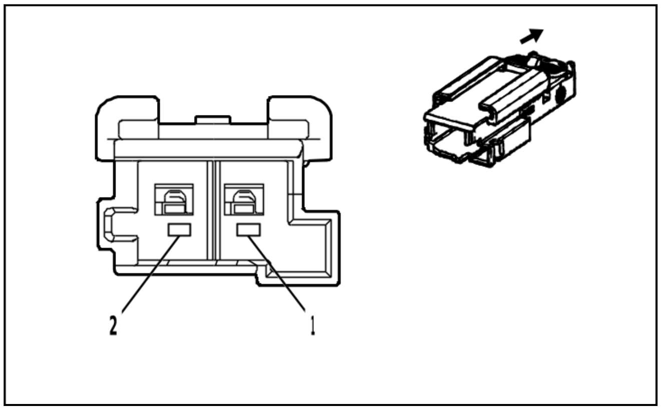
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B13 Automatic Transmission Fluid Temperature Sensor (MI2 / MHS / MHT / MQB / MQC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU / BN	(1) 586	(1) Transmission Fluid Temperature Sensor Low Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / YE	(2) 585	(2) Transmission Fluid Temperature Sensor Signal	(2) I	(2) —

B14A Automatic Transmission Output Speed Sensor (MI2 / MHS / MHT / MQB / MQC)



4672593

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2340311-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series(BU)

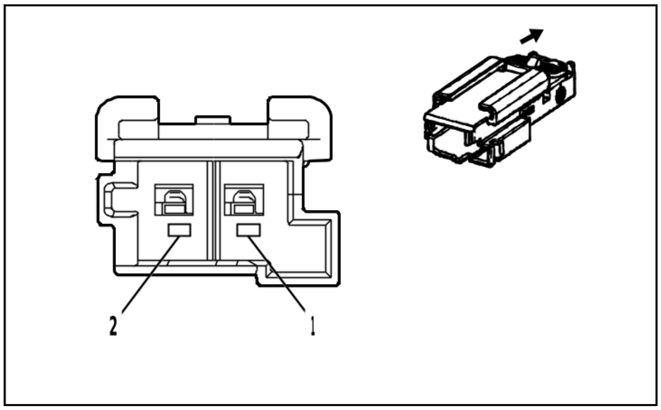
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

B14A Automatic Transmission Output Speed Sensor (MI2 / MHS / MHT / MQB / MQC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / OG	(1) 6358	(1) Output Speed Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN	(2) 4170	(2) Transmission Output Shaft Speed Sensor Circuit 9V Reference	(2) I	(2) —

B14C Automatic Transmission Input Speed Sensor (MI2 / MHS / MHT / MQB / MQC)



4672611

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2340311-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series(GN)

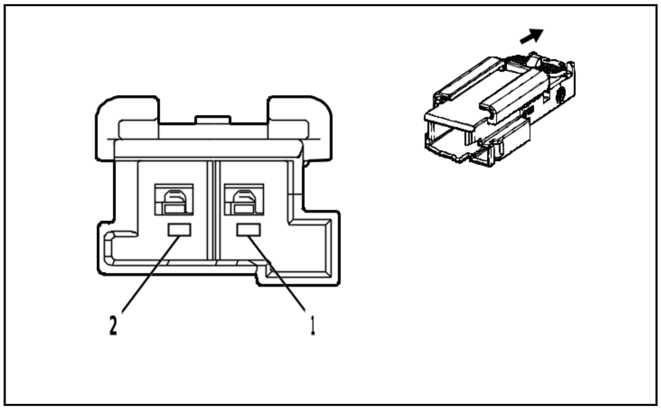
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

B14C Automatic Transmission Input Speed Sensor (MI2 / MHS / MHT / MQB / MQC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / VT	(1) 6353	(1) Input Speed Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU	(2) 4171	(2) Transmission Input Shaft Speed Sensor Circuit 9V Reference	(2) I	(2) —

B14DA Automatic Transmission Intermediate Speed Sensor 1 (MI2 / MHS / MHT / MQB / MQC)



4663490

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2340311-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series(NA)

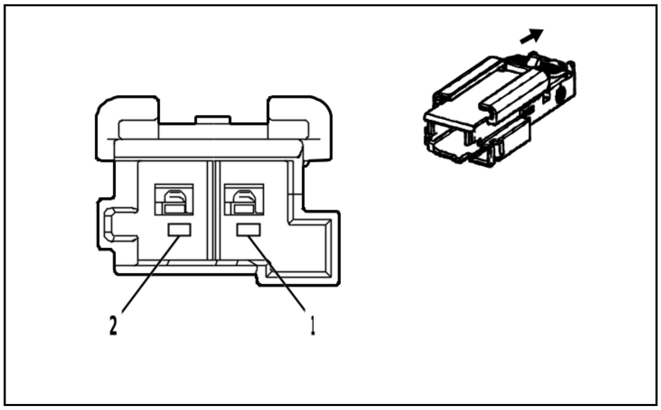
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

B14DA Automatic Transmission Intermediate Speed Sensor 1 (MI2 / MHS / MHT / MQB / MQC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / GN	(1) 4510	(1) Transmission Intermediate Speed Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN	(2) 4170	(2) Transmission Output Shaft Speed Sensor Circuit 9V Reference	(2) I	(2) —

B14DB Automatic Transmission Intermediate Speed Sensor 2 (MI2 / MHS / MHT / MQB / MQC)



4672593

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2340311-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series(BU)

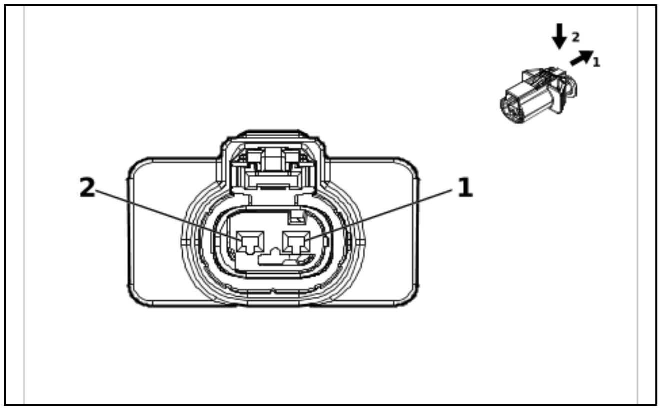
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

B14DB Automatic Transmission Intermediate Speed Sensor 2 (MI2 / MHS / MHT / MQB / MQC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / BU	(1) 6254	(1) Transmission Input Speed Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU	(2) 4171	(2) Transmission Input Shaft Speed Sensor Circuit 9V Reference	(2) I	(2) —

B20A Brake Fluid Level Indicator Switch



5877143

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 35747313
- Service Connector: 85751409
- Description: 2-Way F 1.2 MLK Series, Sealed(BK)

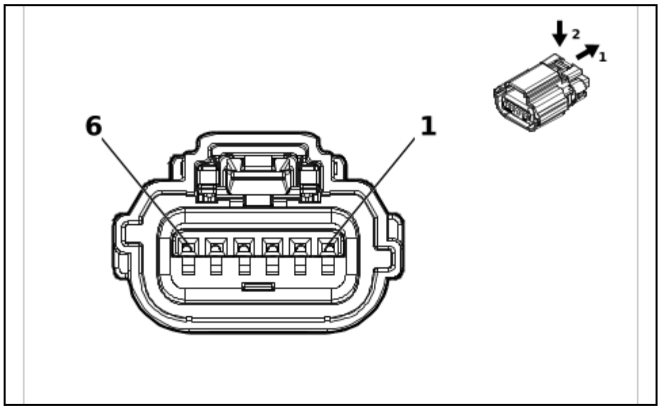
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B20A Brake Fluid Level Indicator Switch

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / GY	(1) 333	(1) Brake Fluid Level Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / WH	(2) 151	(2) Signal Ground	(2) I	(2) —

B22 Brake Pedal Position Sensor



5921818

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 35547326
- Service Connector: 86825468
- Description: 6-Way F 0.64 OCS Series, Sealed(NA)

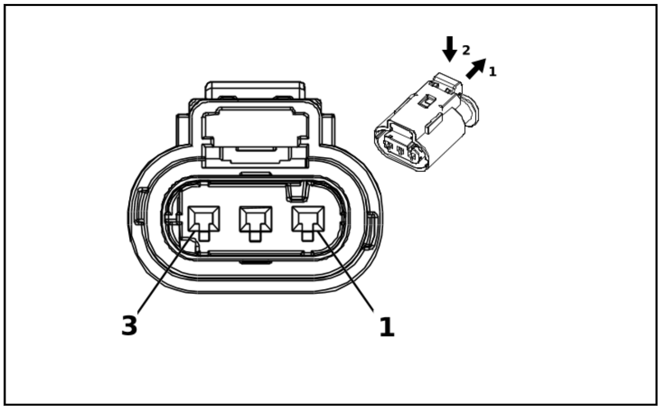
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B22 Brake Pedal Position Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK / BN	(1) 5360	(1) Brake Apply Sensor Low Reference	(1) I	(1) —
(2) 2	(2) 0.35	(2) WH	(2) 5359	(2) Brake Apply Sensor Control	(2) I	(2) —
(3) 3	(3) 0.35	(3) BU / YE	(3) 5361	(3) Brake Apply Sensor Signal	(3) I	(3) —
(4) 4	(4) 0.35	(4) WH / GN	(4) 5380	(4) Brake Position Sensor Signal	(4) I	(4) —
(5) 5	(5) 0.35	(5) BK / GY	(5) 626	(5) Engine Control Vehicle Sensors Low Reference 1	(5) I	(5) —
(6) 6	(6) 0.35	(6) WH / RD	(6) 480	(6) Engine Control Vehicle Sensors 5 Volt Reference 1	(6) I	(6) —

B23 Camshaft Position Sensor (L84 / L87)



2717069

Connector Part Information

- Harness Type: Camshaft Position Sensor Wire
- OEM Connector: 10010341
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 Multilock Series, Sealed(BK)

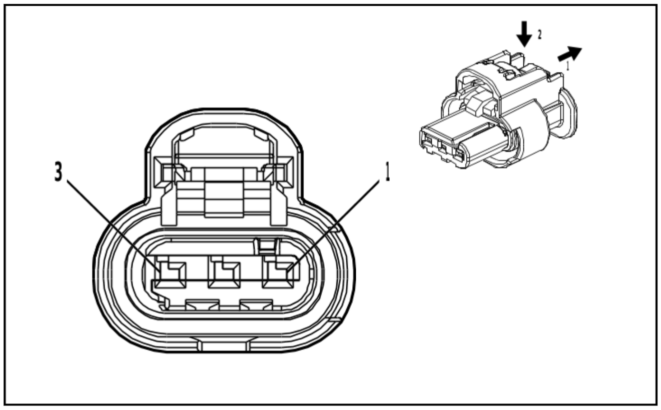
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-3 (GY)	No Tool Required

B23 Camshaft Position Sensor (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BU	(1) 5300	(1) Intake Camshaft Position Sensor 1 Voltage Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 5301	(2) Intake Camshaft Position Sensor Low Reference 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / VT	(3) 5275	(3) Intake Camshaft Position Sensor 1	(3) I	(3) —

B23 Camshaft Position Sensor (LZ0)



4581126

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

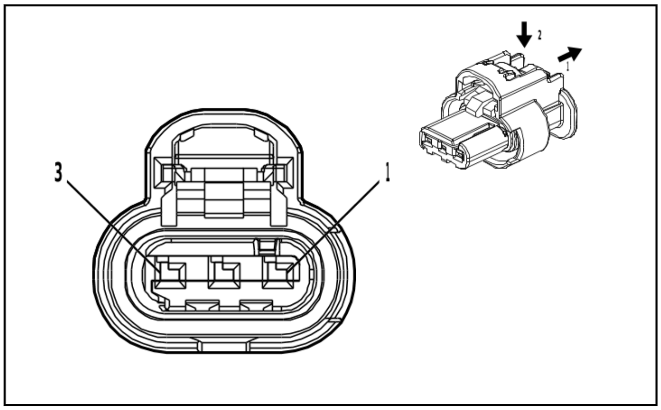
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B23 Camshaft Position Sensor (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / YE	(1) 5297	(1) Exhaust Camshaft Position Sensor 1 Voltage Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GY	(2) 5296	(2) Exhaust Camshaft Position Sensor Low Reference 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) VT / BK	(3) 5273	(3) Exhaust Camshaft Position Sensor 1	(3) I	(3) —

B23E Camshaft Position Sensor - Exhaust (L3B)



4581126

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

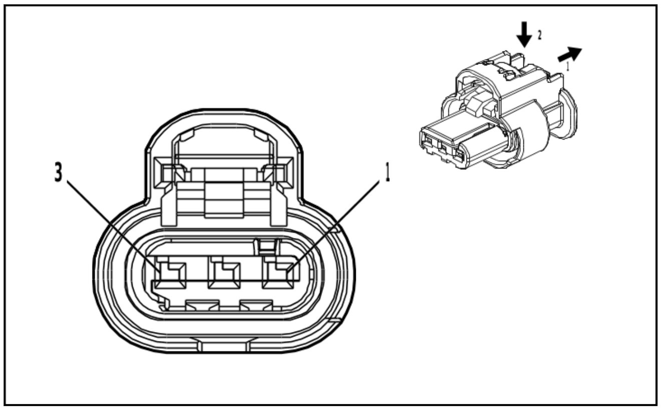
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B23E Camshaft Position Sensor - Exhaust (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / YE	(1) 5297	(1) Exhaust Camshaft Position Sensor 1 Voltage Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GY	(2) 5296	(2) Exhaust Camshaft Position Sensor Low Reference 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) VT / BK	(3) 5273	(3) Exhaust Camshaft Position Sensor 1	(3) I	(3) —

B23F Camshaft Position Sensor - Intake (L3B)



4581126

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

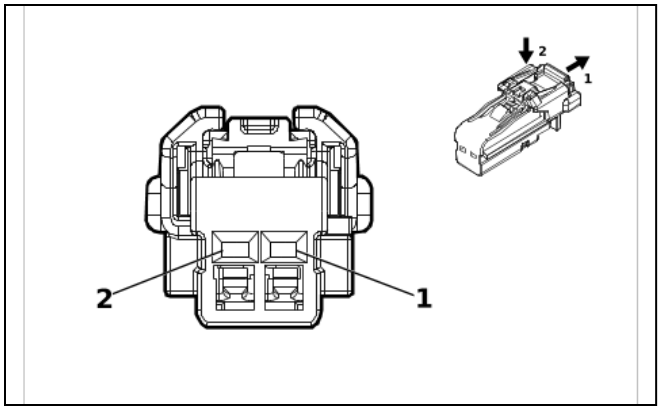
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B23F Camshaft Position Sensor - Intake (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BU	(1) 5300	(1) Intake Camshaft Position Sensor 1 Voltage Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 5301	(2) Intake Camshaft Position Sensor Low Reference 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / VT	(3) 5275	(3) Intake Camshaft Position Sensor 1	(3) I	(3) —

B24LF Mobile Telephone Microphone - Left Front



4115691

Connector Part Information
- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series(BK)

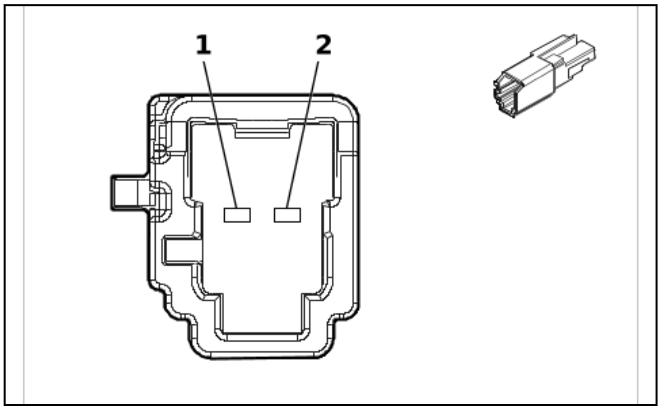
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B24LF Mobile Telephone Microphone - Left Front

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK / BN	(1) 654	(1) Cellular Telephone Microphone Low Reference	(1) I	(1) —
(2) 2	(2) 0.35	(2) BU	(2) 655	(2) Cellular Telephone Microphone Signal	(2) I	(2) —

B24RF Mobile Telephone Microphone - Right Front



6529127

Connector Part Information
- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 6099-0611
- Service Connector: 85725004
- Description: 2-Way M 1.2 MBS Series(GY)

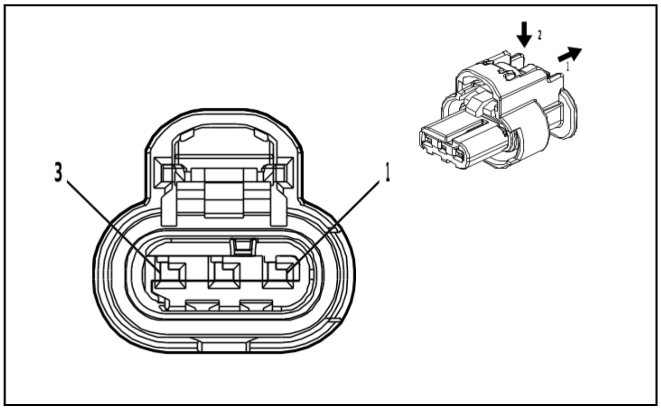
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

B24RF Mobile Telephone Microphone - Right Front

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BU / BK	(1) 7044	(1) Microphone [-] Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) VT / YE	(2) 7043	(2) Microphone [+] Signal	(2) I	(2) —

B26 Crankshaft Position Sensor (L3B)



4778903

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-2
- Service Connector: 86792095
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

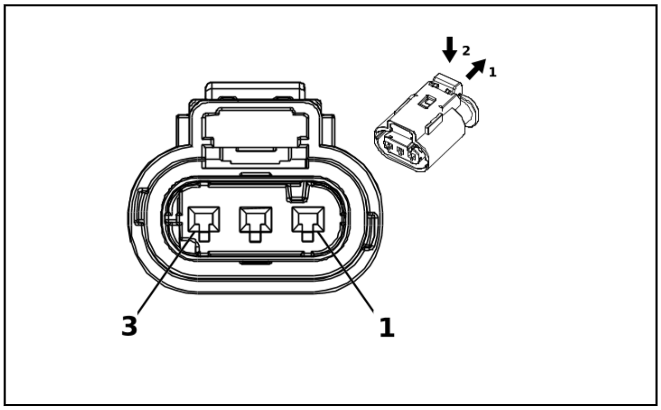
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B26 Crankshaft Position Sensor (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BU	(1) 6270	(1) Crankshaft Position Sensor Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / VT	(2) 6272	(2) Crankshaft Position Sensor Low Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) GN	(3) 6271	(3) Crankshaft Position Sensor Signal	(3) I	(3) —

B26 Crankshaft Position Sensor (L84 / L87)



2717069

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10010341
- Service Connector: 84601390
- Description: 3-Way F 1.2 Multilock Series, Sealed(BK)

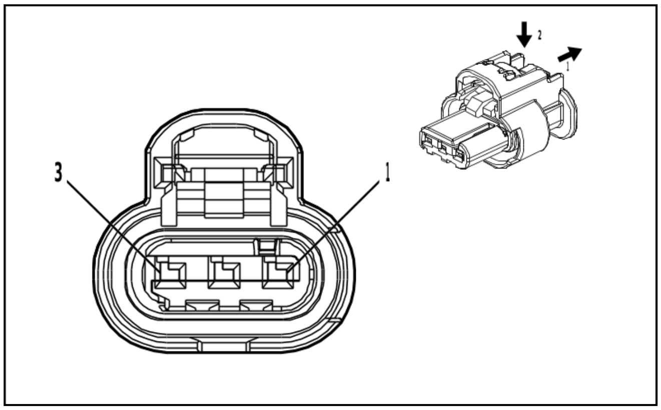
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B26 Crankshaft Position Sensor (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN	(1) 6271	(1) Crankshaft Position Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / VT	(2) 6272	(2) Crankshaft Position Sensor Low Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) VT / BU	(3) 6270	(3) Crankshaft Position Sensor Voltage	(3) I	(3) —

B26 Crankshaft Position Sensor (LZ0)



4581126

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

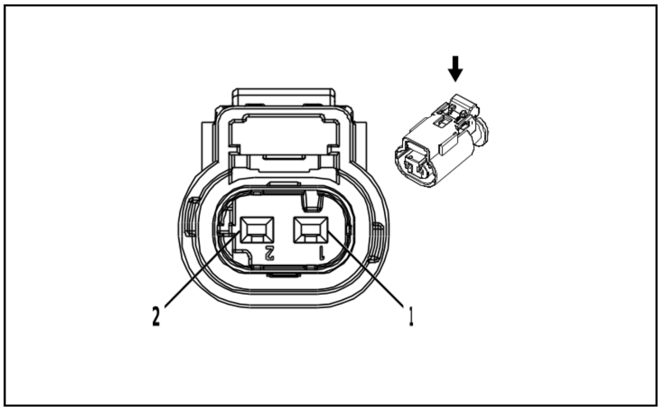
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B26 Crankshaft Position Sensor (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BU	(1) 6270	(1) Crankshaft Position Sensor Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / VT	(2) 6272	(2) Crankshaft Position Sensor Low Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) GN	(3) 6271	(3) Crankshaft Position Sensor Signal	(3) I	(3) —

B34 Engine Coolant Temperature Sensor (L84 / L87)



2717066

Connector Part Information
- Harness Type: Valve Rocker Arm Oil Control Valve Extension Harness
- OEM Connector: 10010337
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)

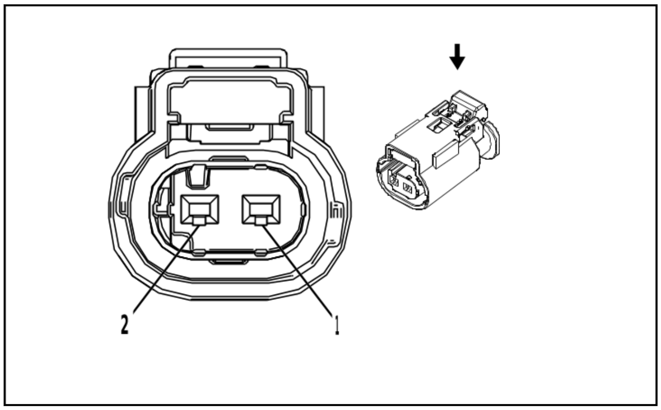
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B34 Engine Coolant Temperature Sensor (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU	(1) 410	(1) Engine Coolant Temperature Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / YE	(2) 626	(2) Engine Control Vehicle Sensors Low Reference 1	(2) I	(2) —

B34 Engine Coolant Temperature Sensor (LZ0)



2830969

Connector Part Information
- Harness Type: Engine Coolant Temperature Sensor Harness
- OEM Connector: 13503568
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 Multilock Series, Sealed(D-GY)

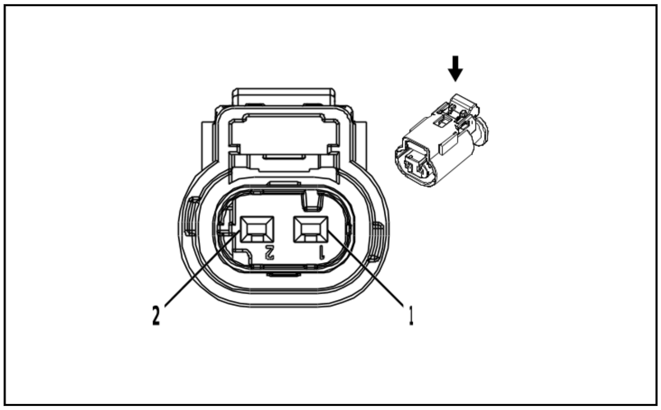
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B34 Engine Coolant Temperature Sensor (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT	(1) 2988	(1) Engine Outlet Coolant Temperature Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GY	(2) 626	(2) Engine Control Vehicle Sensors Low Reference 1	(2) I	(2) —

B34A Engine Coolant Temperature Sensor 1 (L3B)



2717066

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10010337
- Service Connector: 13587326
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)

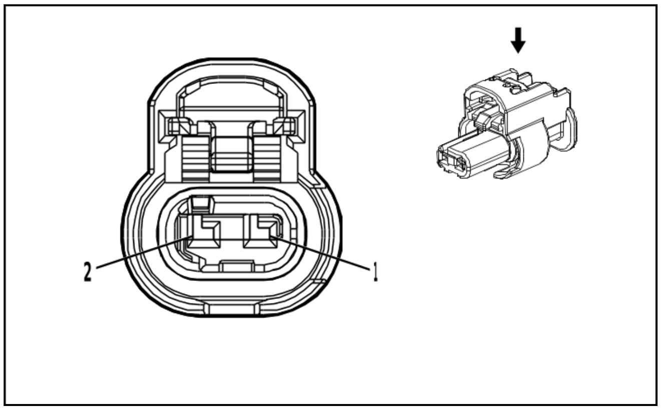
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B34A Engine Coolant Temperature Sensor 1 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BU	(1) 2408	(1) Engine Inlet Coolant Temperature Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / YE	(2) 548	(2) Engine Control Sensors Low Reference 1	(2) I	(2) —

B34B Engine Coolant Temperature Sensor 2 (L3B)



4690744

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296694-3
- Service Connector: 19366871
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

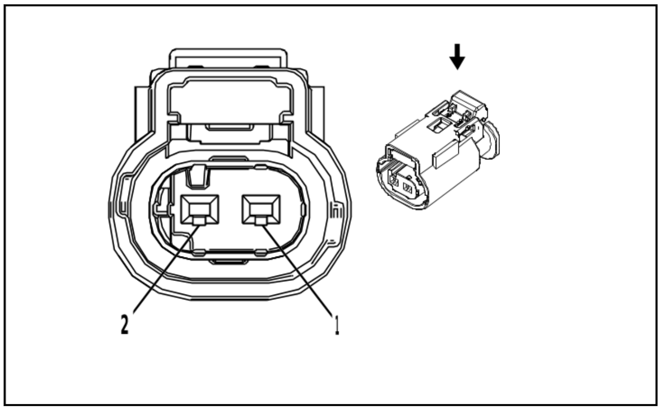
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B34B Engine Coolant Temperature Sensor 2 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT	(1) 2988	(1) Engine Outlet Coolant Temperature Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GY	(2) 626	(2) Engine Control Vehicle Sensors Low Reference 1	(2) I	(2) —

B34B Engine Coolant Temperature Sensor 2 (LZ0)



2830969

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10010339
- Service Connector: 13587321
- Description: 2-Way F 1.2 Multilock Series, Sealed(D-GY)

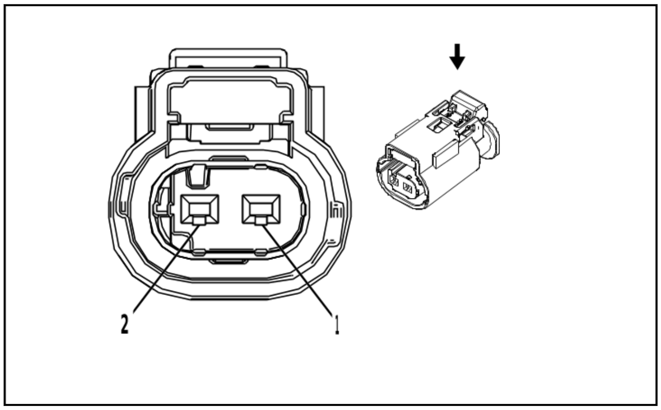
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B34B Engine Coolant Temperature Sensor 2 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BU	(1) 2408	(1) Engine Inlet Coolant Temperature Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / YE	(2) 548	(2) Engine Control Sensors Low Reference 1	(2) I	(2) —

B34E Engine Coolant Temperature Sensor 5 (L3B)



2830969

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10010339
- Service Connector: 13587321
- Description: 2-Way F 1.2 Multilock Series, Sealed(D-GY)

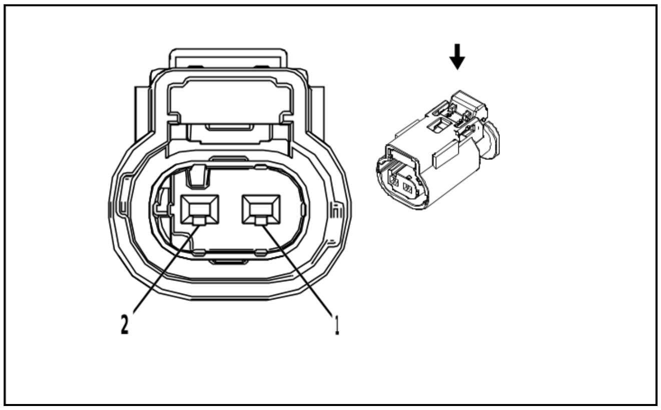
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B34E Engine Coolant Temperature Sensor 5 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU / YE	(1) 8938	(1) Engine Integrated Exhaust Manifold Temperature Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / YE	(2) 548	(2) Engine Control Sensors Low Reference 1	(2) I	(2) —

B34F Engine Coolant Temperature Sensor 6 (L3B)



2830969

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10010339
- Service Connector: 13587321
- Description: 2-Way F 1.2 Multilock Series, Sealed(D-GY)

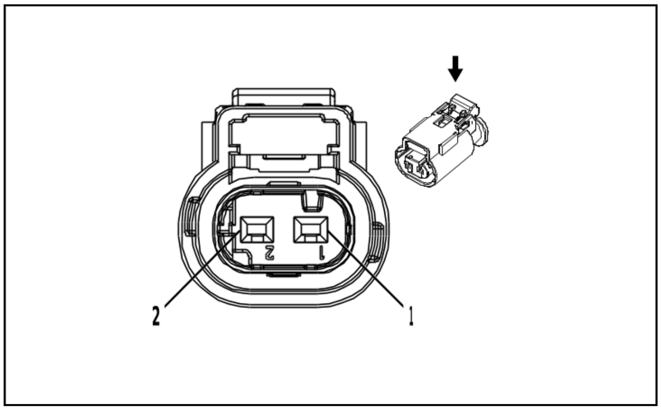
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B34F Engine Coolant Temperature Sensor 6 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / VT	(1) 2404	(1) Engine Block Coolant Temperature Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / YE	(2) 548	(2) Engine Control Sensors Low Reference 1	(2) I	(2) —

B34K Charge Air Cooler Coolant Temperature Sensor - Inlet (LZ0)



2717066

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10010337
- Service Connector: 13587326
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)

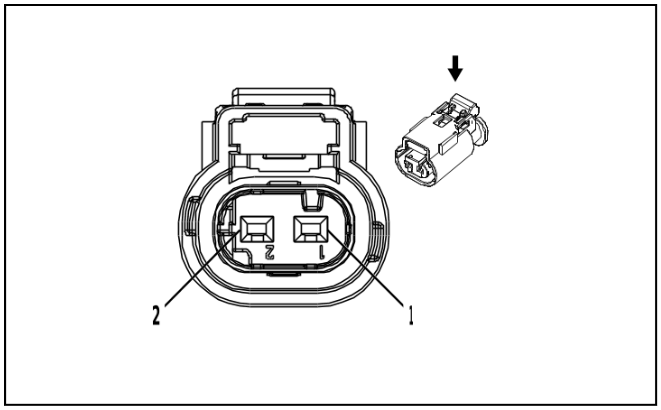
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B34K Charge Air Cooler Coolant Temperature Sensor - Inlet (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU / BK	(1) 1422	(1) Engine Water Charge Air Coolant Temperature Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GY	(2) 626	(2) Engine Control Vehicle Sensors Low Reference 1	(2) I	(2) —

B35 Engine Oil Level Indicator Switch (L84 / L87)



2717066

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10010337
- Service Connector: 13587326
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)

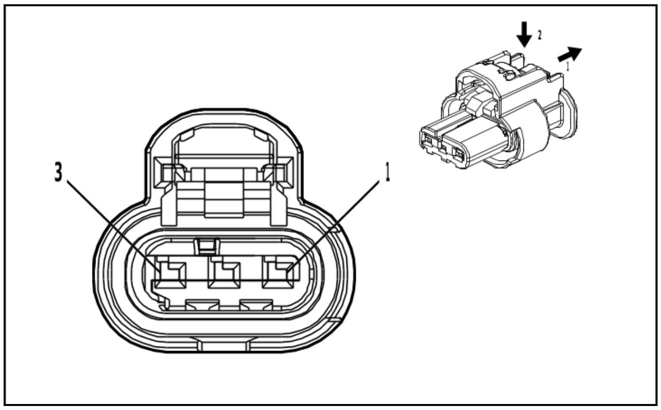
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B35 Engine Oil Level Indicator Switch (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / GN	(1) 1174	(1) Oil Level Switch Signal	(1) I	(1) —
(2) 2	(2) 0.75	(2) BK / WH	(2) 251	(2) Signal Ground	(2) I	(2) —

B36 Engine Oil Temperature Sensor (L3B)



4994602

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-3
- Service Connector: 19371199
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

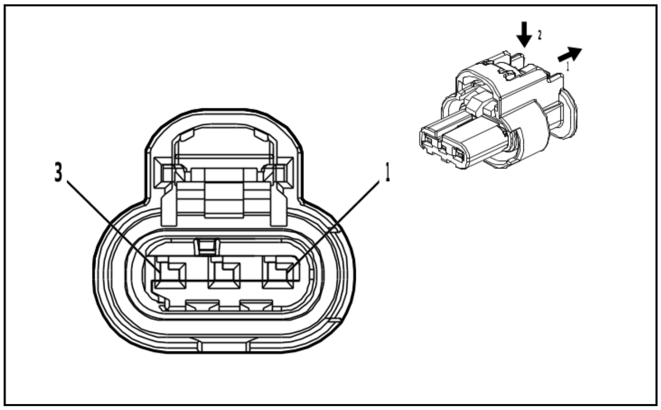
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B36 Engine Oil Temperature Sensor (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / YE	(1) 548	(1) Engine Control Sensors Low Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / BU	(2) 357	(2) Oil Temperature Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) VT	(3) 7485	(3) Engine Oil Temperature Sensor 2 Signal	(3) I	(3) —

B36 Engine Oil Temperature Sensor (LZ0)



4994602

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-3
- Service Connector: 19371199
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

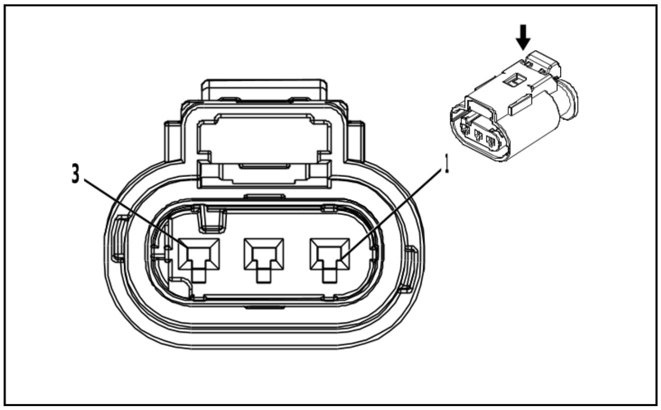
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B36 Engine Oil Temperature Sensor (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / GY	(1) 626	(1) Engine Control Vehicle Sensors Low Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / BU	(2) 357	(2) Oil Temperature Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) VT	(3) 7485	(3) Engine Oil Temperature Sensor 2 Signal	(3) I	(3) —

B37B Engine Oil Pressure Sensor (L3B)



3240107

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10010344
- Service Connector: 19301717
- Description: 3-Way F 1.2 Multilock Series, Sealed(BK)

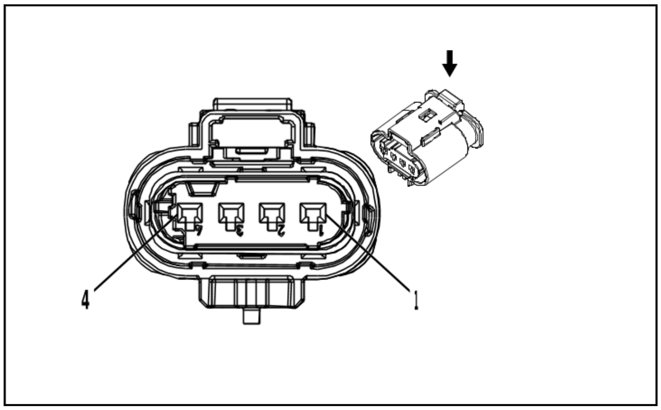
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B37B Engine Oil Pressure Sensor (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BN	(1) 331	(1) Oil Pressure Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / YE	(2) 548	(2) Engine Control Sensors Low Reference 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / RD	(3) 460	(3) Engine Control Sensors 5 Volt Reference 1	(3) I	(3) —

B37B Engine Oil Pressure Sensor (L84 / L87)



2717079

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10010346
- Service Connector: 85877329
- Description: 4-Way F 1.2 Multilock Series, Sealed(BK)

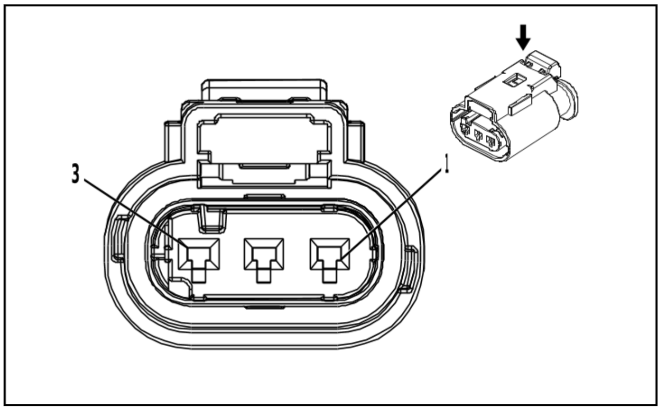
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B37B Engine Oil Pressure Sensor (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / GN	(1) 580	(1) Engine Control Sensors Low Reference 2	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / BN	(2) 331	(2) Oil Pressure Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / RD	(3) 460	(3) Engine Control Sensors 5 Volt Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) BN / BU	(4) 357	(4) Oil Temperature Sensor Signal	(4) I	(4) —

B37B Engine Oil Pressure Sensor (LZ0)



3240107

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10010344
- Service Connector: 19301717
- Description: 3-Way F 1.2 Multilock Series, Sealed(BK)

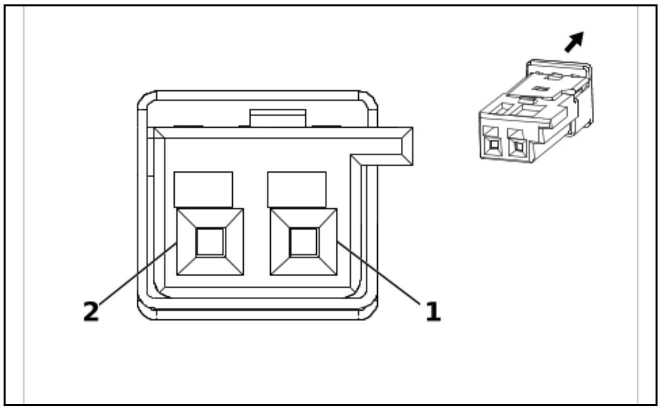
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B37B Engine Oil Pressure Sensor (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BN	(1) 331	(1) Oil Pressure Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / YE	(2) 548	(2) Engine Control Sensors Low Reference 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / RD	(3) 460	(3) Engine Control Sensors 5 Volt Reference 1	(3) I	(3) —

B39 Air Conditioning Evaporator Air Temperature Sensor



2780265

Connector Part Information

- Harness Type: Heater Wiring Harness
- OEM Connector: 13535799
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 Micro-Quadlock Series(NA)

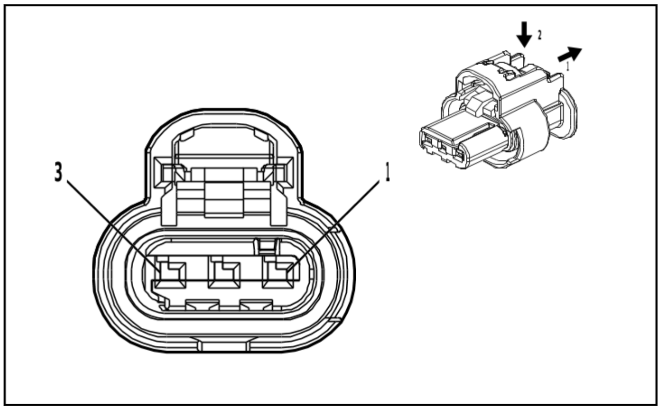
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B39 Air Conditioning Evaporator Air Temperature Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BN	(1) 6137	(1) Air Conditioning Evaporator Temperature Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) BK / YE	(2) 407	(2) Sensor Low Reference	(2) I	(2) —

B47 Fuel Pressure Sensor (L3B / L84 / L87)



4581126

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

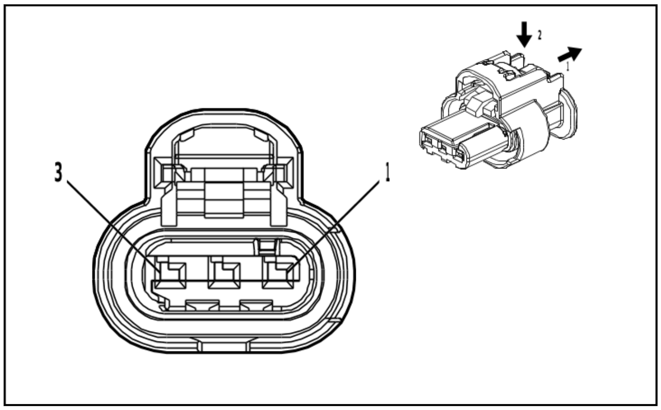
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B47 Fuel Pressure Sensor (L3B / L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / RD	(1) 7445	(1) Fuel Line Pressure Sensor 5V Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / YE	(2) 7447	(2) Fuel Pressure Sensor Low Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / WH	(3) 7446	(3) Fuel Pressure Sensor Signal	(3) I	(3) —

B47 Fuel Pressure Sensor (LZ0)



4581126

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

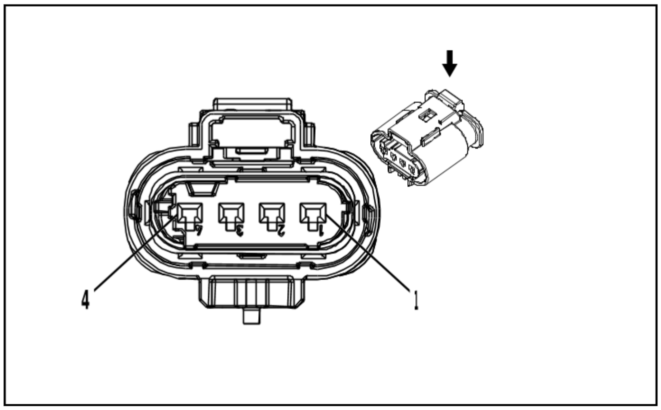
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B47 Fuel Pressure Sensor (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / RD	(1) 7445	(1) Fuel Line Pressure Sensor 5V Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / YE	(2) 7447	(2) Fuel Pressure Sensor Low Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / WH	(3) 7446	(3) Fuel Pressure Sensor Signal	(3) I	(3) —

B47B Fuel Rail Pressure Sensor (LZ0)



2717079

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10010346
- Service Connector: 85877329
- Description: 4-Way F 1.2 Multilock Series, Sealed(BK)

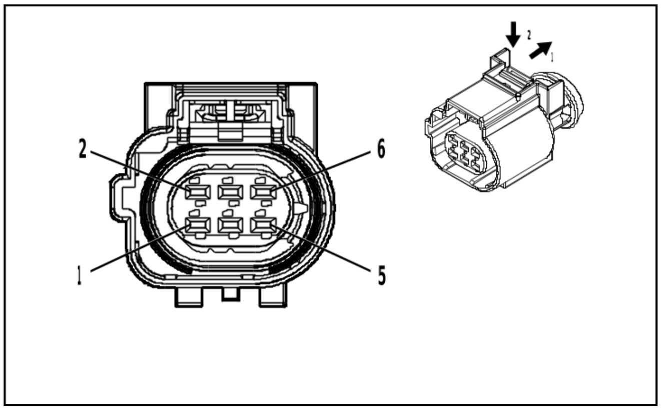
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B47B Fuel Rail Pressure Sensor (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / RD	(1) 2917	(1) Fuel Rail Pressure Sensor 5V Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / YE	(2) 2161	(2) Fuel Rail Pressure Sensor 2 Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / GN	(3) 2919	(3) Fuel Rail Pressure Sensor Low Reference	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / WH	(4) 2918	(4) Fuel Rail Pressure Sensor Signal	(4) I	(4) —

B52A Heated Oxygen Sensor 1 (L3B)



5086832

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 2-2309220-8
- Service Connector: 84613131
- Description: 6-Way F 1.5 MCP Series, Sealed(GY)

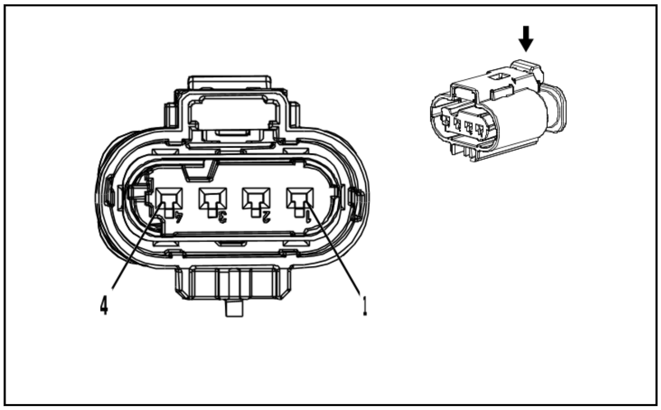
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B52A Heated Oxygen Sensor 1 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / WH	(1) 6933	(1) HO2S Pump Current Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN	(2) 6934	(2) HO2S Ground	(2) I	(2) —
(3) 3	(3) 0.5	(3) GY / WH	(3) 3113	(3) HO2S Heater Low Control Bank 1 Sensor 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) VT / BU	(4) 5293	(4) Powertrain Main Relay Fused Supply Voltage 4	(4) I	(4) —
(5) 5	(5) 0.5	(5) GN	(5) 6935	(5) HO2S Pump Current Trim Signal	(5) I	(5) —
(6) 6	(6) 0.5	(6) YE / GY	(6) 6936	(6) HO2S Signal	(6) I	(6) —

B52B Heated Oxygen Sensor 2 (L3B)



4036496

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10021265
- Service Connector: 19330904
- Description: 4-Way F 1.2 Multilock Series, Sealed(BK)

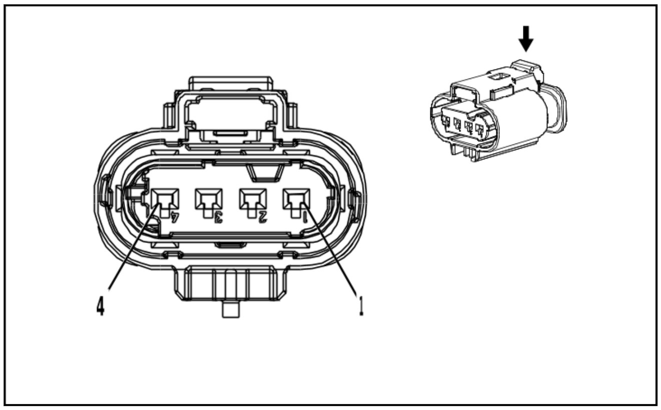
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B52B Heated Oxygen Sensor 2 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / WH	(1) 3122	(1) HO2S Heater Low Control Bank 1 Sensor 2	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / BU	(2) 5294	(2) Powertrain Main Relay Fused Supply Voltage 5	(2) I	(2) —
(3) 3	(3) 0.5	(3) WH / YE	(3) 3121	(3) HO2S Low Signal Bank 1 Sensor 2	(3) I	(3) —
(4) 4	(4) 0.5	(4) VT / BU	(4) 3120	(4) HO2S High Signal Bank 1 Sensor 2	(4) I	(4) —

B52C Heated Oxygen Sensor - Bank 1 Sensor 1 ((L84 / L87) & FHS)



4381050

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10021267
- Service Connector: 85877333
- Description: 4-Way F 1.2 Multilock Series, Sealed(GY)

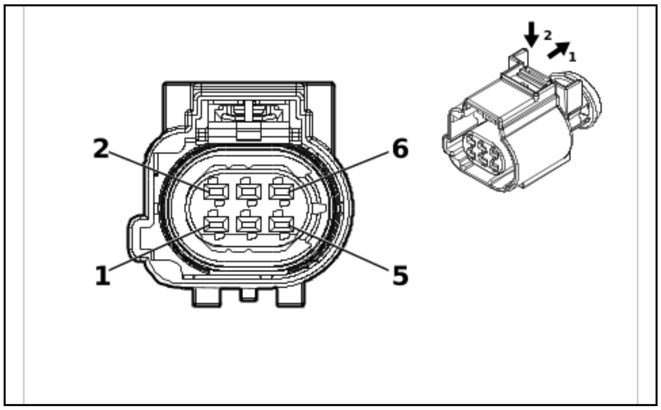
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B52C Heated Oxygen Sensor - Bank 1 Sensor 1 ((L84 / L87) & FHS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / WH	(1) 3113	(1) HO2S Heater Low Control Bank 1 Sensor 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / BU	(2) 5293	(2) Powertrain Main Relay Fused Supply Voltage 4	(2) I	(2) —
(3) 3	(3) 0.5	(3) WH / BK	(3) 3111	(3) HO2S Low Signal Bank 1 Sensor 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) VT / GY	(4) 3110	(4) HO2S High Signal Bank 1 Sensor 1	(4) I	(4) —

B52C Heated Oxygen Sensor - Bank 1 Sensor 1 ((L84 / L87) & FJW)



6312186

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 2-2309220-2
- Service Connector: 85686357
- Description: 6-Way F 1.5 MCP Series, Sealed(BN)

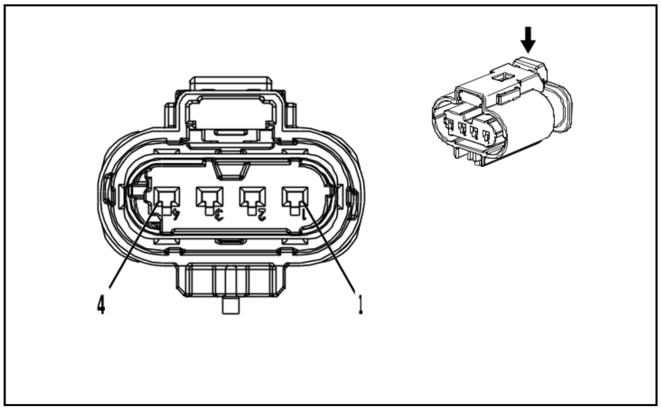
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B52C Heated Oxygen Sensor - Bank 1 Sensor 1 ((L84 / L87) & FJW)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / WH	(1) 6933	(1) HO2S Pump Current Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN	(2) 6934	(2) HO2S Ground	(2) I	(2) —
(3) 3	(3) 0.5	(3) GY / WH	(3) 3113	(3) HO2S Heater Low Control Bank 1 Sensor 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) VT / BU	(4) 5293	(4) Powertrain Main Relay Fused Supply Voltage 4	(4) I	(4) —
(5) 5	(5) 0.5	(5) GN	(5) 6935	(5) HO2S Pump Current Trim Signal	(5) I	(5) —
(6) 6	(6) 0.5	(6) YE / GY	(6) 6936	(6) HO2S Signal	(6) I	(6) —

B52D Heated Oxygen Sensor - Bank 1 Sensor 2 (L84 / L87)



Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10021266
- Service Connector: 19330920
- Description: 4-Way F 1.2 Multilock Series, Sealed(GY)

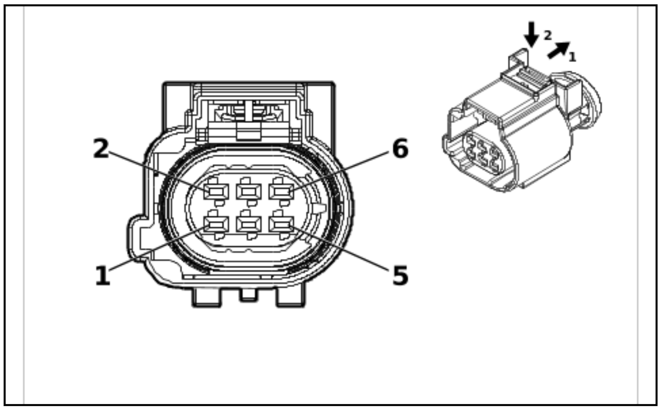
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B52D Heated Oxygen Sensor - Bank 1 Sensor 2 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / WH	(1) 3122	(1) HO2S Heater Low Control Bank 1 Sensor 2	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / BU	(2) 5294	(2) Powertrain Main Relay Fused Supply Voltage 5	(2) I	(2) —
(3) 3	(3) 0.5	(3) WH / YE	(3) 3121	(3) HO2S Low Signal Bank 1 Sensor 2	(3) I	(3) —
(4) 4	(4) 0.5	(4) VT / BU	(4) 3120	(4) HO2S High Signal Bank 1 Sensor 2	(4) I	(4) —

B52E Heated Oxygen Sensor - Bank 2 Sensor 1 ((L84 / L87) & FJW)



6312186

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 2-2309220-2
- Service Connector: 85686357
- Description: 6-Way F 1.5 MCP Series, Sealed(BN)

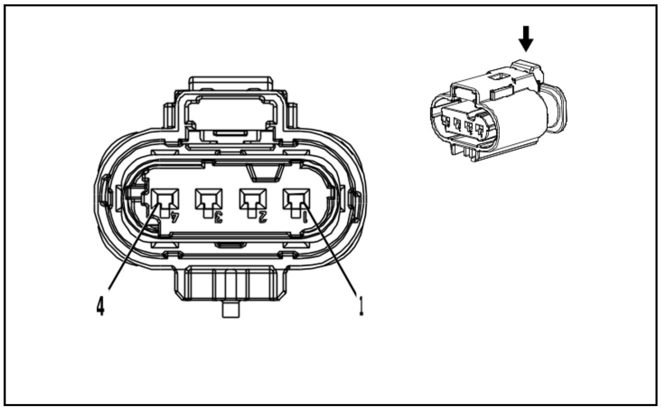
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B52E Heated Oxygen Sensor - Bank 2 Sensor 1 ((L84 / L87) & FJW)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / WH	(1) 2570	(1) Heated Oxygen Sensor 2 Pump Current Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH	(2) 2571	(2) Heated Oxygen Sensor 2 Common Bank 2 Sensor 1 Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) GN / YE	(3) 3212	(3) HO2S Heater Low Control Bank 2 Sensor 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) VT / BU	(4) 5294	(4) Powertrain Main Relay Fused Supply Voltage 5	(4) I	(4) —
(5) 5	(5) 0.5	(5) BU	(5) 2572	(5) Heated Oxygen Sensor 2 Current Adjust Signal	(5) I	(5) —
(6) 6	(6) 0.5	(6) BN / GY	(6) 2573	(6) Heated Oxygen Sensor 2 Collector Signal	(6) I	(6) —

B52E Heated Oxygen Sensor - Bank 2 Sensor 1 (L84 & FHS)



4381050

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10021267
- Service Connector: 85877333
- Description: 4-Way F 1.2 Multilock Series, Sealed(GY)

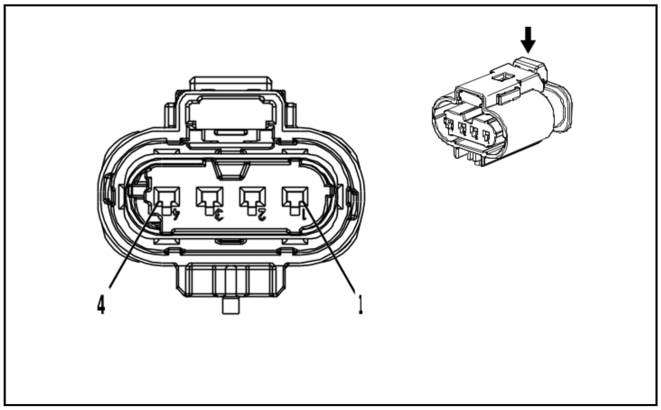
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B52E Heated Oxygen Sensor - Bank 2 Sensor 1 (L84 & FHS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / YE	(1) 3212	(1) HO2S Heater Low Control Bank 2 Sensor 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / BU	(2) 5293	(2) Powertrain Main Relay Fused Supply Voltage 4	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / WH	(3) 3211	(3) HO2S Low Signal Bank 2 Sensor 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) VT / WH	(4) 3210	(4) HO2S High Signal Bank 2 Sensor 1	(4) I	(4) —

B52F Heated Oxygen Sensor - Bank 2 Sensor 2 ((L84 / L87) & FHS)



Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10021266
- Service Connector: 19330920
- Description: 4-Way F 1.2 Multilock Series, Sealed(GY)

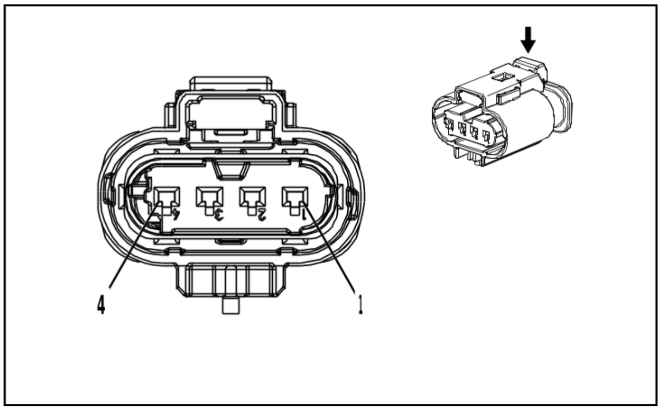
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B52F Heated Oxygen Sensor - Bank 2 Sensor 2 ((L84 / L87) & FHS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / BN	(1) 3223	(1) HO2S Heater Low Control Bank 2 Sensor 2	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / BU	(2) 5294	(2) Powertrain Main Relay Fused Supply Voltage 5	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / BU	(3) 3221	(3) HO2S Low Signal Bank 2 Sensor 2	(3) I	(3) —
(4) 4	(4) 0.5	(4) VT / GN	(4) 3220	(4) HO2S High Signal Bank 2 Sensor 2	(4) I	(4) —

B52F Heated Oxygen Sensor - Bank 2 Sensor 2 ((L84 / L87) & FJW)



4036370

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10021266
- Service Connector: 19330920
- Description: 4-Way F 1.2 Multilock Series, Sealed(GY)

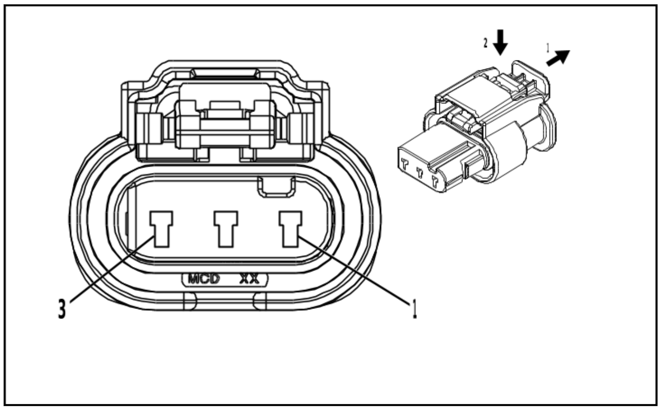
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B52F Heated Oxygen Sensor - Bank 2 Sensor 2 ((L84 / L87) & FJW)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / BN	(1) 3223	(1) HO2S Heater Low Control Bank 2 Sensor 2	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / BU	(2) 5294	(2) Powertrain Main Relay Fused Supply Voltage 5	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / BU	(3) 3221	(3) HO2S Low Signal Bank 2 Sensor 2	(3) I	(3) —
(4) 4	(4) 0.5	(4) VT / GN	(4) 3220	(4) HO2S High Signal Bank 2 Sensor 2	(4) I	(4) —

B55 Engine Compartment Cover Switch



4421568

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 34900-3120
- Service Connector: 19368220
- Description: 3-Way F 1.2 MCON-LL Series, Sealed(BK)

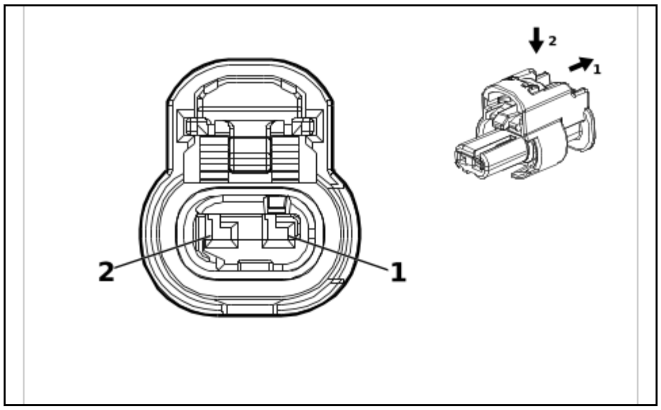
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B55 Engine Compartment Cover Switch

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE	(1) 4063	(1) Hood Status A Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) BN / GN	(2) 4064	(2) Hood Status B Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / WH	(3) 151	(3) Signal Ground	(3) I	(3) —

B58L Airbag Front End Discriminating Sensor - Left



4649903

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: 85761014
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

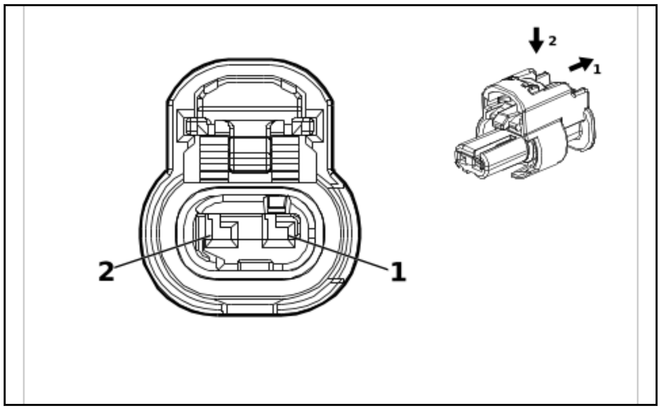
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B58L Airbag Front End Discriminating Sensor - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / YE	(1) 354	(1) Left Front Impact Discriminating Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / OG	(2) 5045	(2) Left Front Impact Discriminating Sensor Low Reference	(2) I	(2) —

B58R Airbag Front End Discriminating Sensor - Right



4649903

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: 85761014
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

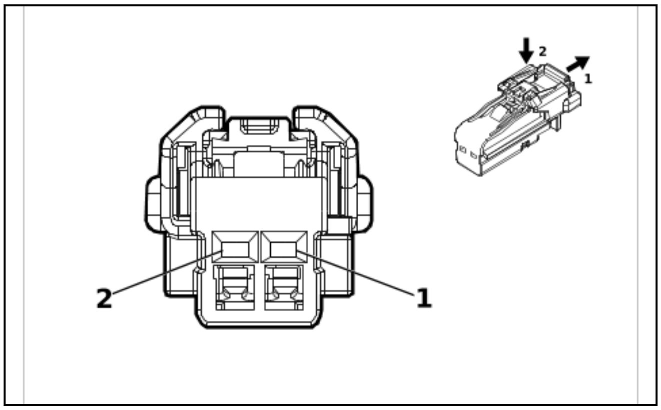
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B58R Airbag Front End Discriminating Sensor - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / GN	(1) 1409	(1) Right Front Impact Discriminating Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / OG	(2) 5600	(2) Right Front Impact Discriminating Sensor Low Reference	(2) I	(2) —

B61P Seat Belt Tension Sensor - Passenger (AL0)



4115691

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series(BK)

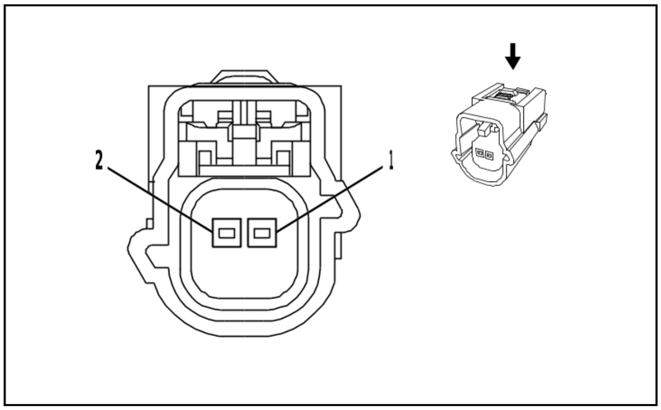
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B61P Seat Belt Tension Sensor - Passenger (AL0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GY / OG	(1) 3946	(1) Passenger Automatic Locking Retractor Switch Low Reference	(1) I	(1) —
(2) 2	(2) 0.35	(2) OG / BN	(2) 3947	(2) Passenger Automatic Locking Retractor Switch Signal	(2) I	(2) —

B63LF Airbag Side Impact Sensor - Left Front Door



2179777

Connector Part Information
- Harness Type: Front Side Door Door Wiring Harness - Driver
- OEM Connector: 13610095
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 Series, Sealed(GY)

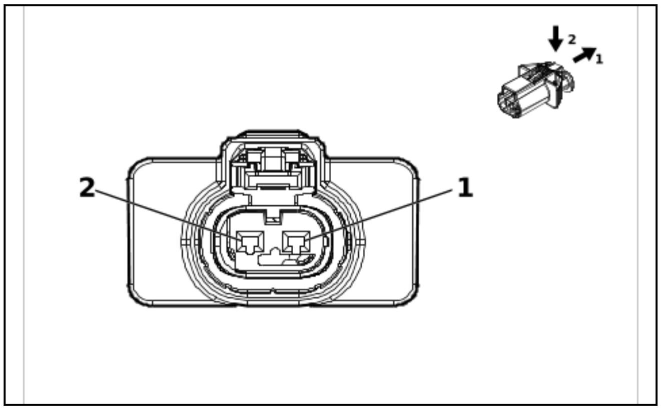
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B63LF Airbag Side Impact Sensor - Left Front Door

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / GN	(1) 2132	(1) Left Front Side Impact Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / OG	(2) 6628	(2) Left Front Side Impact Sensor Low Reference	(2) I	(2) —

B63LR Airbag Side Impact Rear Sensor - Left Door



5877154

Connector Part Information
- Harness Type: Rear Side Door Door Wiring Harness - Left Rear
- OEM Connector: 35747314
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MLK Series, Sealed(BK)

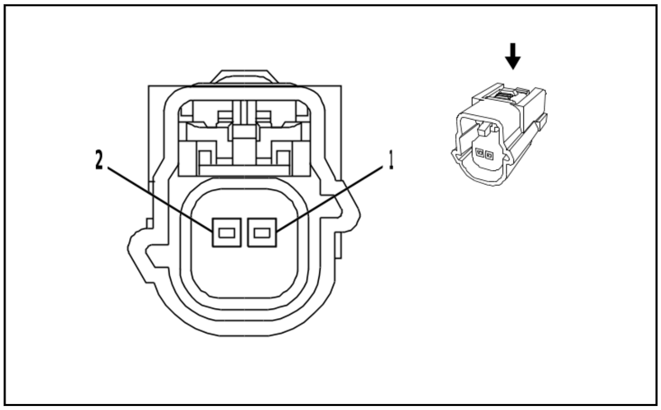
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B63LR Airbag Side Impact Rear Sensor - Left Door

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / BU	(1) 6622	(1) Left Rear Side Impact Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / OG	(2) 6623	(2) Left Rear Side Impact Sensor Low Reference	(2) I	(2) —

B63RF Airbag Side Impact Sensor - Right Front Door



2179777

Connector Part Information
- Harness Type: Front Side Door Door Wiring Harness - Passenger
- OEM Connector: 13610095
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 Series, Sealed(GY)

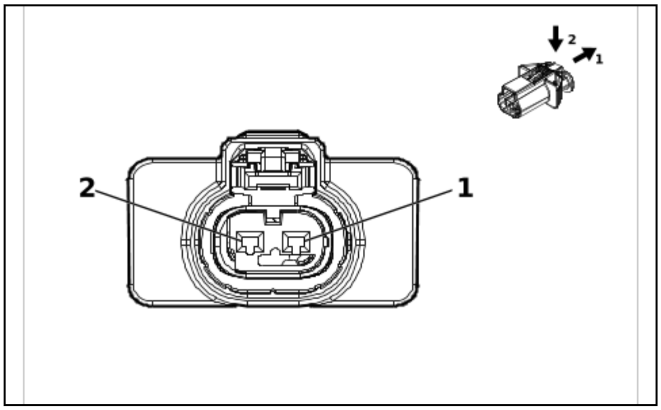
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B63RF Airbag Side Impact Sensor - Right Front Door

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / OG	(1) 2134	(1) Right Front Side Impact Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / OG	(2) 6629	(2) Right Front Side Impact Sensor Low Reference	(2) I	(2) —

B63RR Airbag Side Impact Rear Sensor - Right Door



5877154

Connector Part Information

- Harness Type: Rear Side Door Door Wiring Harness - Right Rear
- OEM Connector: 35747314
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MLK Series, Sealed(BK)

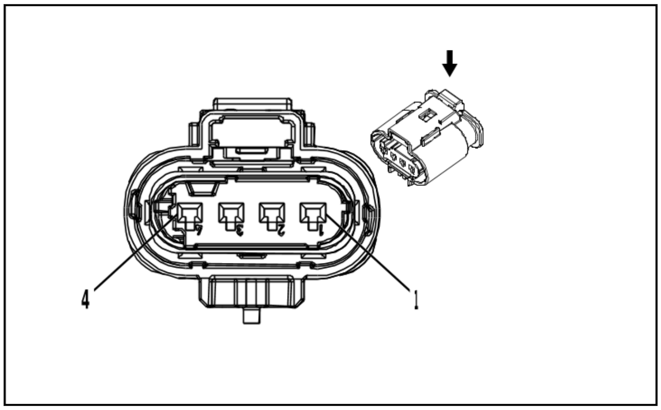
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B63RR Airbag Side Impact Rear Sensor - Right Door

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / WH	(1) 6626	(1) Right Rear Side Impact Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / OG	(2) 6627	(2) Right Rear Side Impact Sensor Low Reference	(2) I	(2) —

B65 Manifold Absolute Pressure and Intake Air Temperature Sensor (L3B)



2717079

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10010346
- Service Connector: 85877329
- Description: 4-Way F 1.2 Multilock Series, Sealed(BK)

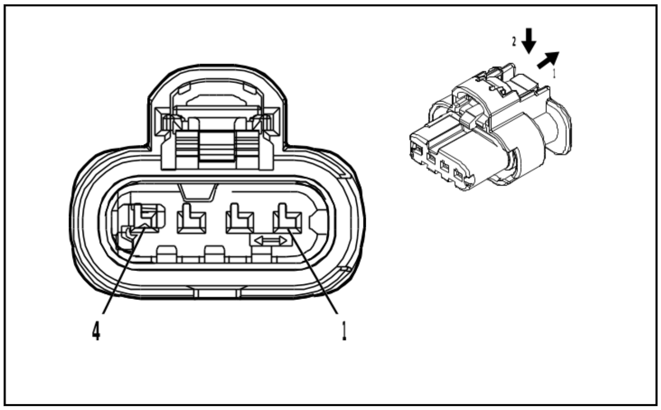
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B65 Manifold Absolute Pressure and Intake Air Temperature Sensor (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / BU	(1) 7329	(1) Pre-Throttle Air Temperature Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY / RD	(2) 2704	(2) Manifold Absolute Pressure Sensor 5V Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / GN	(3) 469	(3) Manifold Absolute Pressure Sensor Low Reference	(3) I	(3) —
(4) 4	(4) 0.5	(4) GN / WH	(4) 432	(4) Manifold Absolute Pressure Sensor Signal	(4) I	(4) —

B65 Manifold Absolute Pressure and Intake Air Temperature Sensor (LZ0)



4934614

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296696-2
- Service Connector: 85519071
- Description: 4-Way F 1.2 MCON-CB Series, Sealed(BK)

Terminal Part Information

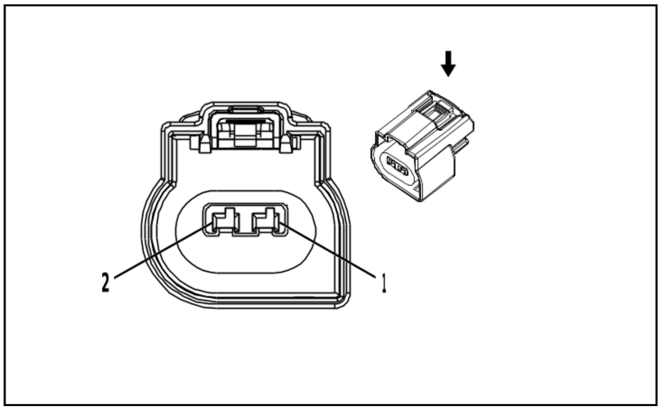
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B65 Manifold Absolute Pressure and Intake Air Temperature Sensor (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / BU	(1) 7329	(1) Pre-Throttle Air Temperature Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / RD	(2) 480	(2) Engine Control Vehicle Sensors 5 Volt Reference 1	(2) I	(2) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(3) 3	(3) 0.5	(3) BK / GN	(3) 580	(3) Engine Control Sensors Low Reference 2	(3) I	(3) —
(4) 4	(4) 0.5	(4) GN / WH	(4) 432	(4) Manifold Absolute Pressure Sensor Signal	(4) I	(4) —

B68A Knock Sensor 1 (L84 / L87)



2717073

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 34752-0204
- Service Connector: 19301207
- Description: 2-Way F 1.5 MX Series, Sealed(BK)

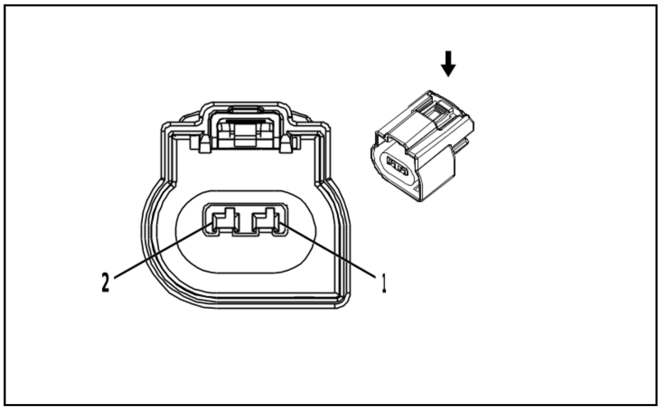
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B68A Knock Sensor 1 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) VT / GY	(1) 496	(1) Knock Sensor 1 Signal	(1) I	(1) —
(2) 2	(2) 0.75	(2) BK / YE	(2) 1716	(2) Knock Sensor Low Reference 1	(2) I	(2) —

B68B Knock Sensor 2 (L84 / L87)



2717073

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 34752-0204
- Service Connector: 19301207
- Description: 2-Way F 1.5 MX Series, Sealed(BK)

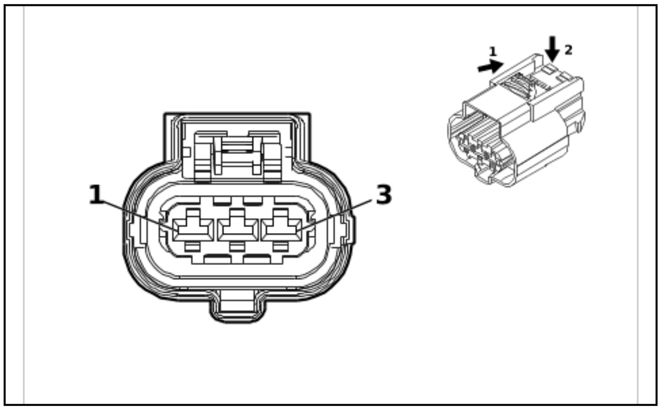
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B68B Knock Sensor 2 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) WH / GY	(1) 1876	(1) Knock Sensor 2 Signal	(1) I	(1) —
(2) 2	(2) 0.75	(2) BK / GY	(2) 2303	(2) Knock Sensor Low Reference 2	(2) I	(2) —

B74 Manifold Absolute Pressure Sensor (L84 / L87)



4900977

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 35133579
- Service Connector: 84815530
- Description: 3-Way F 2.8 CTS Series, Sealed(BK)

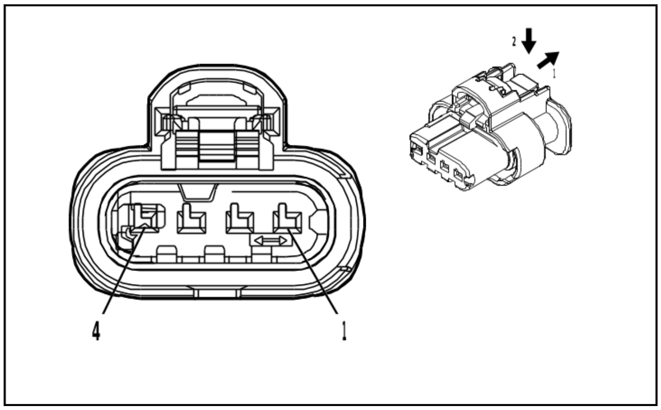
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

B74 Manifold Absolute Pressure Sensor (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / RD	(1) 2704	(1) Manifold Absolute Pressure Sensor 5V Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 469	(2) Manifold Absolute Pressure Sensor Low Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) GN / WH	(3) 432	(3) Manifold Absolute Pressure Sensor Signal	(3) I	(3) —

B75 Mass Airflow Sensor (L3B)



4934614

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296696-2
- Service Connector: 85519071
- Description: 4-Way F 1.2 MCON-CB Series, Sealed(BK)

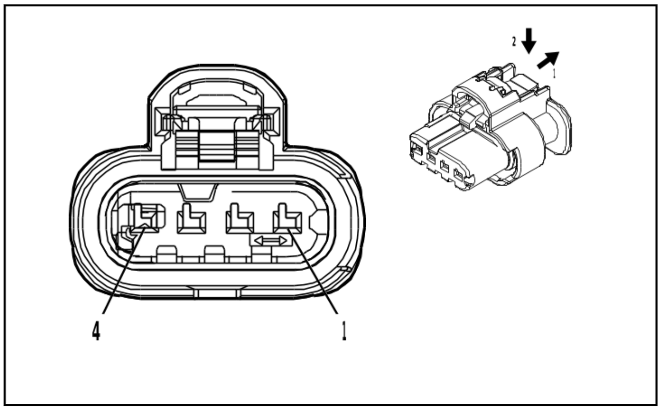
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B75 Mass Airflow Sensor (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BU	(1) 5294	(1) Powertrain Main Relay Fused Supply Voltage 5	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / WH	(2) 492	(2) Mass Air Flow Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) GN / YE	(3) 4622	(3) Engine Control Module LIN Bus 2	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 6550	(4) Ground	(4) I	(4) —

B75 Mass Airflow Sensor (L84 / L87)



4934614

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296696-2
- Service Connector: 85519071
- Description: 4-Way F 1.2 MCON-CB Series, Sealed(BK)

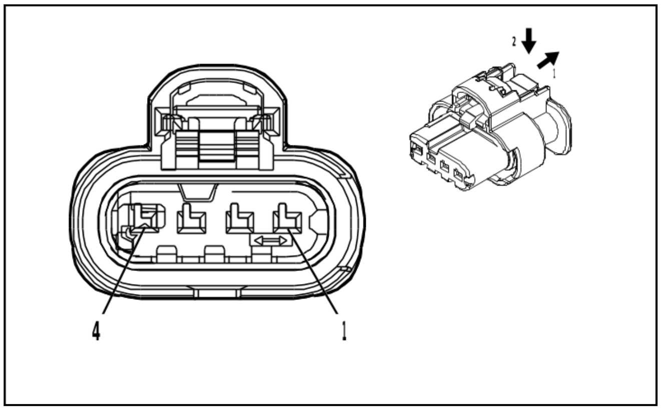
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B75 Mass Airflow Sensor (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BU	(1) 5294	(1) Powertrain Main Relay Fused Supply Voltage 5	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / WH	(2) 492	(2) Mass Air Flow Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) GN / YE	(3) 4622	(3) Engine Control Module LIN Bus 2	(3) I	(3) —
(4) 4	(4) 0.75	(4) BK / WH	(4) 251	(4) Signal Ground	(4) I	(4) —

B75 Mass Airflow Sensor (LZ0)



4934614

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296696-2
- Service Connector: 85519071
- Description: 4-Way F 1.2 MCON-CB Series, Sealed(BK)

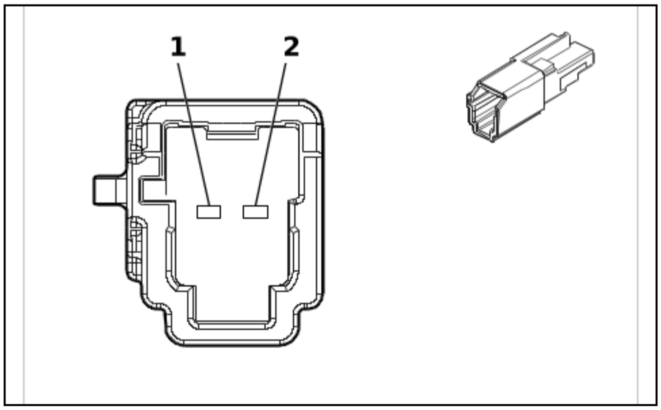
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B75 Mass Airflow Sensor (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BU	(1) 5294	(1) Powertrain Main Relay Fused Supply Voltage 5	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / WH	(2) 492	(2) Mass Air Flow Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) GN / YE	(3) 4622	(3) Engine Control Module LIN Bus 2	(3) I	(3) —
(4) 4	(4) 0.75	(4) BK / WH	(4) 251	(4) Signal Ground	(4) I	(4) —

B77 Radio Volume Compensator Interior Noise Microphone (UQS)



6529124

Connector Part Information

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 6099-0610
- Service Connector: 85725003
- Description: 2-Way M 1.2 MBS Series(BK)

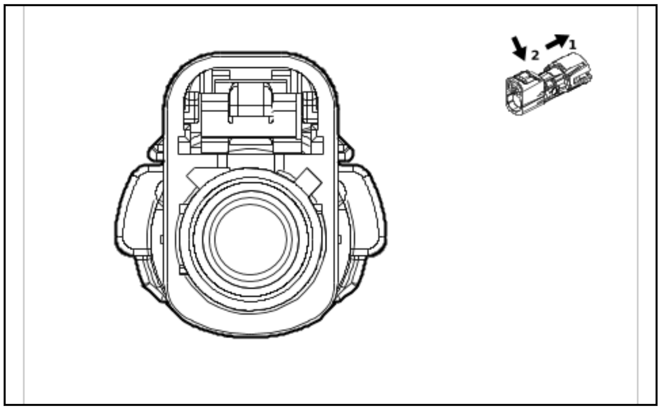
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

B77 Radio Volume Compensator Interior Noise Microphone (UQS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GN / BK	(1) 3008	(1) Active Noise Cancellation Microphone 1 Feedback Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN / BN	(2) 3005	(2) Active Noise Cancellation Microphone 1 Signal	(2) I	(2) —

B87 Rearview Driver Information Camera (UV2)



5758030

Connector Part Information

- Harness Type: Endgate Wiring Harness COAX
- OEM Connector: 35187032
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BK)

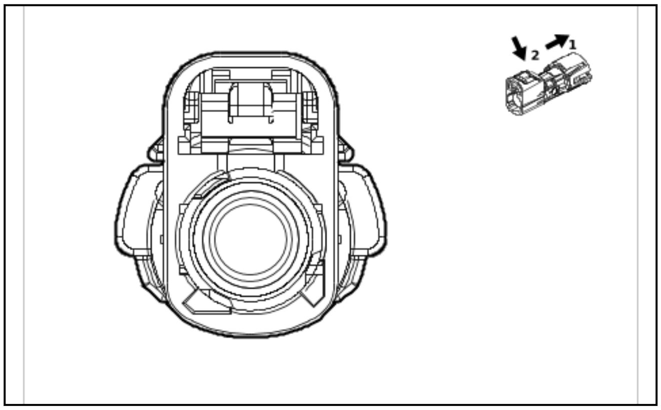
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B87 Rearview Driver Information Camera (UV2)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	Rear Vision Camera Coaxial Video Signal	I	—

B87 Rearview Driver Information Camera (UVB)



5757455

Connector Part Information

- Harness Type: Endgate Wiring Harness COAX
- OEM Connector: 13529793
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(OG)

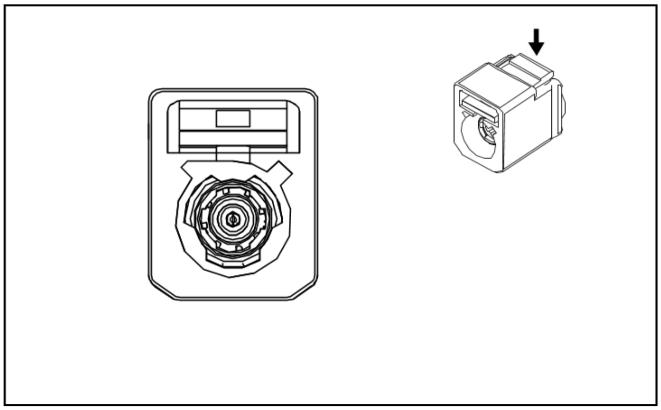
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B87 Rearview Driver Information Camera (UVB)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	Rear Vision Camera Coaxial Video Signal	I	—

B87CA Auxiliary Rearview Camera - Cargo Area (UVN)



3293633

Connector Part Information

- Harness Type: Inside Rearview Mirror Wiring Harness - Jumper COAX
- OEM Connector: 13519801
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BK)

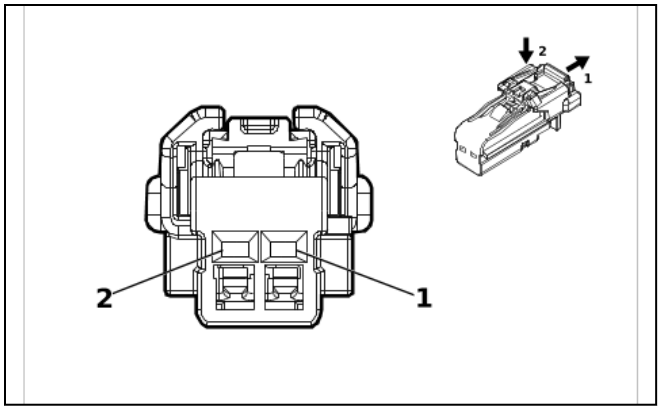
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B87CA Auxiliary Rearview Camera - Cargo Area (UVN)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	Cargo Bed Rear Vision Camera Coaxial Video Signal	I	—

B88D Seat Belt Switch - Driver (A2S)



4115691

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

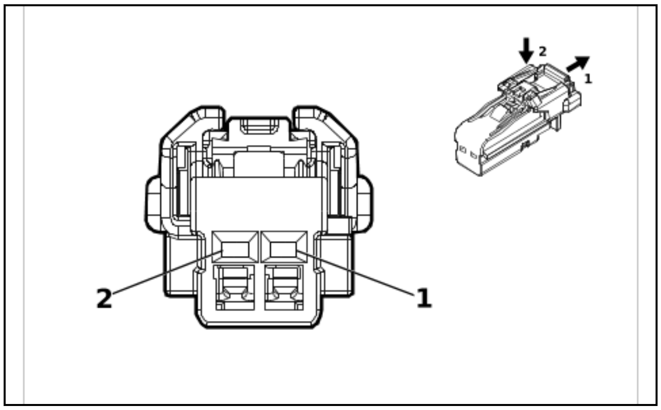
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B88D Seat Belt Switch - Driver (A2S)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / OG	(1) 1363	(1) Driver Seat Belt Switch Low Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) OG / GY	(2) 2652	(2) Driver Seat Belt Sensor Signal	(2) I	(2) —

B88DB Seat Belt Sensor - Driver (A2X)



4115691

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

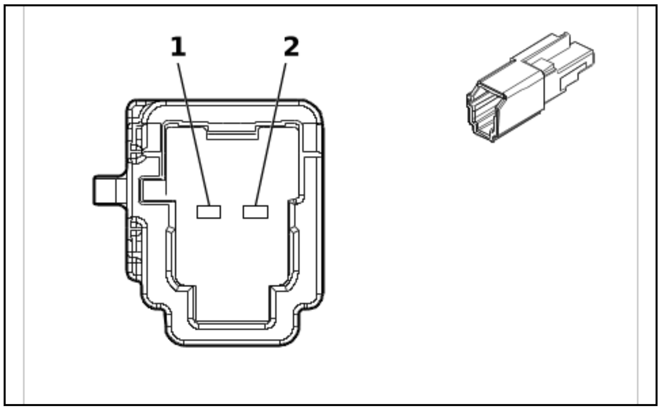
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B88DB Seat Belt Sensor - Driver (A2X)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / OG	(1) 1363	(1) Driver Seat Belt Switch Low Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) OG / GY	(2) 2652	(2) Driver Seat Belt Sensor Signal	(2) I	(2) —

B88LR Seat Belt Switch - Left Rear ((UH5 - (KI4 / KI5)) / (UH5 & (KI4 / KI5)))



6529124

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 6099-0610
- Service Connector: 85725003
- Description: 2-Way M 1.2 MBS Series(BK)

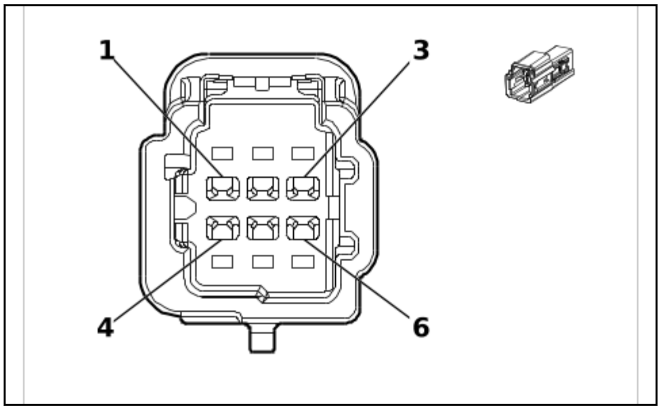
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-17 (L-GN)	No Tool Required

B88LR Seat Belt Switch - Left Rear ((UH5 - (KI4 / KI5)) / (UH5 & (KI4 / KI5)))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / OG	(1) 1363	(1) Driver Seat Belt Switch Low Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / OG	(2) 5161	(2) Left Rear Seat Belt Switch Signal	(2) I	(2) —

B88MR Seat Belt Switch - Rear Middle (UH5 - UQA)



5714613

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 6098-9120
- Service Connector: 86825467
- Description: 6-Way M 1.2 MBS Series(BK)

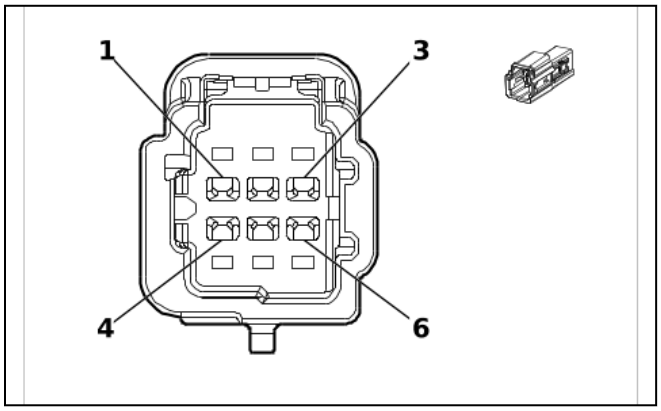
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-17 (L-GN)	No Tool Required

B88MR Seat Belt Switch - Rear Middle (UH5 - UQA)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.5	(2) BU / OG	(2) 5163	(2) Rear Center Seat Belt Switch Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / OG	(3) 1363	(3) Driver Seat Belt Switch Low Reference	(3) I	(3) —
4 - 6	—	—	—	Not Occupied	—	—

B88MR Seat Belt Switch - Rear Middle (UH5 & UQA)



5714613

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 6098-9120
- Service Connector: 86825467
- Description: 6-Way M 1.2 MBS Series(BK)

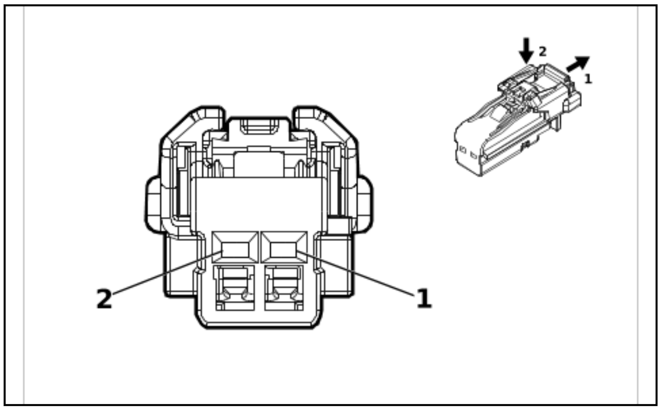
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-17 (L-GN)	No Tool Required

B88MR Seat Belt Switch - Rear Middle (UH5 & UQA)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.5	(2) BU / OG	(2) 5163	(2) Rear Center Seat Belt Switch Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / OG	(3) 1363	(3) Driver Seat Belt Switch Low Reference	(3) I	(3) —
4 - 6	—	—	—	Not Occupied	—	—

B88P Seat Belt Switch - Passenger



4115691

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

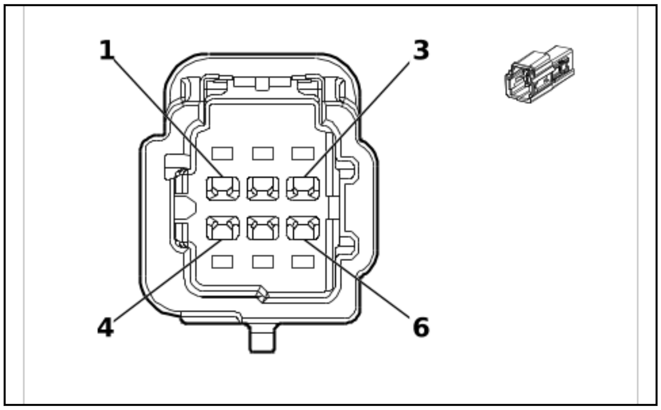
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B88P Seat Belt Switch - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / OG	(1) 1363	(1) Driver Seat Belt Switch Low Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) OG / VT	(2) 1362	(2) Passenger Seat Belt Switch Signal	(2) I	(2) —

B88RR Seat Belt Switch - Right Rear (UH5 - UQA)



5714613

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 6098-9120
- Service Connector: 86825467
- Description: 6-Way M 1.2 MBS Series(BK)

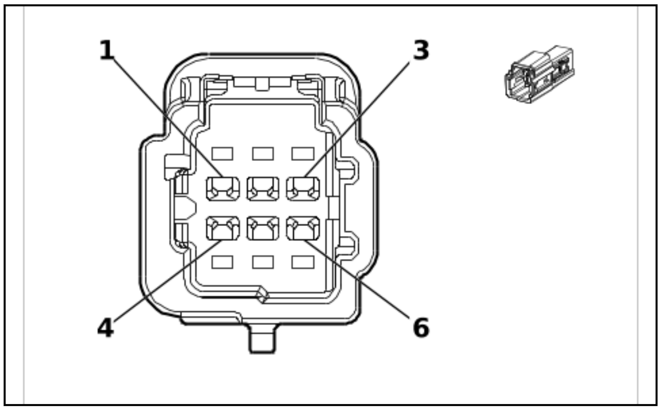
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-17 (L-GN)	No Tool Required

B88RR Seat Belt Switch - Right Rear (UH5 - UQA)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) BN / OG	(5) 5162	(5) Right Rear Seat Belt Switch Signal	(5) I	(5) —
(6) 6	(6) 0.5	(6) BK / OG	(6) 1363	(6) Driver Seat Belt Switch Low Reference	(6) I	(6) —

B88RR Seat Belt Switch - Right Rear (UH5 & UQA)



5714613

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 6098-9120
- Service Connector: 86825467
- Description: 6-Way M 1.2 MBS Series(BK)

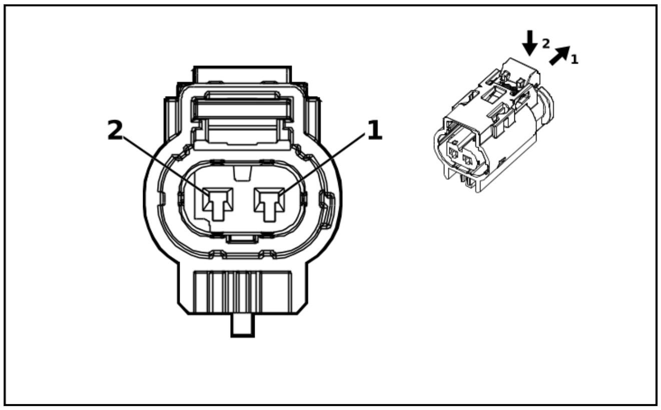
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-17 (L-GN)	No Tool Required

B88RR Seat Belt Switch - Right Rear (UH5 & UQA)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) BN / OG	(5) 5162	(5) Right Rear Seat Belt Switch Signal	(5) I	(5) —
(6) 6	(6) 0.5	(6) BK / OG	(6) 1363	(6) Driver Seat Belt Switch Low Reference	(6) I	(6) —

B96 Cylinder Head Temperature Sensor (LZ0)



3747580

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10094236
- Service Connector: 19332627
- Description: 2-Way F 1.2 Multilock Series, Sealed(GY)

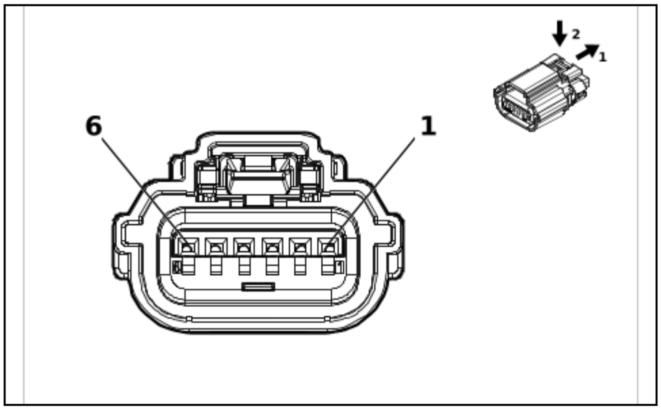
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B96 Cylinder Head Temperature Sensor (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / YE	(1) 37	(1) Engine Block Temperature Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 580	(2) Engine Control Sensors Low Reference 2	(2) I	(2) —

B107 Accelerator Pedal Position Sensor



5921819

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 35390637
- Service Connector: 86825466
- Description: 6-Way F 0.64 OCS Series, Sealed(BK)

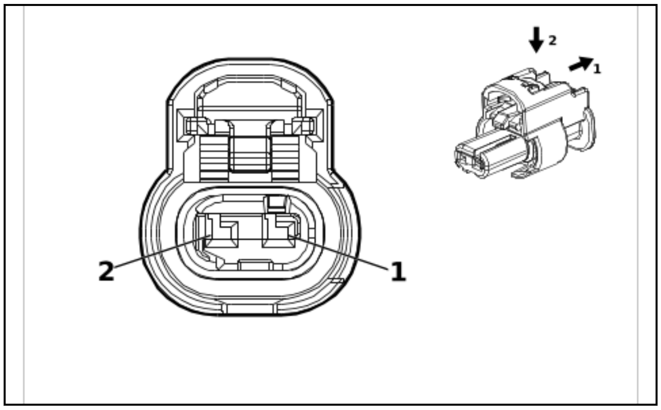
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B107 Accelerator Pedal Position Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) WH / RD	(1) 1164	(1) Accelerator Pedal Position 5V Reference 1	(1) I	(1) —
(2) 2	(2) 0.35	(2) YE / WH	(2) 1161	(2) Accelerator Pedal Position Signal 1	(2) I	(2) —
(3) 3	(3) 0.35	(3) BK / BU	(3) 1271	(3) Accelerator Pedal Position Low Reference 1	(3) I	(3) —
(4) 4	(4) 0.35	(4) BK / VT	(4) 1272	(4) Accelerator Pedal Position Low Reference 2	(4) I	(4) —
(5) 5	(5) 0.35	(5) GN / WH	(5) 1162	(5) Accelerator Pedal Position Signal 2	(5) I	(5) —
(6) 6	(6) 0.35	(6) BN / RD	(6) 1274	(6) Accelerator Pedal Position 5V Reference 2	(6) I	(6) —

B110 Battery Monitor Module X1



4649903

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: 85761014
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

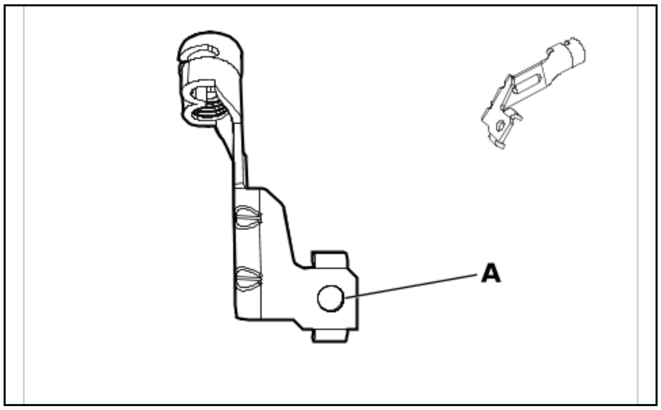
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B110 Battery Monitor Module X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GN / YE	(1) 2855	(1) Body Control Module LIN Bus 9	(1) I	(1) —
(2) 2	(2) 0.75	(2) RD / YE	(2) 2340	(2) Battery Positive Voltage	(2) I	(2) —

B110 Battery Monitor Module X2 (L3B / L84 / L87)



6781792

Connector Part Information

- Harness Type: Battery Negative Cable
- OEM Connector: 13516387
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

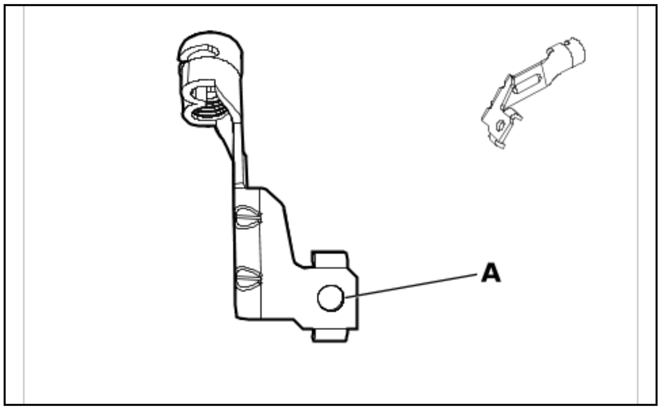
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B110 Battery Monitor Module X2 (L3B / L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Ring Terminal	—	Ground	I	—

B110 Battery Monitor Module X2 (LZ0)



6781792

Connector Part Information

- Harness Type: Battery Negative Cable
- OEM Connector: 13516387
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

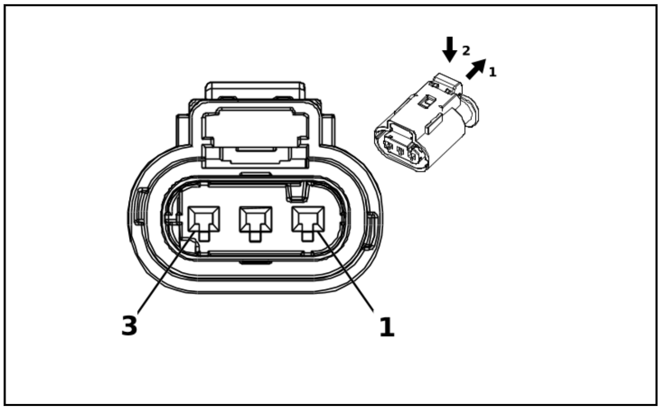
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B110 Battery Monitor Module X2 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	50	BK	550	Ground	I	—

B111 Turbocharger/Supercharger Boost Pressure Sensor (L3B)



2717069

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10010341
- Service Connector: 84601390
- Description: 3-Way F 1.2 Multilock Series, Sealed(BK)

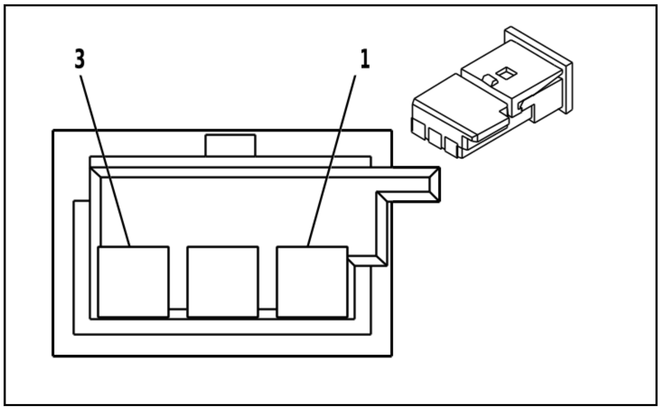
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B111 Turbocharger/Supercharger Boost Pressure Sensor (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU / RD	(1) 460	(1) Engine Control Sensors 5 Volt Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / YE	(2) 548	(2) Engine Control Sensors Low Reference 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / WH	(3) 3200	(3) Throttle Inlet Absolute Pressure Sensor Signal	(3) I	(3) —

B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor (ASV & CE1)



647970

Connector Part Information

- Harness Type: Headlamp Automatic Control Ambient Light Sensor Wiring Harness
- OEM Connector: 1-1718346-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 0.64 Micro-Quadlock Series(BK)

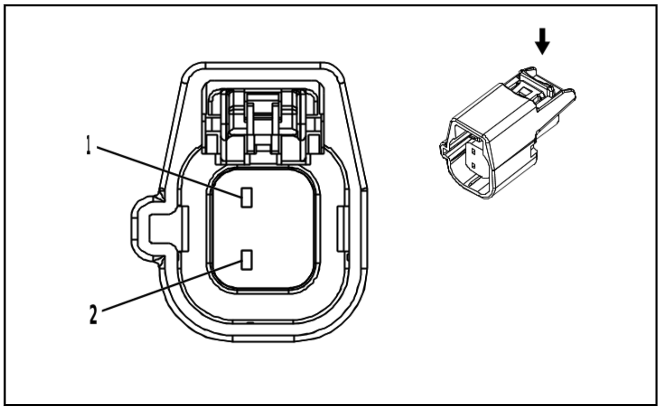
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor (ASV & CE1)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / VT	(1) 339	(1) Run/Crank Ignition 1 Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN / BN	(2) 4115	(2) Body Control Module LIN Bus 5	(2) I	(2) —
(3) 3	(3) 0.35	(3) BK	(3) 851	(3) Signal Ground	(3) I	(3) —

B118 Windshield Washer Solvent Container Level Sensor



3958652

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 7287-8378-40
- Service Connector: 13593220
- Description: 2-Way F 1.5 Series, Sealed(L-GY)

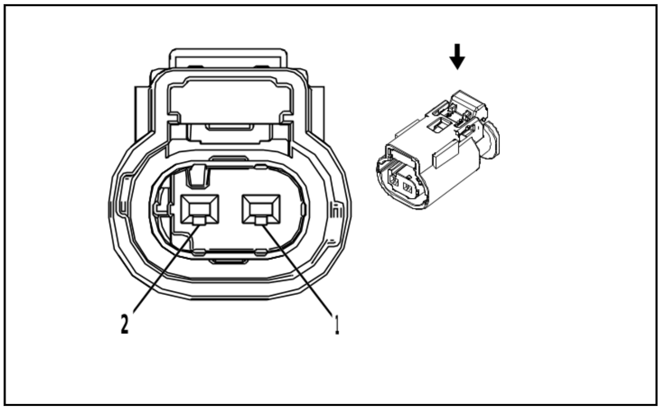
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B118 Windshield Washer Solvent Container Level Sensor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) VT	(1) 185	(1) Low Washer Fluid Indicator Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / WH	(2) 151	(2) Signal Ground	(2) I	(2) —

B130C Exhaust Gas Recirculation Temperature Sensor 3 (LZ0)



2830969

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10010339
- Service Connector: 13587321
- Description: 2-Way F 1.2 Multilock Series, Sealed(D-GY)

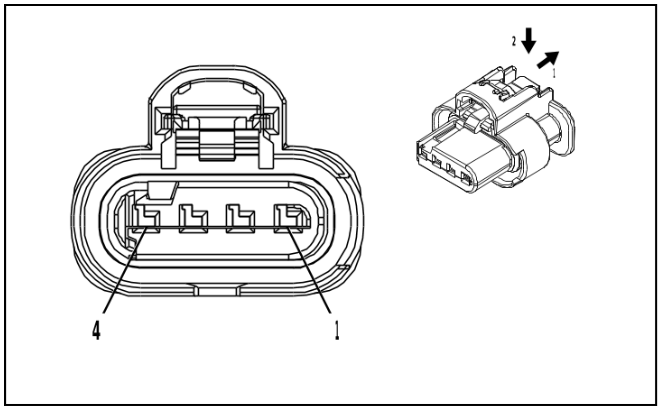
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B130C Exhaust Gas Recirculation Temperature Sensor 3 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / GN	(1) 3235	(1) Exhaust Gas Recirculation Temperature Sensor 3 Low Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / GY	(2) 3234	(2) Exhaust Gas Recirculation Temperature Sensor 3 Signal	(2) I	(2) —

B136 Exhaust Particulate Matter Sensor (LZ0)



4210809

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296696-1
- Service Connector: 85518225
- Description: 4-Way F 1.2 MCON-CB Series, Sealed(BK)

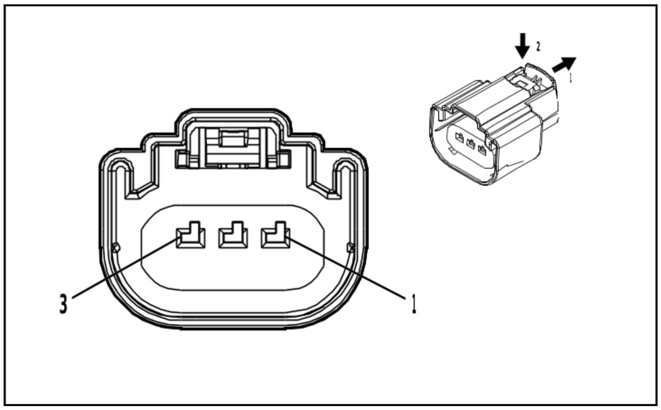
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B136 Exhaust Particulate Matter Sensor (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) BK / WH	(1) 1151	(1) Signal Ground	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / GY	(2) 4054	(2) Private Serial Data Powertrain CAN Bus [-] Serial Data	(2) I	(2) —
(3) 3	(3) 0.5	(3) WH	(3) 4055	(3) Private Serial Data Powertrain CAN Bus [+] Serial Data	(3) I	(3) —
(4) 4	(4) 1	(4) VT / GN	(4) 4320	(4) Powertrain Sensor Bus Enable	(4) I	(4) —

B139 Transfer Case Two/Four Wheel Drive Actuator Position Sensor (NP0 / NQH)



4569745

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 160073-3105
- Service Connector: 19179750
- Description: 3-Way F 1.5 MX Series, Sealed(BK)

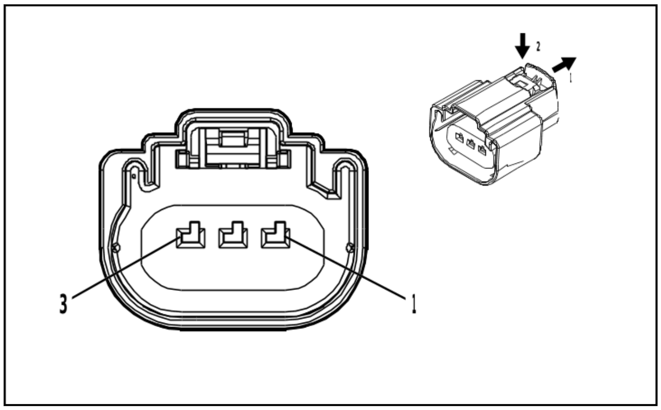
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

B139 Transfer Case Two/Four Wheel Drive Actuator Position Sensor (NP0 / NQH)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / RD	(1) 7477	(1) Gear Position Sensor 5V Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / GN	(2) 7479	(2) Rotary Position Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / BK	(3) 7478	(3) Gear Position Sensor Low Reference	(3) I	(3) —

B150 Fuel Tank Pressure Sensor (FHS / FJW)



4589538

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 160073-3106
- Service Connector: 84569854
- Description: 3-Way F 1.5 MX Series, Sealed(GY)

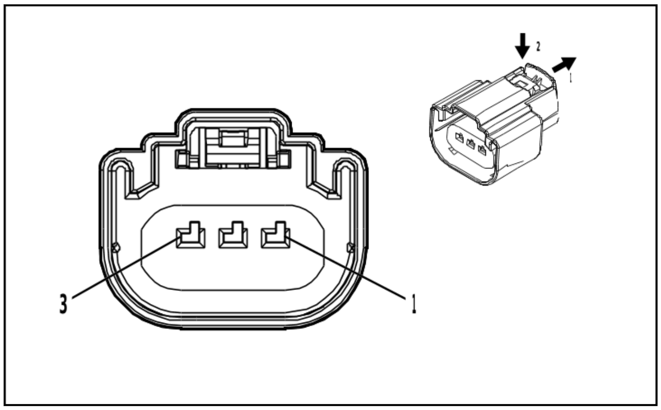
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B150 Fuel Tank Pressure Sensor (FHS / FJW)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5 (1) 0.5	(1) BU / GN (1) BU / WH	(1) 890 (1) 890	(1) Fuel Tank Pressure Sensor Signal (1) Fuel Tank Pressure Sensor Signal	(1) I (1) I	(1) FHS (1) FJW
(2) 2	(2) 0.5	(2) BK / BN	(2) 6284	(2) Fuel Tank Pressure Sensor Low Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / RD	(3) 2709	(3) Fuel Tank Pressure Sensor 5V Reference	(3) I	(3) —

B152LF Front Suspension Automatic Forward Lighting Position Sensor - Left (Z45)



4569745

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 160073-3105
- Service Connector: 19179750
- Description: 3-Way F 1.5 MX Series, Sealed(BK)

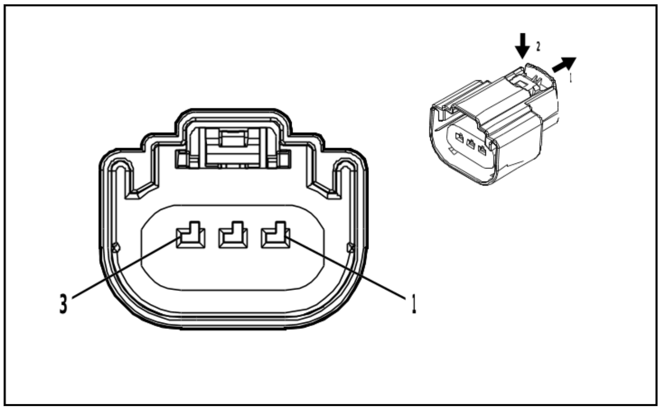
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B152LF Front Suspension Automatic Forward Lighting Position Sensor - Left (Z45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU / RD	(1) 1205	(1) Left Front Suspension Position Sensor Voltage Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / BU	(2) 1206	(2) Left Front Suspension Position Sensor Low Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) BN / WH	(3) 1207	(3) Left Front Suspension Position Sensor Signal	(3) I	(3) —

B152R Rear Suspension Automatic Forward Lighting Leveling Position Sensor (Z45)



4569745

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 160073-3105
- Service Connector: 19179750
- Description: 3-Way F 1.5 MX Series, Sealed(BK)

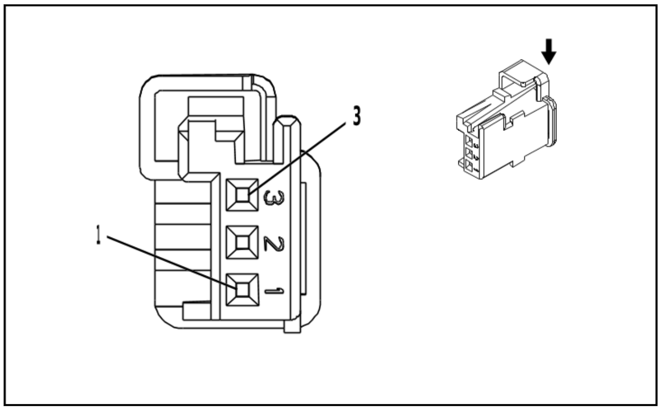
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B152R Rear Suspension Automatic Forward Lighting Leveling Position Sensor (Z45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / RD	(1) 1208	(1) Left Rear Suspension Position Sensor Voltage Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 1209	(2) Left Rear Suspension Position Sensor Low Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) GN / WH	(3) 1210	(3) Left Rear Suspension Position Sensor Signal	(3) I	(3) —

B160 Inside Air Moisture and Windshield Temperature Sensor (ASV - CE1)



4218883

Connector Part Information

- Harness Type: Inside Rearview Mirror Wiring Harness
- OEM Connector: 953697-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 0.64 Micro-Quadlock Series(BK)

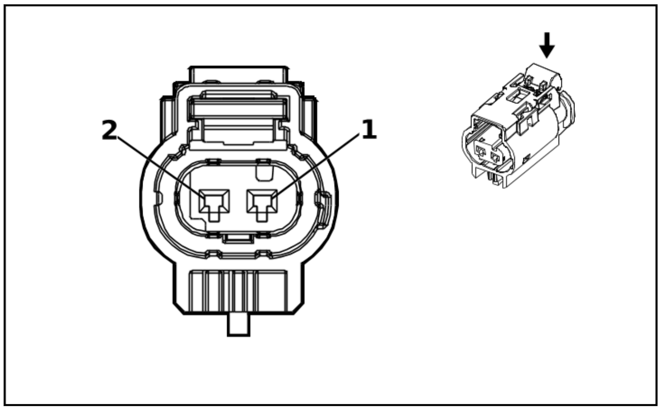
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B160 Inside Air Moisture and Windshield Temperature Sensor (ASV - CE1)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) VT / BK	(1) 339	(1) Run/Crank Ignition 1 Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) BK / WH	(2) 851	(2) Signal Ground	(2) I	(2) —
(3) 3	(3) 0.35	(3) GN / WH	(3) 4115	(3) Body Control Module LIN Bus 5	(3) I	(3) —

B172LF Front Disc Brake Pad Wear Sensor - Left (JBP)



3747581

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 10094234
- Service Connector: 84727362
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)

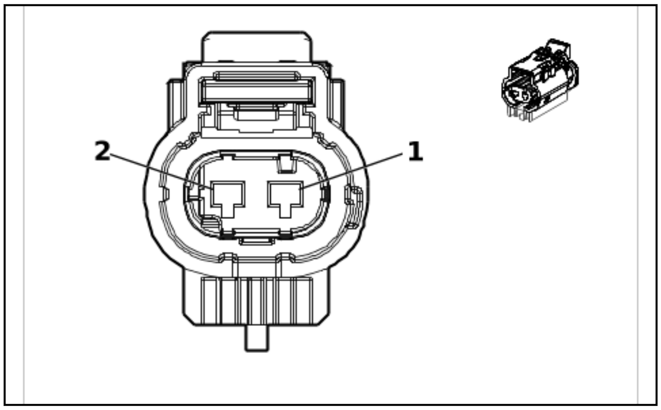
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B172LF Front Disc Brake Pad Wear Sensor - Left (JBP)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / BU	(1) 1602	(1) Front Brake Pad Wear Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / WH	(2) 1151	(2) Signal Ground	(2) I	(2) —

B172LR Rear Disc Brake Pad Wear Sensor - Left (JBP)



6819415

Connector Part Information

- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 10530492
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MLK Series, Sealed(BK)

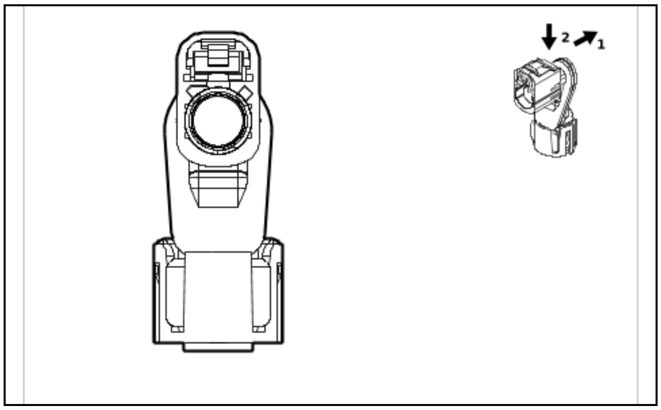
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B172LR Rear Disc Brake Pad Wear Sensor - Left (JBP)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75 (1) 0.75	(1) GN / YE (1) GN / YE	(1) 1616 (1) 1616	(1) Rear Brake Pad Wear Sensor Signal (1) Rear Brake Pad Wear Sensor Signal	(1) I (1) I	(1) - Z45 (1) Z45, G94
(2) 2	(2) 0.75 (2) 0.75	(2) BK / WH (2) BK / WH	(2) 1951 (2) 1951	(2) Signal Ground (2) Signal Ground	(2) I (2) I	(2) - Z45 (2) Z45, G94

B174G Front View Driver Information Camera - Grille



5920539

Connector Part Information

- Harness Type: Front View Camera Switch Wiring Harness COAX
- OEM Connector: 35339728
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BK)

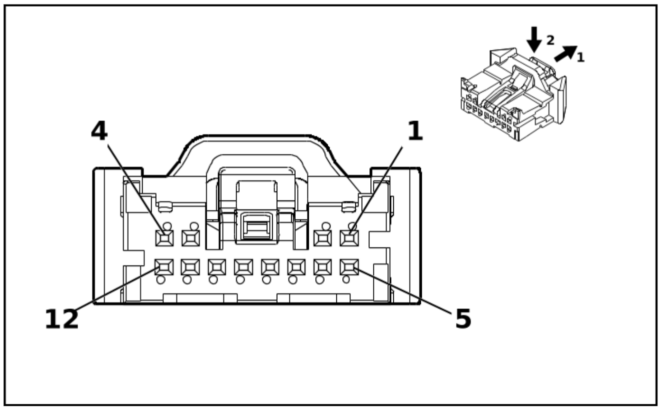
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B174G Front View Driver Information Camera - Grille

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	Front Vision Camera 1 Coaxial Video Signal	I	—

B174W Front View Camera - Windshield



5360826

Connector Part Information

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 35068239
- Service Connector: 13529935
- Description: 12-Way F 050 CTS Series(BK)

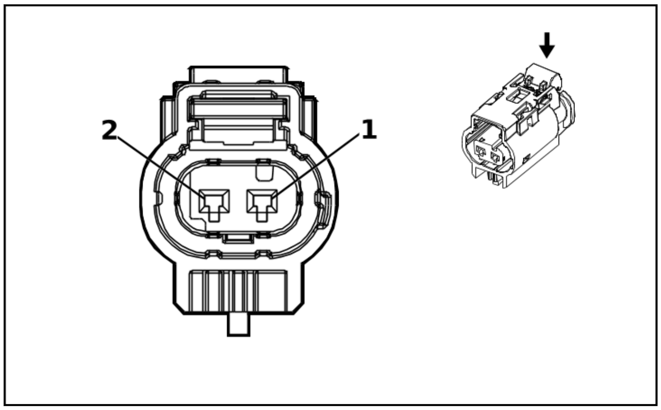
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84944580	EL-35616-58 (BK)	EL-38125-58

B174W Front View Camera - Windshield

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK / WH	(1) 851	(1) Signal Ground	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) RD / YE	(3) 240	(3) Battery Positive Voltage	(3) I	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.35 (5) 0.35	(5) BU / YE (5) BU / GY	(5) 4979 (5) 4105	(5) AUTOSAR CAN Bus [+] 2 Serial Data (5) AUTOSAR CAN Bus [+] 8 Serial Data	(5) I (5) I	(5) GFF+ UHY (5) UGN- GFF
(6) 6	(6) 0.35 (6) 0.35	(6) WH (6) WH / GY	(6) 4978 (6) 4104	(6) AUTOSAR CAN Bus [-] 2 Serial Data (6) AUTOSAR CAN Bus [-] 8 Serial Data	(6) I (6) I	(6) GFF+ UHY (6) UGN- GFF
(7) 7	(7) 0.35 (7) 0.35	(7) BU / YE (7) BU / GY	(7) 4979 (7) 4105	(7) AUTOSAR CAN Bus [+] 2 Serial Data (7) AUTOSAR CAN Bus [+] 8 Serial Data	(7) I (7) I	(7) GFF+ UHY (7) UGN- GFF
(8) 8	(8) 0.35 (8) 0.35	(8) WH (8) WH / GY	(8) 4978 (8) 4104	(8) AUTOSAR CAN Bus [-] 2 Serial Data (8) AUTOSAR CAN Bus [-] 8 Serial Data	(8) I (8) I	(8) GFF+ UHY (8) UGN- GFF
9 - 12	—	—	—	Not Occupied	—	—

B193A Charge Air Cooler Air Temperature Sensor - Inlet (LZ0)



3747581

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10094234
- Service Connector: 84727362
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)

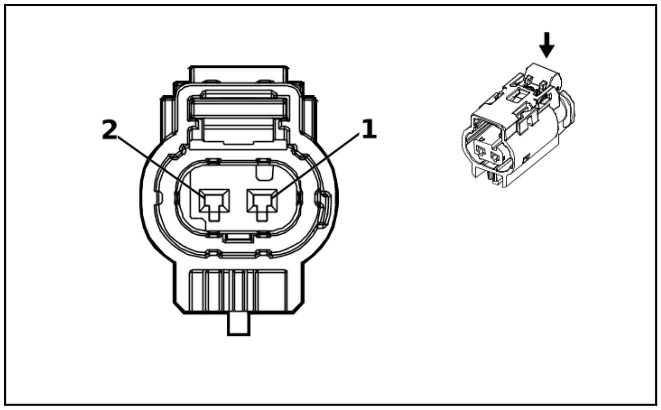
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B193A Charge Air Cooler Air Temperature Sensor - Inlet (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN	(1) 3683	(1) Charge Air Cooler Inlet Temperature Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / BK	(2) 3682	(2) Charge Air Cooler Inlet Temperature Sensor Low Reference	(2) I	(2) —

B193B Charge Air Cooler Air Temperature Sensor - Outlet (LZ0)



3747581

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10094234
- Service Connector: 84727362
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)

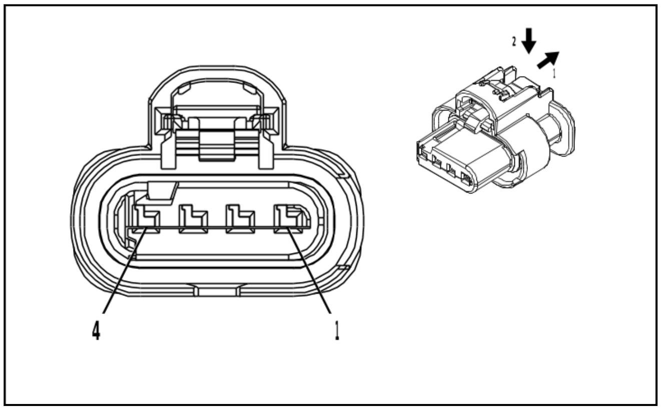
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B193B Charge Air Cooler Air Temperature Sensor - Outlet (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN	(1) 3681	(1) Charge Air Cooler Outlet Temperature Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / BU	(2) 3680	(2) Charge Air Cooler Outlet Temperature Sensor Low Reference	(2) I	(2) —

B195A Nitrogen Oxides Sensor 1 (LZ0)



4210809

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296696-1
- Service Connector: 85518225
- Description: 4-Way F 1.2 MCON-CB Series, Sealed(BK)

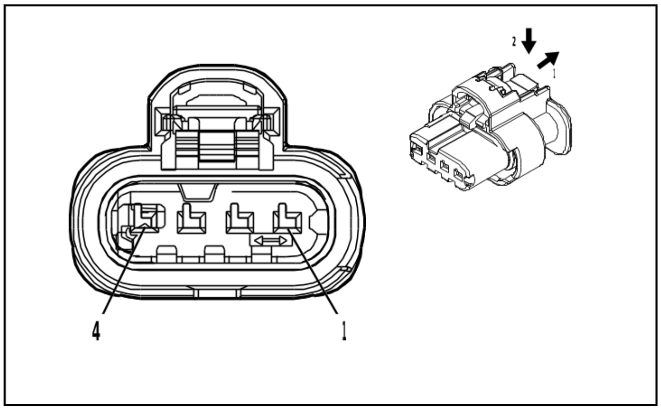
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B195A Nitrogen Oxides Sensor 1 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) VT / GN	(1) 4320	(1) Powertrain Sensor Bus Enable	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH	(2) 4055	(2) Private Serial Data Powertrain CAN Bus [+] Serial Data	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / GY	(3) 4054	(3) Private Serial Data Powertrain CAN Bus [-] Serial Data	(3) I	(3) —
(4) 4	(4) 1	(4) BK / WH	(4) 1151	(4) Signal Ground	(4) I	(4) —

B195B Nitrogen Oxides Sensor 2 (LZ0)



4934614

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296696-2
- Service Connector: 85519071
- Description: 4-Way F 1.2 MCON-CB Series, Sealed(BK)

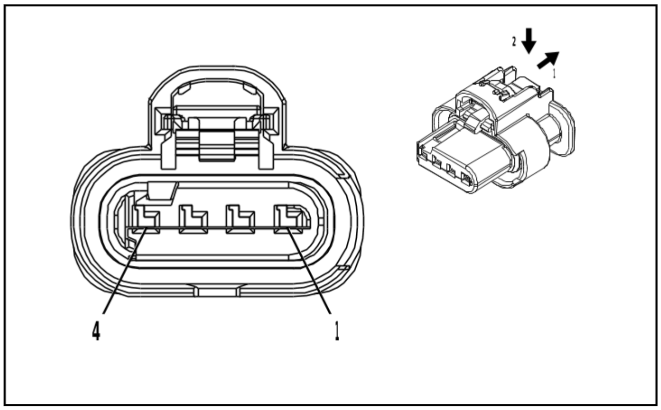
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B195B Nitrogen Oxides Sensor 2 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) VT / GN	(1) 4320	(1) Powertrain Sensor Bus Enable	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH	(2) 4055	(2) Private Serial Data Powertrain CAN Bus [+] Serial Data	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / GY	(3) 4054	(3) Private Serial Data Powertrain CAN Bus [-] Serial Data	(3) I	(3) —
(4) 4	(4) 1	(4) BK / WH	(4) 1151	(4) Signal Ground	(4) I	(4) —

B195C Nitrogen Oxides Sensor 3 (LZ0)



4210809

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296696-1
- Service Connector: 85518225
- Description: 4-Way F 1.2 MCON-CB Series, Sealed(BK)

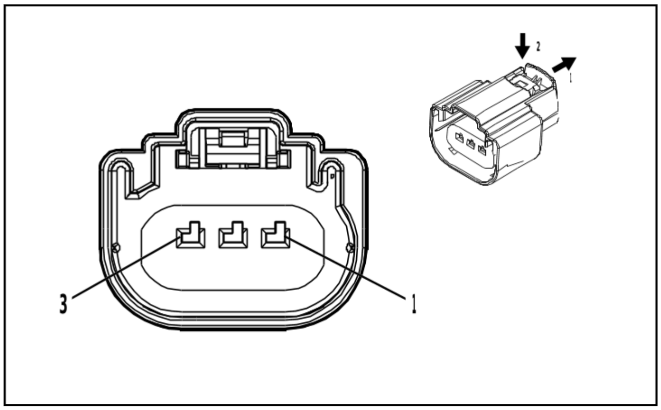
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B195C Nitrogen Oxides Sensor 3 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) VT / GN	(1) 4320	(1) Powertrain Sensor Bus Enable	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH	(2) 4055	(2) Private Serial Data Powertrain CAN Bus [+] Serial Data	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / GY	(3) 4054	(3) Private Serial Data Powertrain CAN Bus [-] Serial Data	(3) I	(3) —
(4) 4	(4) 1	(4) BK / WH	(4) 1151	(4) Signal Ground	(4) I	(4) —

B198 Fuel Composition Sensor (FHS)



4829227

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 160073-3107
- Service Connector: 19371197
- Description: 3-Way F 1.5 MX Series, Sealed(GY)

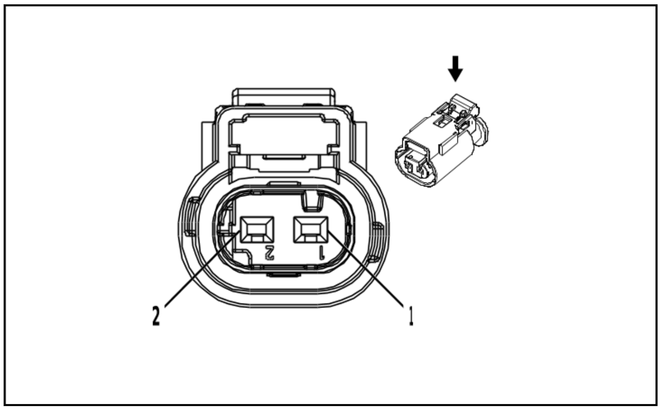
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

B198 Fuel Composition Sensor (FHS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / GN	(1) 4320	(1) Powertrain Sensor Bus Enable	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GY	(2) 3802	(2) Fuel Composition Sensor Low Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) VT / BN	(3) 3803	(3) Fuel Composition Sensor Signal	(3) I	(3) —

B203 Radiator Coolant Temperature Sensor (L3B)



2717066

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10010337
- Service Connector: 13587326
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)

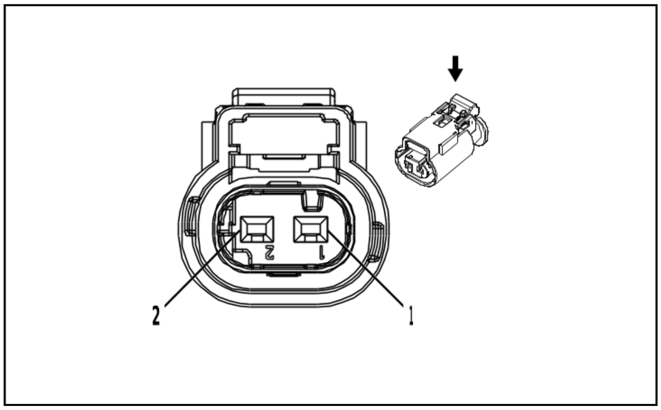
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B203 Radiator Coolant Temperature Sensor (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BK	(1) 3000	(1) Coolant Temperature Sensor 2 Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 580	(2) Engine Control Sensors Low Reference 2	(2) I	(2) —

B203 Radiator Coolant Temperature Sensor (LZ0)



2717066

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10010337
- Service Connector: 13587326
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)

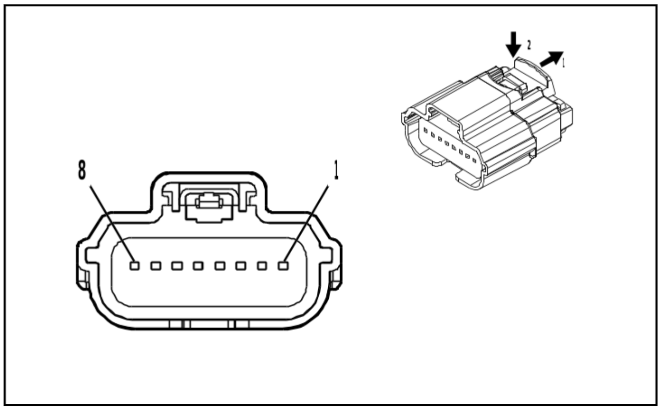
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B203 Radiator Coolant Temperature Sensor (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BK	(1) 3000	(1) Coolant Temperature Sensor 2 Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 580	(2) Engine Control Sensors Low Reference 2	(2) I	(2) —

B218L Side Obstacle Detection Control Module - Left ((UKC / UKV) - UKL)



4708234

Connector Part Information
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 31404-9110
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed(BK)

Terminal Part Information

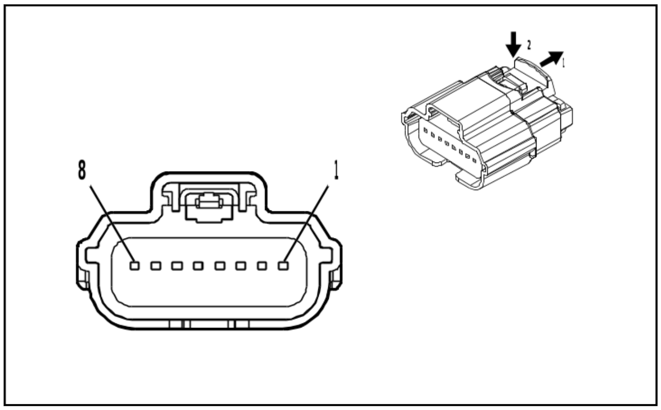
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B218L Side Obstacle Detection Control Module - Left ((UKC / UKV) - UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 4087	(1) Private Serial Data Side Obstacle Detection CAN Bus [-] Serial Data	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / VT	(2) 4088	(2) Private Serial Data Side Obstacle Detection CAN Bus [+] Serial Data	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / WH	(3) 1951	(3) Signal Ground	(3) I	(3) —
(4) 4	(4) 0.5	(4) WH	(4) 4100	(4) AUTOSAR CAN Bus [-] 4 Serial Data	(4) I	(4) —
(5) 5	(5) 0.5	(5) WH	(5) 4100	(5) AUTOSAR CAN Bus [-] 4 Serial Data	(5) I	(5) —
(6) 6	(6) 0.5	(6) BU / VT	(6) 4101	(6) AUTOSAR CAN Bus [+] 4 Serial Data	(6) I	(6) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(7) 7	(7) 0.5	(7) BU / VT	(7) 4101	(7) AUTOSAR CAN Bus [+] 4 Serial Data	(7) I	(7) —
(8) 8	(8) 0.5	(8) RD / GN	(8) 6940	(8) Battery Positive Voltage	(8) I	(8) —

B218R Side Obstacle Detection Control Module - Right ((UKC / UKV) - UKL)



4708234

Connector Part Information

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 31404-9532
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed(BK)

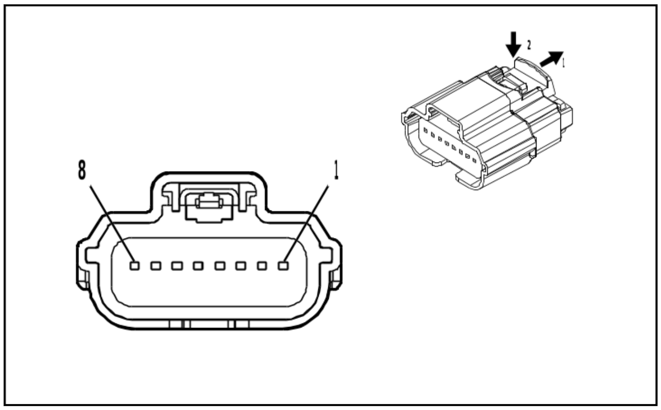
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B218R Side Obstacle Detection Control Module - Right ((UKC / UKV) - UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 4087	(1) Private Serial Data Side Obstacle Detection CAN Bus [-] Serial Data	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / VT	(2) 4088	(2) Private Serial Data Side Obstacle Detection CAN Bus [+] Serial Data	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / WH	(3) 1951	(3) Signal Ground	(3) I	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) WH	(5) 4100	(5) AUTOSAR CAN Bus [-] 4 Serial Data	(5) I	(5) —
(6) 6	(6) 0.5	(6) BU / VT	(6) 4101	(6) AUTOSAR CAN Bus [+] 4 Serial Data	(6) I	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.5	(8) RD / GN	(8) 6940	(8) Battery Positive Voltage	(8) I	(8) —

B233B Forward Range Radar Sensor - Long Range (UKL / (UGN - UKL))



4708234

Connector Part Information

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 35211138
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed(BK)

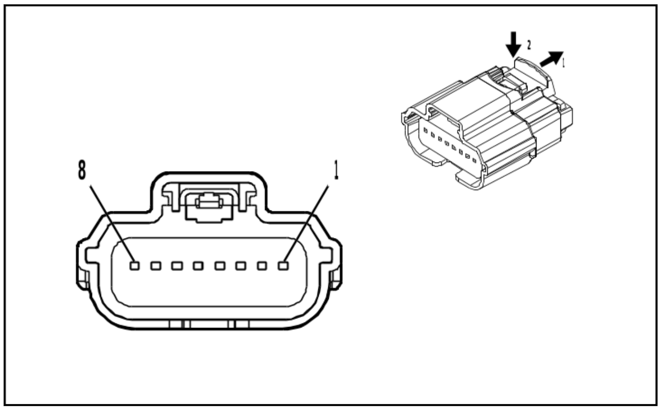
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B233B Forward Range Radar Sensor - Long Range (UKL / (UGN - UKL))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) BU / GY	(3) 4105	(3) AUTOSAR CAN Bus [+] 8 Serial Data	(3) I	(3) —
(4) 4	(4) 0.5	(4) WH / GY	(4) 4104	(4) AUTOSAR CAN Bus [-] 8 Serial Data	(4) I	(4) —
(5) 5	(5) 0.5	(5) RD / GN	(5) 3140	(5) Battery Positive Voltage	(5) I	(5) —
6 - 7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.5	(8) BK / WH	(8) 651	(8) Signal Ground	(8) I	(8) —

B233LF Short Range Radar Sensor - Left Front (UKL)



4708234

Connector Part Information

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 31404-9111
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed(BK)

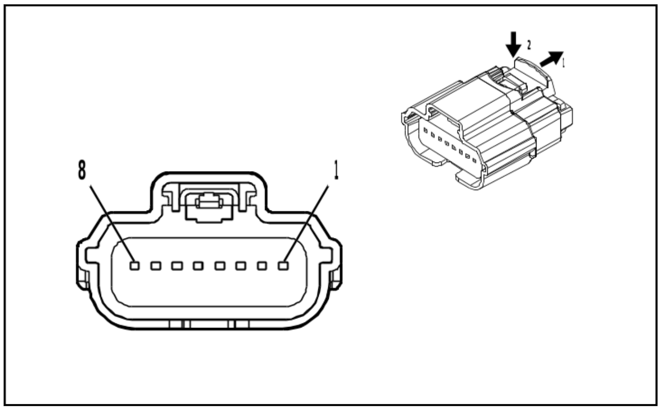
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B233LF Short Range Radar Sensor - Left Front (UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / WH	(1) 651	(1) Signal Ground	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / WH	(2) 651	(2) Signal Ground	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.5	(4) RD / GN	(4) 3140	(4) Battery Positive Voltage	(4) I	(4) —
(5) 5	(5) 0.5	(5) WH / GY	(5) 4104	(5) AUTOSAR CAN Bus [-] 8 Serial Data	(5) I	(5) —
(6) 6	(6) 0.5	(6) BU / GY	(6) 4105	(6) AUTOSAR CAN Bus [+] 8 Serial Data	(6) I	(6) —
(7) 7	(7) 0.5	(7) WH / GY	(7) 4104	(7) AUTOSAR CAN Bus [-] 8 Serial Data	(7) I	(7) —
(8) 8	(8) 0.5	(8) BU / GY	(8) 4105	(8) AUTOSAR CAN Bus [+] 8 Serial Data	(8) I	(8) —

B233LR Short Range Radar Rear Sensor - Left (UKL)



4708234

Connector Part Information
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 31404-9552
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed(BK)

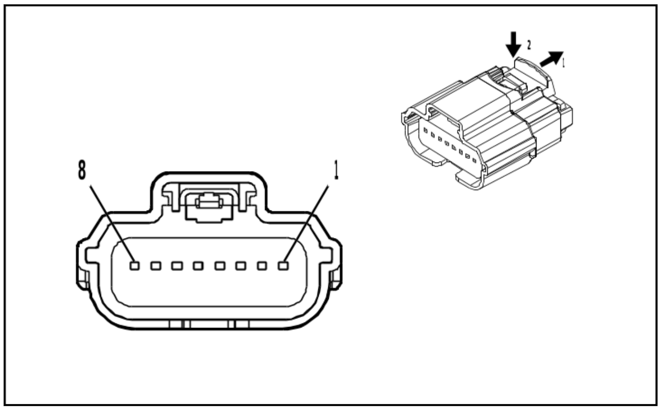
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B233LR Short Range Radar Rear Sensor - Left (UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / WH	(1) 1951	(1) Signal Ground	(1) I	(1) —
2 - 3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.5	(4) RD / BU	(4) 5240	(4) Battery Positive Voltage	(4) I	(4) —
(5) 5	(5) 0.5	(5) WH / GY	(5) 4104	(5) AUTOSAR CAN Bus [-] 8 Serial Data	(5) I	(5) —
(6) 6	(6) 0.5	(6) BU / GY	(6) 4105	(6) AUTOSAR CAN Bus [+] 8 Serial Data	(6) I	(6) —
(7) 7	(7) 0.5	(7) WH / GY	(7) 4104	(7) AUTOSAR CAN Bus [-] 8 Serial Data	(7) I	(7) —
(8) 8	(8) 0.5	(8) BU / GY	(8) 4105	(8) AUTOSAR CAN Bus [+] 8 Serial Data	(8) I	(8) —

B233RF Short Range Radar Sensor - Right Front (UKL)



4708234

Connector Part Information
- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 31404-9171
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed(BK)

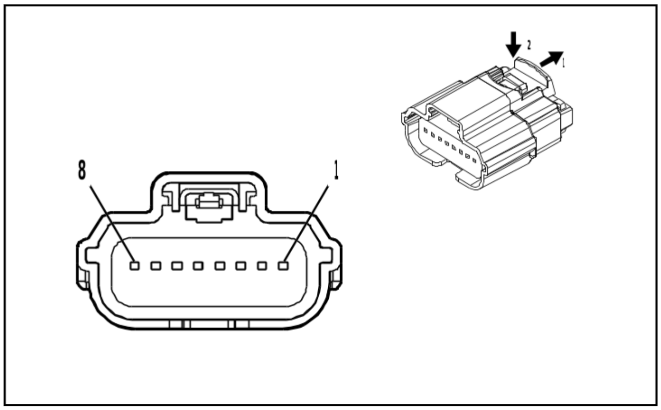
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B233RF Short Range Radar Sensor - Right Front (UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / WH	(1) 651	(1) Signal Ground	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) BK / WH	(3) 651	(3) Signal Ground	(3) I	(3) —
(4) 4	(4) 0.5	(4) RD / GN	(4) 3140	(4) Battery Positive Voltage	(4) I	(4) —
(5) 5	(5) 0.5	(5) WH / GY	(5) 4104	(5) AUTOSAR CAN Bus [-] 8 Serial Data	(5) I	(5) —
(6) 6	(6) 0.5	(6) BU / GY	(6) 4105	(6) AUTOSAR CAN Bus [+] 8 Serial Data	(6) I	(6) —
(7) 7	(7) 0.5	(7) WH / GY	(7) 4104	(7) AUTOSAR CAN Bus [-] 8 Serial Data	(7) I	(7) —
(8) 8	(8) 0.5	(8) BU / GY	(8) 4105	(8) AUTOSAR CAN Bus [+] 8 Serial Data	(8) I	(8) —

B233RR Short Range Radar Rear Sensor - Right (UKL)



4708234

Connector Part Information

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 31404-9110
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed(BK)

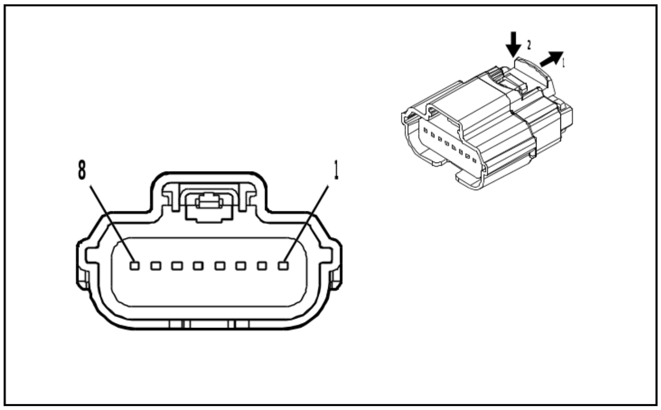
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B233RR Short Range Radar Rear Sensor - Right (UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / WH	(1) 1951	(1) Signal Ground	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / WH	(2) 1951	(2) Signal Ground	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / WH	(3) 1951	(3) Signal Ground	(3) I	(3) —
(4) 4	(4) 0.5	(4) RD / BU	(4) 5240	(4) Battery Positive Voltage	(4) I	(4) —
(5) 5	(5) 0.5	(5) WH / GY	(5) 4104	(5) AUTOSAR CAN Bus [-] 8 Serial Data	(5) I	(5) —
(6) 6	(6) 0.5	(6) BU / GY	(6) 4105	(6) AUTOSAR CAN Bus [+] 8 Serial Data	(6) I	(6) —
(7) 7	(7) 0.5	(7) WH / GY	(7) 4104	(7) AUTOSAR CAN Bus [-] 8 Serial Data	(7) I	(7) —
(8) 8	(8) 0.5	(8) BU / GY	(8) 4105	(8) AUTOSAR CAN Bus [+] 8 Serial Data	(8) I	(8) —

B233SL Short Range Radar Rear Side Sensor - Left (UKL)



4708234

Connector Part Information

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 31404-9552
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed(BK)

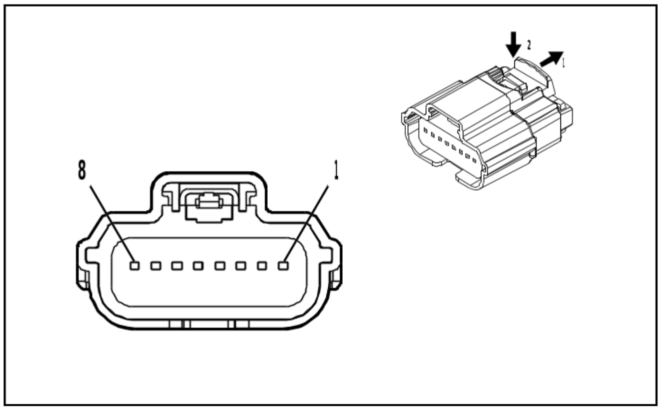
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B233SL Short Range Radar Rear Side Sensor - Left (UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / WH	(1) 1951	(1) Signal Ground	(1) I	(1) —
2 - 3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.5	(4) RD / BU	(4) 5240	(4) Battery Positive Voltage	(4) I	(4) —
(5) 5	(5) 0.5	(5) WH / GY	(5) 4104	(5) AUTOSAR CAN Bus [-] 8 Serial Data	(5) I	(5) —
(6) 6	(6) 0.5	(6) BU / GY	(6) 4105	(6) AUTOSAR CAN Bus [+] 8 Serial Data	(6) I	(6) —
(7) 7	(7) 0.5	(7) WH / GY	(7) 4104	(7) AUTOSAR CAN Bus [-] 8 Serial Data	(7) I	(7) —
(8) 8	(8) 0.5	(8) BU / GY	(8) 4105	(8) AUTOSAR CAN Bus [+] 8 Serial Data	(8) I	(8) —

B233SR Short Range Radar Rear Side Sensor - Right (UKL)



4708234

Connector Part Information

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 31404-9110
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed(BK)

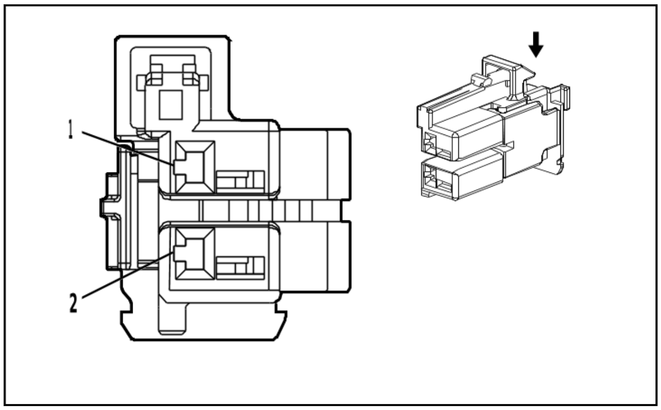
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B233SR Short Range Radar Rear Side Sensor - Right (UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / WH	(1) 1951	(1) Signal Ground	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / WH	(2) 1951	(2) Signal Ground	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / WH	(3) 1951	(3) Signal Ground	(3) I	(3) —
(4) 4	(4) 0.5	(4) RD / BU	(4) 5240	(4) Battery Positive Voltage	(4) I	(4) —
(5) 5	(5) 0.5	(5) WH / GY	(5) 4104	(5) AUTOSAR CAN Bus [-] 8 Serial Data	(5) I	(5) —
(6) 6	(6) 0.5	(6) BU / GY	(6) 4105	(6) AUTOSAR CAN Bus [+] 8 Serial Data	(6) I	(6) —
(7) 7	(7) 0.5	(7) WH / GY	(7) 4104	(7) AUTOSAR CAN Bus [-] 8 Serial Data	(7) I	(7) —
(8) 8	(8) 0.5	(8) BU / GY	(8) 4105	(8) AUTOSAR CAN Bus [+] 8 Serial Data	(8) I	(8) —

B280 Transmission Fluid Pressure Accumulator Solenoid Valve (MFC)



4672650

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356394-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BN)

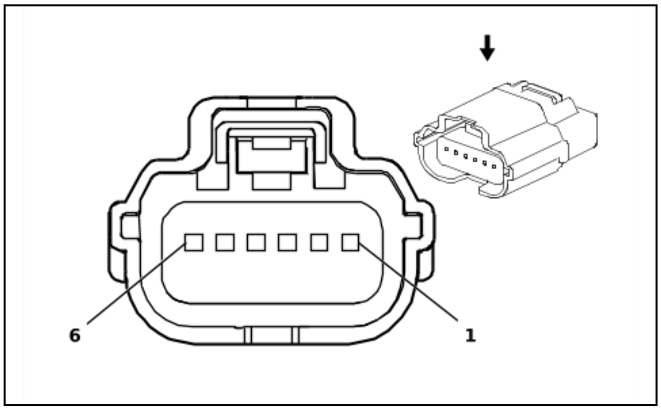
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	No Tool Required	No Tool Required

B280 Transmission Fluid Pressure Accumulator Solenoid Valve (MFC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / GN	(1) 6387	(1) Transmission High Side Driver 1 Control	(1) II	(1) —
(2) 2	(2) 0.5	(2) GN / WH	(2) 2968	(2) Transmission Auxiliary Fluid Pump Control	(2) I	(2) —

B284 Vehicle Dynamics Sensor (UKL)



1974974

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 13541403
- Service Connector: 84773558
- Description: 6-Way F 0.64 Series, Sealed(BK)

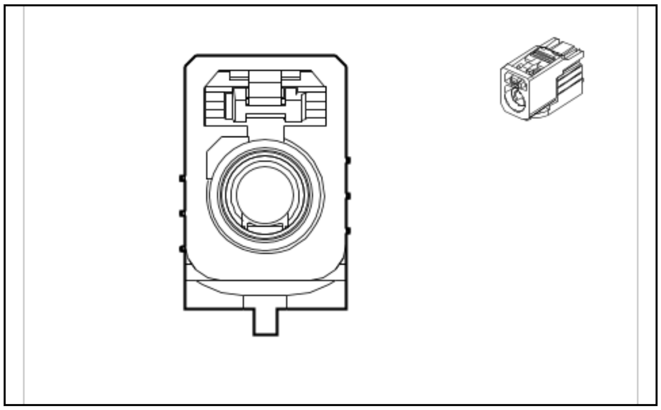
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B284 Vehicle Dynamics Sensor (UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / GY	(1) 8978	(1) Inertial Sensor Supply Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / YE	(2) 8977	(2) Private Serial Data Active Safety CAN Bus [+] Serial Data	(2) I	(2) —
(3) 3	(3) 0.5	(3) WH / YE	(3) 8976	(3) Private Serial Data Active Safety CAN Bus [-] Serial Data	(3) I	(3) —
4 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.5	(6) BK / WH	(6) 1551	(6) Signal Ground	(6) I	(6) —

B292 Driver Monitoring Camera (UKL)



5633912

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33351016
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(GN)

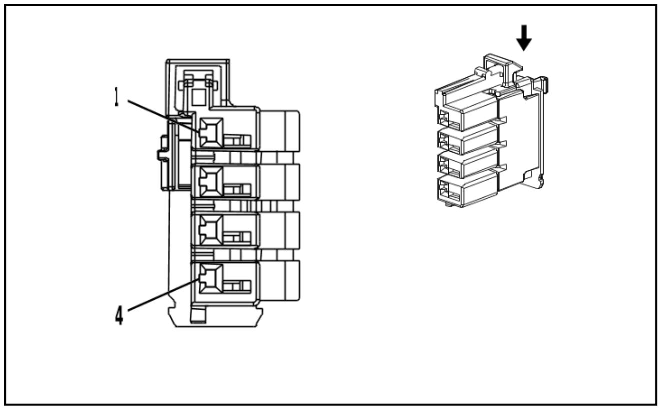
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B292 Driver Monitoring Camera (UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	Driver Monitoring System Camera Coaxial Signal	I	—

B303 Transmission Range Sensor (MFC)



4364148

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2289524-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 MCON Series(BN)

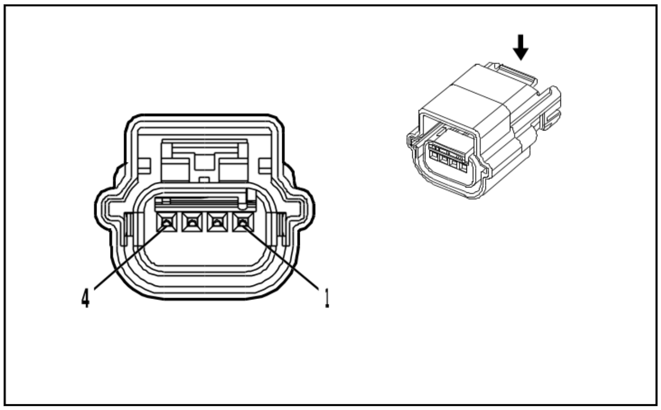
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B303 Transmission Range Sensor (MFC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / YE	(1) 3337	(1) Transmission Internal Mode Switch Mode Control Y	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / RD	(2) 480	(2) Engine Control Vehicle Sensors 5 Volt Reference 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / GY	(3) 626	(3) Engine Control Vehicle Sensors Low Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / WH	(4) 3338	(4) Transmission Internal Mode Switch Mode Control X	(4) I	(4) —

B303 Transmission Range Sensor (MI2 / MHT / MQB)



4789353

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 6006314801
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Series, Sealed(BK)

Terminal Part Information

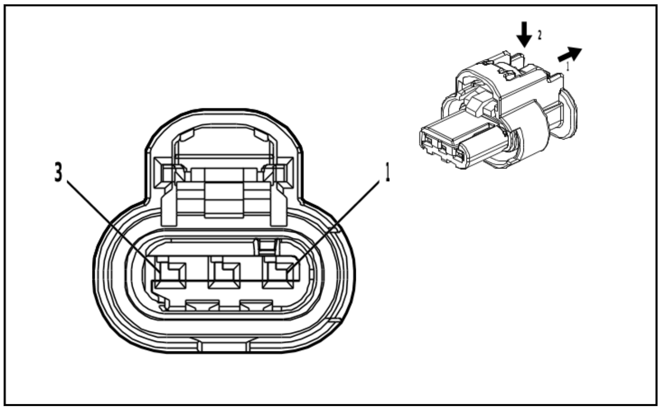
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

B303 Transmission Range Sensor (MI2 / MHT / MQB)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / GY	(1) 626	(1) Engine Control Vehicle Sensors Low Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE	(2) 3338	(2) Transmission Internal Mode Switch Mode Control X	(2) I	(2) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(3) 3	(3) 0.5	(3) YE / GY	(3) 3337	(3) Transmission Internal Mode Switch Mode Control Y	(3) I	(3) —
(4) 4	(4) 0.5	(4) OG	(4) 480	(4) Engine Control Vehicle Sensors 5 Volt Reference 1	(4) I	(4) —

B306A Parking Assist Alarm Sensor - Front Left Outer (UD5)



4581126

Connector Part Information
- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 13514590
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

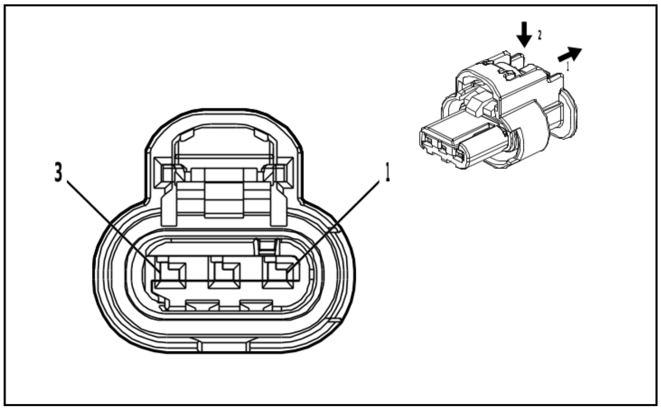
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B306A Parking Assist Alarm Sensor - Front Left Outer (UD5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN	(1) 6581	(1) Front Parking Assist Display Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / WH	(2) 5215	(2) Left Front Outer Parking Assist Sensor	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / BU	(3) 5214	(3) Front Parking Assist Sensor Low Reference	(3) I	(3) —

B306B Parking Assist Alarm Sensor - Front Left Middle (UD5)



4581126

Connector Part Information

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 13514590
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

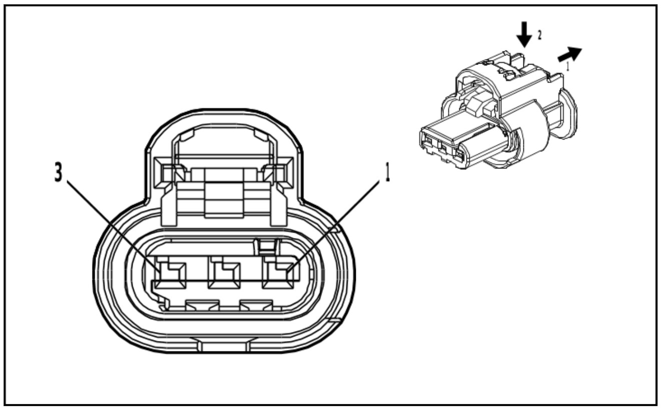
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B306B Parking Assist Alarm Sensor - Front Left Middle (UD5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN	(1) 6581	(1) Front Parking Assist Display Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / GY	(2) 5216	(2) Left Front Middle Parking Assist Sensor	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / BU	(3) 5214	(3) Front Parking Assist Sensor Low Reference	(3) I	(3) —

B306C Parking Assist Alarm Sensor - Front Right Middle (UD5)



4581126

Connector Part Information
- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 13514590
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

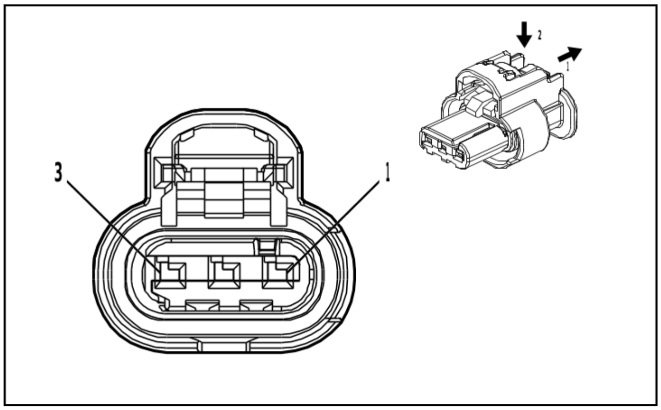
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B306C Parking Assist Alarm Sensor - Front Right Middle (UD5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN	(1) 6581	(1) Front Parking Assist Display Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / GY	(2) 5218	(2) Right Front Middle Parking Assist Sensor	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / BU	(3) 5214	(3) Front Parking Assist Sensor Low Reference	(3) I	(3) —

B306D Parking Assist Alarm Sensor - Front Right Outer (UD5)



4581126

Connector Part Information

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 13514590
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

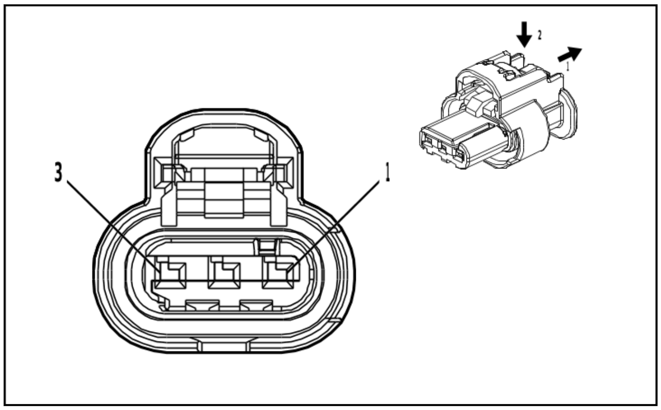
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B306D Parking Assist Alarm Sensor - Front Right Outer (UD5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN	(1) 6581	(1) Front Parking Assist Display Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / GY	(2) 5217	(2) Right Front Outer Parking Assist Sensor	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / BU	(3) 5214	(3) Front Parking Assist Sensor Low Reference	(3) I	(3) —

B306E Parking Assist Alarm Sensor - Rear Left Outer (UD5)



4581126

Connector Part Information
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

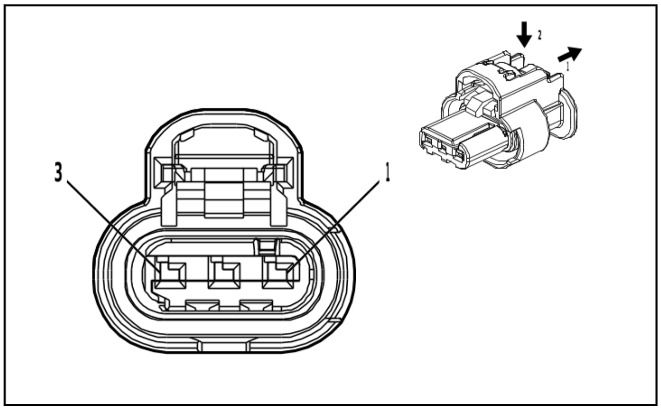
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B306E Parking Assist Alarm Sensor - Rear Left Outer (UD5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / WH	(1) 2374	(1) Object Sensor Voltage Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE	(2) 2375	(2) Left Rear Outer Parking Assist Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / GY	(3) 2379	(3) Object Sensor Low Reference	(3) I	(3) —

B306F Parking Assist Alarm Sensor - Rear Left Middle (UD5)



4581126

Connector Part Information
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

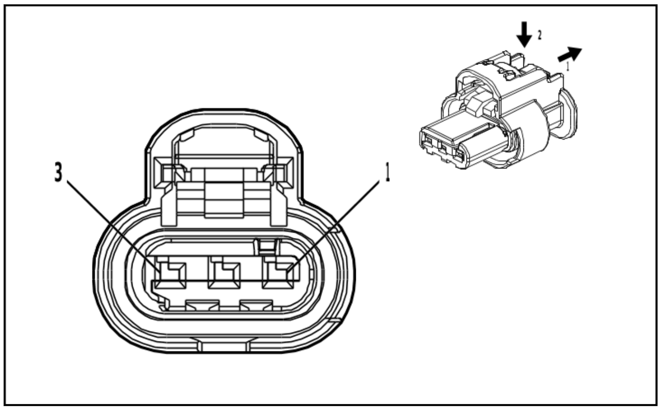
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B306F Parking Assist Alarm Sensor - Rear Left Middle (UD5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / WH	(1) 2374	(1) Object Sensor Voltage Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / BU	(2) 2376	(2) Left Rear Middle Parking Assist Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / GY	(3) 2379	(3) Object Sensor Low Reference	(3) I	(3) —

B306G Parking Assist Alarm Sensor - Rear Right Middle (UD5)



4581126

Connector Part Information

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

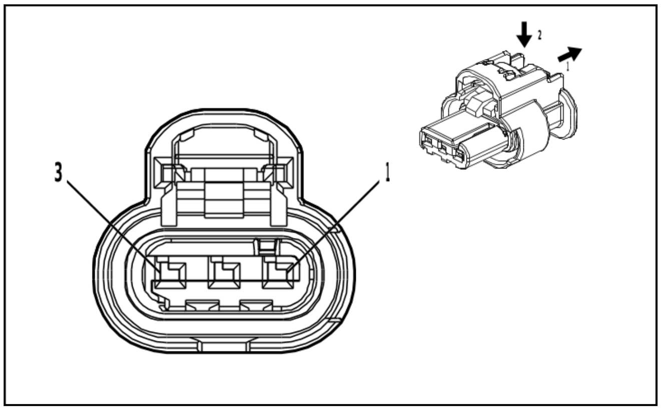
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B306G Parking Assist Alarm Sensor - Rear Right Middle (UD5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / WH	(1) 2374	(1) Object Sensor Voltage Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / WH	(2) 2377	(2) Right Rear Middle Parking Assist Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / GY	(3) 2379	(3) Object Sensor Low Reference	(3) I	(3) —

B306H Parking Assist Alarm Sensor - Rear Right Outer (UD5)



4581126

Connector Part Information

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

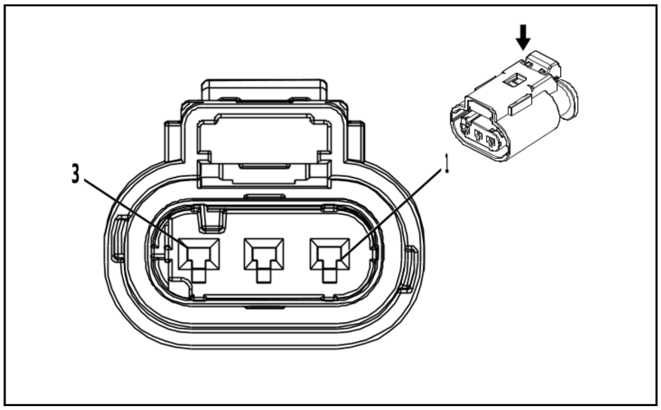
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B306H Parking Assist Alarm Sensor - Rear Right Outer (UD5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / WH	(1) 2374	(1) Object Sensor Voltage Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / VT	(2) 2378	(2) Right Rear Outer Parking Assist Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / GY	(3) 2379	(3) Object Sensor Low Reference	(3) I	(3) —

B310 Fuel Pressure and Temperature Sensor (L84 / L87)



3240107

Connector Part Information

- Harness Type: Fuel Injector Wiring Harness - Bank 1
- OEM Connector: 10010344
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 Multilock Series, Sealed(BK)

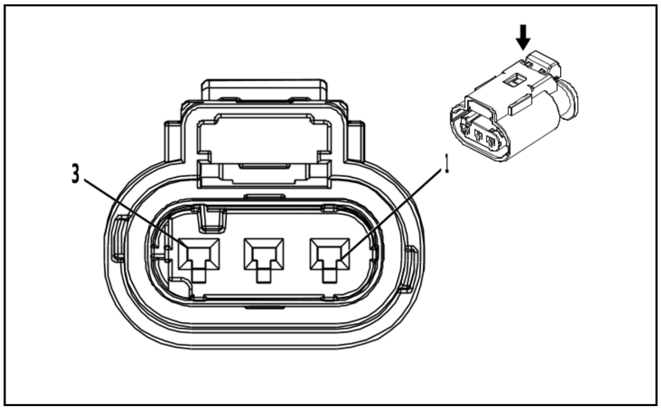
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

B310 Fuel Pressure and Temperature Sensor (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / GN	(1) 548	(1) Engine Control Sensors Low Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / WH	(2) 2918	(2) Fuel Rail Pressure Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BN / RD	(3) 480	(3) Engine Control Vehicle Sensors 5 Volt Reference 1	(3) I	(3) —

B321 Crankcase Pressure Sensor (L3B)



3240107

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10010344
- Service Connector: 19301717
- Description: 3-Way F 1.2 Multilock Series, Sealed(BK)

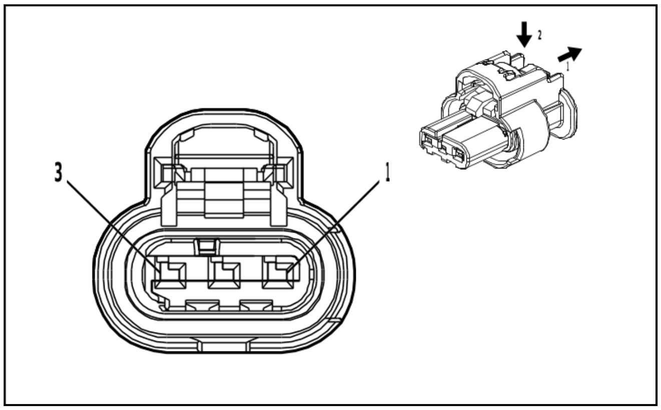
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B321 Crankcase Pressure Sensor (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / GY	(1) 3926	(1) Crankcase Differential Pressure Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / YE	(2) 548	(2) Engine Control Sensors Low Reference 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / RD	(3) 460	(3) Engine Control Sensors 5 Volt Reference 1	(3) I	(3) —

B321 Crankcase Pressure Sensor (LZ0)



4994602

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-3
- Service Connector: 19371199
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

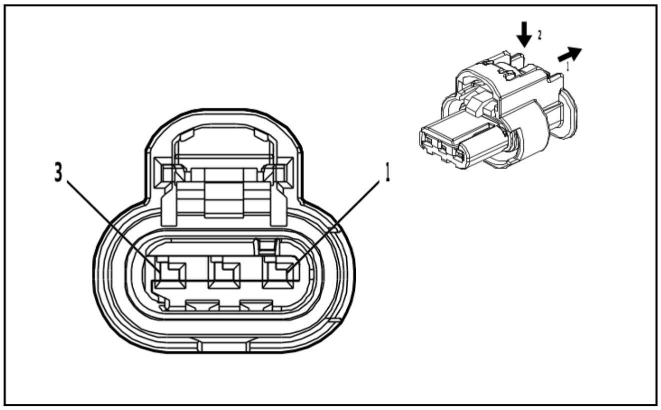
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B321 Crankcase Pressure Sensor (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / GY	(1) 3926	(1) Crankcase Differential Pressure Sensor Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / YE	(2) 548	(2) Engine Control Sensors Low Reference 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / RD	(3) 460	(3) Engine Control Sensors 5 Volt Reference 1	(3) I	(3) —

B338A Intake Camshaft Profile Sleeve Position Sensor 1 (L3B)



4581126

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

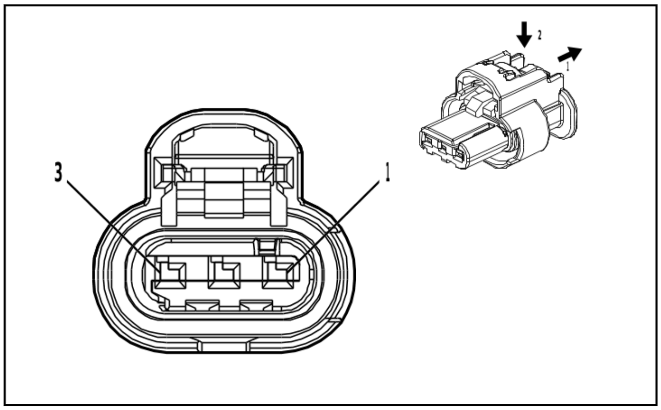
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B338A Intake Camshaft Profile Sleeve Position Sensor 1 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / RD	(1) 480	(1) Engine Control Vehicle Sensors 5 Volt Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 580	(2) Engine Control Sensors Low Reference 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) VT / WH	(3) 3744	(3) Camshaft Intake Lobe Axial Position Signal 1	(3) I	(3) —

B338B Intake Camshaft Profile Sleeve Position Sensor 2 (L3B)



4581126

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

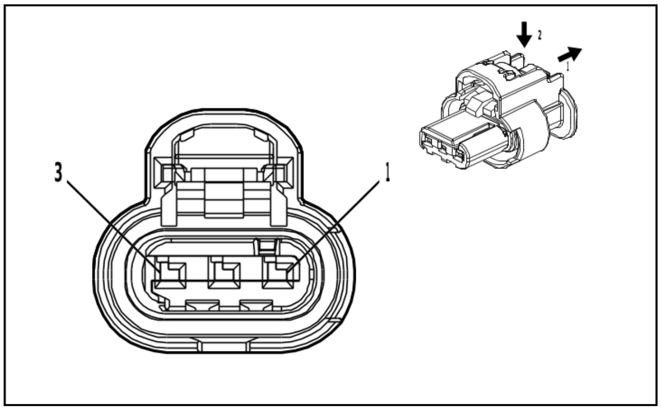
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B338B Intake Camshaft Profile Sleeve Position Sensor 2 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / RD	(1) 480	(1) Engine Control Vehicle Sensors 5 Volt Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 580	(2) Engine Control Sensors Low Reference 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) VT / GN	(3) 3745	(3) Camshaft Intake Lobe Axial Position Signal 2	(3) I	(3) —

B339A Exhaust Camshaft Profile Sleeve Position Sensor 1 (L3B)



4581126

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

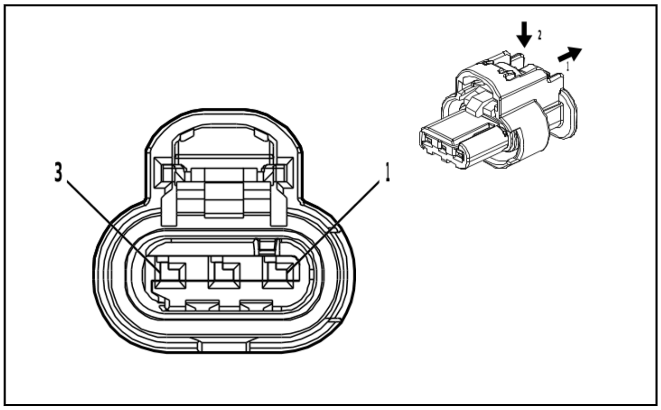
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B339A Exhaust Camshaft Profile Sleeve Position Sensor 1 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / RD	(1) 480	(1) Engine Control Vehicle Sensors 5 Volt Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 580	(2) Engine Control Sensors Low Reference 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / WH	(3) 3746	(3) Camshaft Exhaust Lobe Axial Position Signal 1	(3) I	(3) —

B339B Exhaust Camshaft Profile Sleeve Position Sensor 2 (L3B)



4581126

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

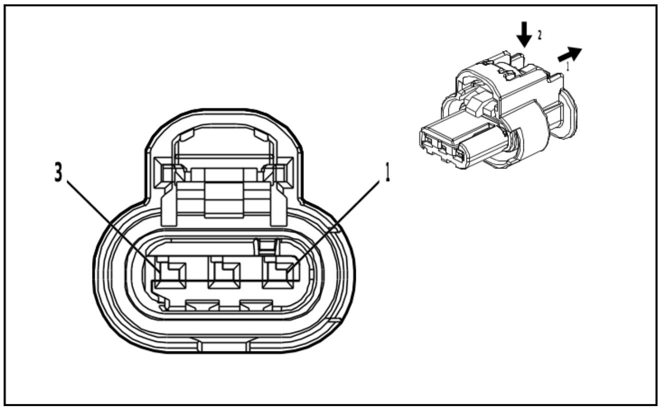
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B339B Exhaust Camshaft Profile Sleeve Position Sensor 2 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / RD	(1) 480	(1) Engine Control Vehicle Sensors 5 Volt Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 580	(2) Engine Control Sensors Low Reference 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / GN	(3) 3747	(3) Camshaft Exhaust Lobe Axial Position Signal 2	(3) I	(3) —

B345P Exhaust Pressure Differential Sensor - Particulate Filter (LZ0)



4581126

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

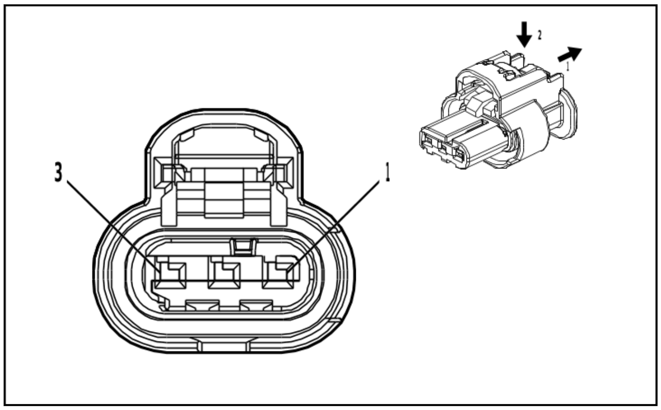
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B345P Exhaust Pressure Differential Sensor - Particulate Filter (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU / RD	(1) 460	(1) Engine Control Sensors 5 Volt Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / BN	(2) 2363	(2) Exhaust Pressure Sensor SENT 1 Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / YE	(3) 548	(3) Engine Control Sensors Low Reference 1	(3) I	(3) —

B345R Exhaust Pressure Differential Sensor - Exhaust Gas Recirculation (LZ0)



4778903

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-2
- Service Connector: 86792095
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

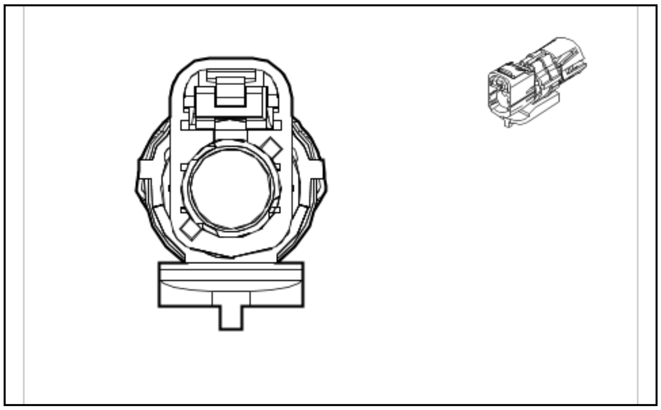
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B345R Exhaust Pressure Differential Sensor - Exhaust Gas Recirculation (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU / RD	(1) 460	(1) Engine Control Sensors 5 Volt Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN	(2) 10478	(2) Low Pressure Exhaust Gas Recirculation Sensor SENT Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / YE	(3) 548	(3) Engine Control Sensors Low Reference 1	(3) I	(3) —

B352 Video Display Inside Rearview Mirror Camera (DRZ)



5633894

Connector Part Information

- Harness Type: Inside Rearview Mirror Wiring Harness - Jumper COAX
- OEM Connector: 35187049
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type, Sealed(BU)

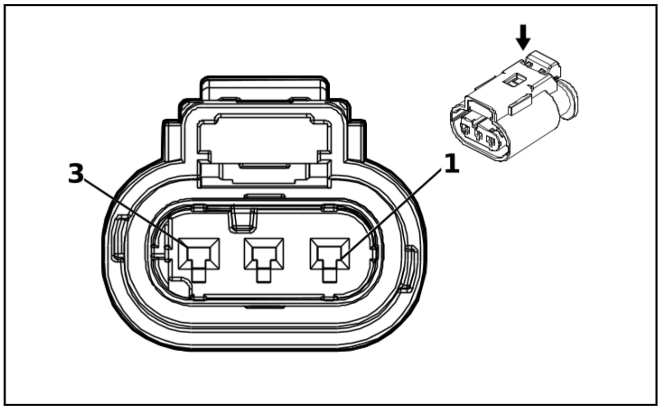
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

B352 Video Display Inside Rearview Mirror Camera (DRZ)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	Full Display Mirror Rear Camera Coaxial Video Signal	I	—

B359 Exhaust Gas Temperature Sensor Module (LZ0)



5192187

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10010343
- Service Connector: 84777453
- Description: 3-Way F 1.2 Multilock Series, Sealed(BK)

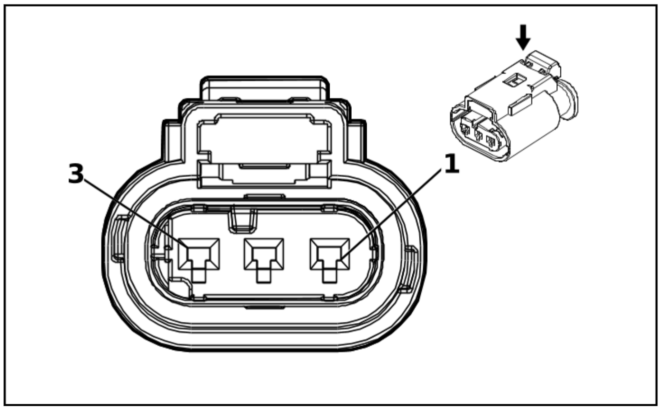
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B359 Exhaust Gas Temperature Sensor Module (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN	(1) 10289	(1) Exhaust Gas Temperature Sensor SENT 1 Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 580	(2) Engine Control Sensors Low Reference 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) WH / RD	(3) 480	(3) Engine Control Vehicle Sensors 5 Volt Reference 1	(3) I	(3) —

B359B Exhaust Gas Temperature Sensor Module 2 (LZ0)



5192187

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10010343
- Service Connector: 84777453
- Description: 3-Way F 1.2 Multilock Series, Sealed(BK)

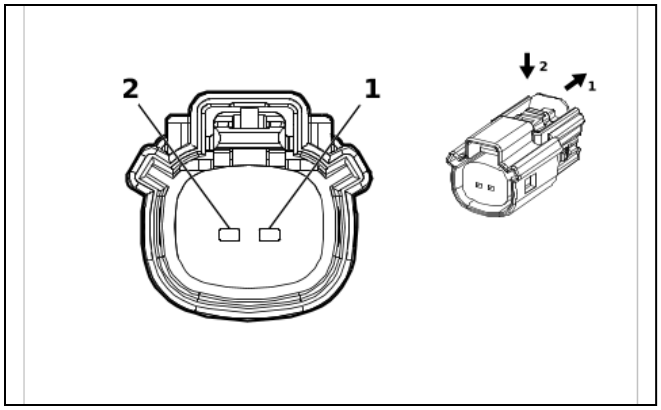
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

B359B Exhaust Gas Temperature Sensor Module 2 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU	(1) 10290	(1) Exhaust Gas Temperature Sensor SENT 2 Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 580	(2) Engine Control Sensors Low Reference 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) WH / RD	(3) 480	(3) Engine Control Vehicle Sensors 5 Volt Reference 1	(3) I	(3) —

E2LRB Side Marker Bulb - Left Rear



2474713

Connector Part Information
- Harness Type: Rear Body Structure Stop Lamp
- OEM Connector: 33471-0206
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed(BK)

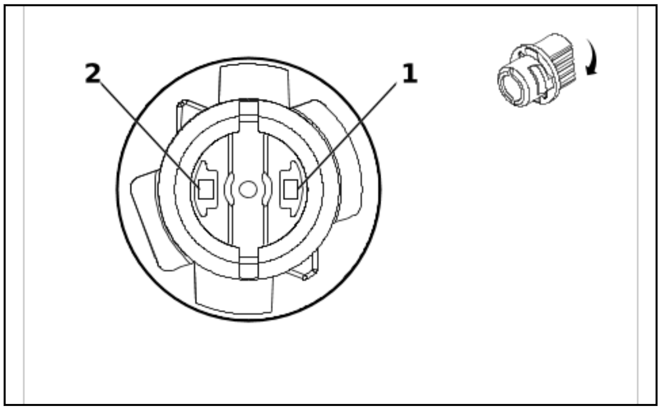
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

E2LRB Side Marker Bulb - Left Rear

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 18	(1) BK	(1) 1951	(1) Signal Ground	(1) I	(1) —
(2) 2	(2) 18	(2) BN	(2) 6993	(2) Left Rear Park Lamp Control	(2) I	(2) —

E2RRB Side Marker Bulb - Right Rear



6001446

Connector Part Information
- Harness Type: Rear Body Structure Stop Lamp
- OEM Connector: EEM0098
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F W2 Lamp Socket Series(GY)

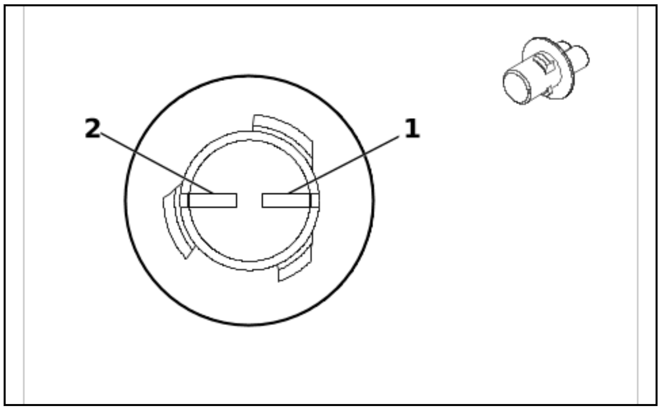
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

E2RRB Side Marker Bulb - Right Rear

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BN	(1) 6995	(1) Right Rear Park Lamp Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) BK	(2) 1850	(2) Ground	(2) I	(2) —

E5A Backup Bulb - Left



6157373

Connector Part Information
- Harness Type: Rear Body Structure Stop Lamp
- OEM Connector: EEM0323
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F Lamp Socket(BK)

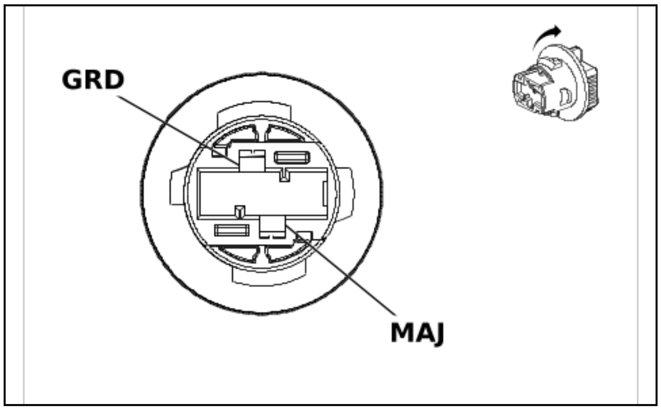
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

E5A Backup Bulb - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 18	(1) GN	(1) 24	(1) Backup Lamp Control	(1) I	(1) —
(2) 2	(2) 18	(2) BK	(2) 1951	(2) Signal Ground	(2) I	(2) —

E5SBU Stop and Turn Signal and Tail Lamp Bulb - Left Upper



6458333

Connector Part Information
- Harness Type: Rear Body Structure Stop Lamp
- OEM Connector: EEM1214
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F T20 Lamp Socket(BK)

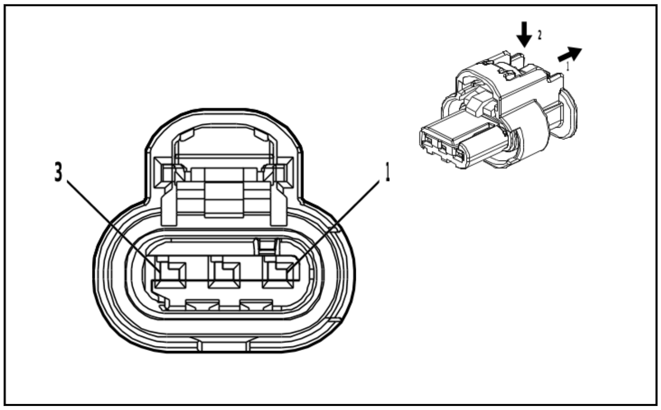
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

E5SBU Stop and Turn Signal and Tail Lamp Bulb - Left Upper

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
GRD	18	BK	1951	Signal Ground	I	—
MAJ	18	GN	1334	Left Rear Turn Signal Lamp Control 2	I	—

E6A High Mount Stop and Cargo Lamp



4581126

Connector Part Information
- Harness Type: Inside Rearview Mirror Wiring Harness - Jumper
- OEM Connector: 1-2296695-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

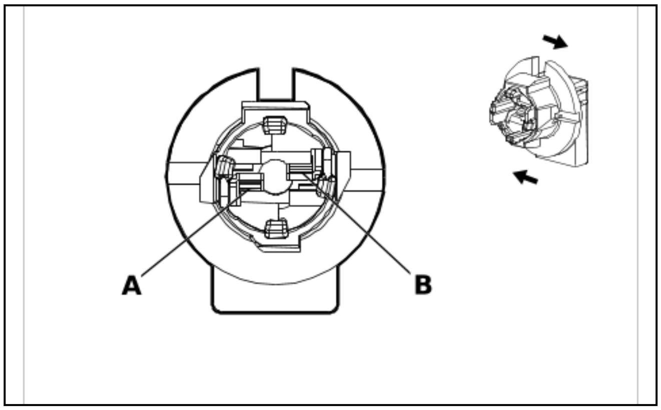
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

E6A High Mount Stop and Cargo Lamp

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / VT	(1) 1430	(1) Exterior Courtesy Lamp Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / YE	(2) 820	(2) Center High Mounted Stop Lamp Supply Voltage	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK	(3) 1050	(3) Ground	(3) I	(3) —

E6B High Mount Stop Lamp Bulb - Regular Cab



5913172

Connector Part Information
- Harness Type: High Mount Stop Lamp Wiring Harness
- OEM Connector: ZCF-02075-01
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F Socket(GY)

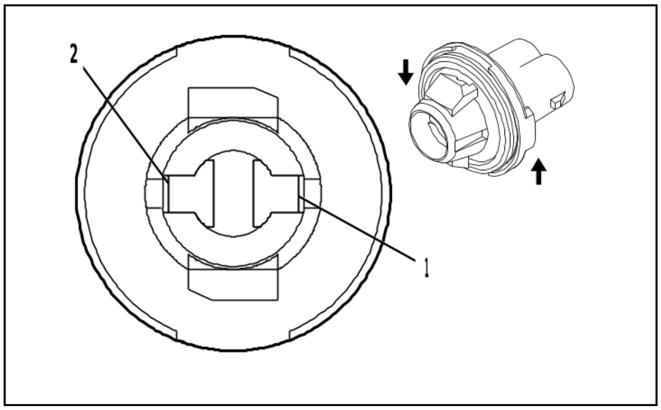
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

E6B High Mount Stop Lamp Bulb - Regular Cab

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	18	RD	1053	Center High Mounted Stop Lamp Control 3	I	—
B	18	BK	1050	Ground	I	—

E7L Rear License Plate Lamp - Left



5153536

Connector Part Information
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 15324946
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F Lamp Socket Wedge Base, Type W-2(D-GY)

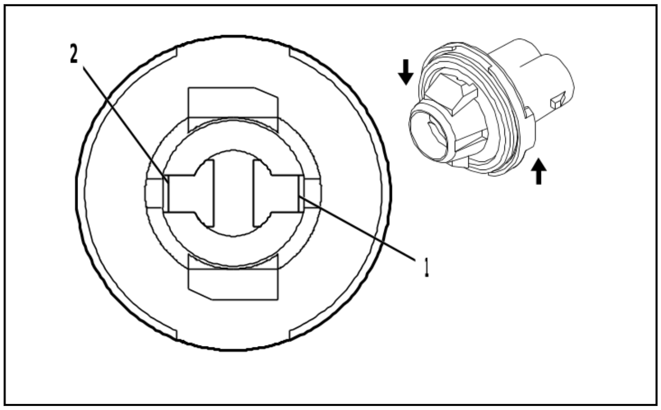
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

E7L Rear License Plate Lamp - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / YE	(1) 6846	(1) Rear License Plate Lamp Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 1850	(2) Ground	(2) I	(2) —

E7R Rear License Plate Lamp - Right



5153536

Connector Part Information
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 15324946
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F Lamp Socket Wedge Base, Type W-2(D-GY)

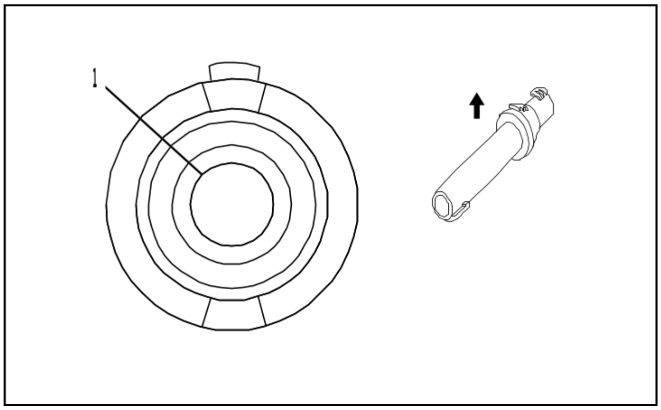
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

E7R Rear License Plate Lamp - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / YE	(1) 6846	(1) Rear License Plate Lamp Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 1850	(2) Ground	(2) I	(2) —

E12A Glow Plug 1 (LZ0)



2231591

Connector Part Information

- Harness Type: Diesel Glow Plug Wiring Harness
- OEM Connector: 284818-1
- Service Connector: Service by Cable Assembly - See Part Catalog
- Description: 1-Way F 4.0 Series(BK)

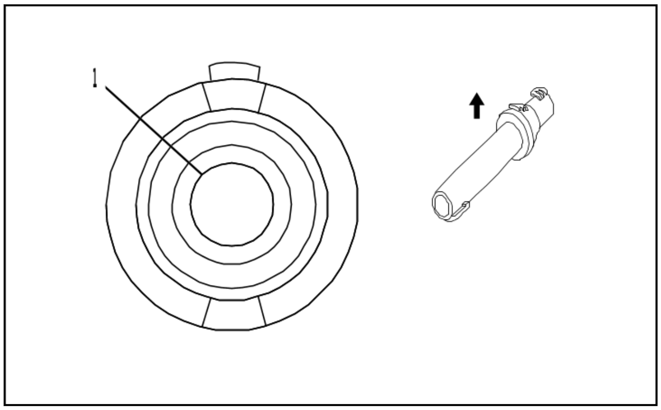
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

E12A Glow Plug 1 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) GY / RD	(1) 1581	(1) Glow Plug 1 Control	(1) I	(1) —

E12B Glow Plug 2 (LZ0)



2231591

Connector Part Information
- Harness Type: Diesel Glow Plug Wiring Harness
- OEM Connector: 284818-1
- Service Connector: Service by Cable Assembly - See Part Catalog
- Description: 1-Way F 4.0 Series(BK)

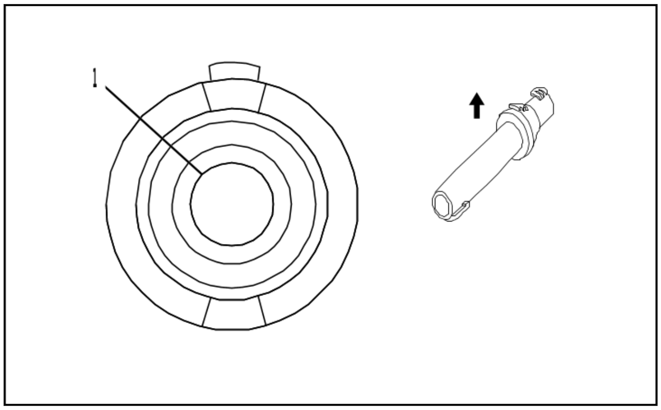
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

E12B Glow Plug 2 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) GY / BK	(1) 1582	(1) Glow Plug 2 Control	(1) I	(1) —

E12C Glow Plug 3 (LZ0)



2231591

Connector Part Information
- Harness Type: Diesel Glow Plug Wiring Harness
- OEM Connector: 284818-1
- Service Connector: Service by Cable Assembly - See Part Catalog
- Description: 1-Way F 4.0 Series(BK)

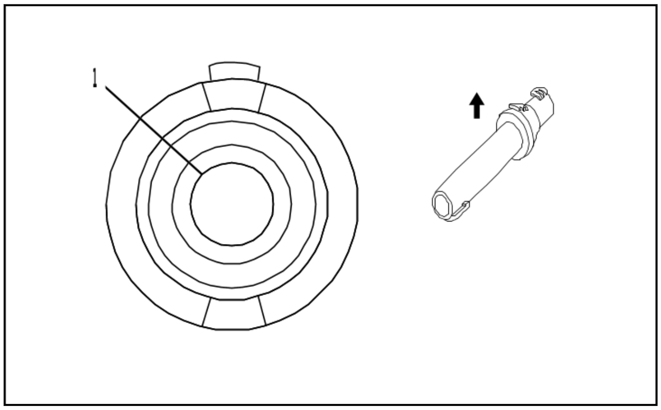
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

E12C Glow Plug 3 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) GY / GN	(1) 1583	(1) Glow Plug 3 Control	(1) I	(1) —

E12D Glow Plug 4 (LZ0)



2231591

Connector Part Information
- Harness Type: Diesel Glow Plug Wiring Harness
- OEM Connector: 284818-1
- Service Connector: Service by Cable Assembly - See Part Catalog
- Description: 1-Way F 4.0 Series(BK)

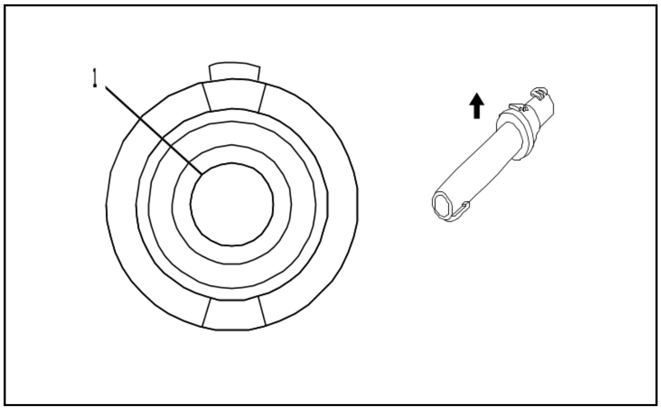
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

E12D Glow Plug 4 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) GY / YE	(1) 1584	(1) Glow Plug 4 Control	(1) I	(1) —

E12E Glow Plug 5 (LZ0)



2231591

Connector Part Information

- Harness Type: Diesel Glow Plug Wiring Harness
- OEM Connector: 284818-1
- Service Connector: Service by Cable Assembly - See Part Catalog
- Description: 1-Way F 4.0 Series(BK)

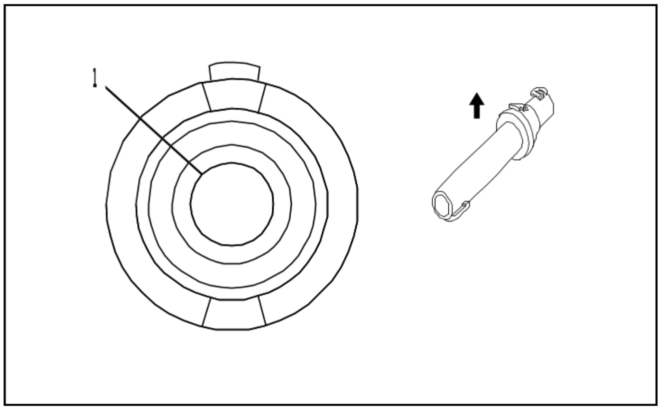
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

E12E Glow Plug 5 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) GY / WH	(1) 1585	(1) Glow Plug 5 Control	(1) I	(1) —

E12F Glow Plug 6 (LZ0)



2231591

Connector Part Information

- Harness Type: Diesel Glow Plug Wiring Harness
- OEM Connector: 284818-1
- Service Connector: Service by Cable Assembly - See Part Catalog
- Description: 1-Way F 4.0 Series(BK)

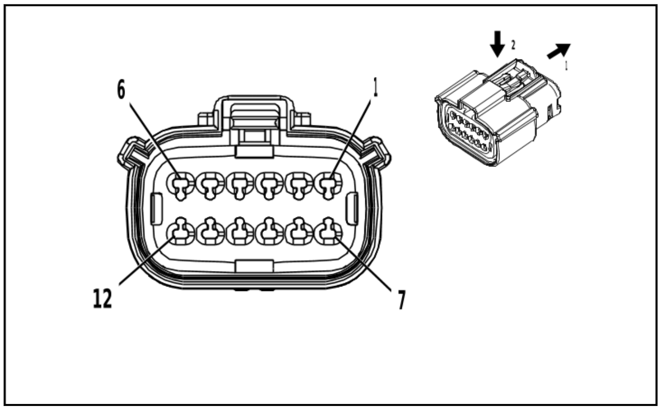
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

E12F Glow Plug 6 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) GY	(1) 1586	(1) Glow Plug 6 Control	(1) I	(1) —

E13LA Front Headlamp - Left



2871860

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 33472-1266
- Service Connector: 19352907
- Description: 12-Way F 1.5 MX Series, Sealed(BK)

Terminal Part Information

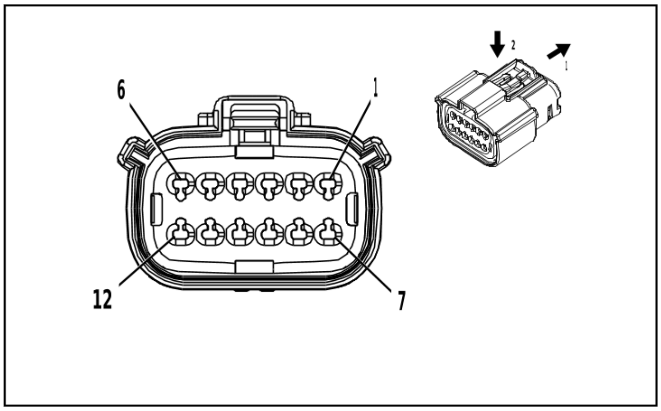
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	85528055	J-35616-2A (GY)	J-38125-217

E13LA Front Headlamp - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) BK	(1) 150	(1) Ground	(1) I	(1) —
(2) 2	(2) 1.5	(2) RD / WH	(2) 640	(2) Battery Positive Voltage	(2) I	(2) —
(3) 3	(3) 0.75	(3) YE	(3) 712	(3) Left Headlamp Low Beam Control	(3) I	(3) —
(4) 4	(4) 0.75	(4) WH	(4) 711	(4) Left Headlamp High Beam Control	(4) I	(4) —
(5) 5	(5) 0.35	(5) GY / BU	(5) 7538	(5) Left Front DRL Control	(5) I	(5) —
(6) 6	(6) 0.5	(6) WH / YE	(6) 1254	(6) Left Front Park Lamp Control	(6) I	(6) —
(7) 7	(7) 0.5	(7) BU / WH	(7) 1314	(7) Left Front Turn Signal Lamp Control	(7) I	(7) —
(8) 8	(8) 0.35	(8) VT / BK	(8) 6568	(8) Front Turn Signal Lamp Feedback Signal	(8) I	(8) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(9) 9	(9) 0.5	(9) YE / GN	(9) 2024	(9) Animation Lighting Control	(9) I	(9) —
(10) 10	(10) 0.5	(10) GN / VT	(10) 1315	(10) Right Front Turn Signal Lamp Control	(10) I	(10) —
11 - 12	—	—	—	Not Occupied	—	—

E13RA Front Headlamp - Right



2871860

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 33472-1266
- Service Connector: 19352907
- Description: 12-Way F 1.5 MX Series, Sealed(BK)

Terminal Part Information

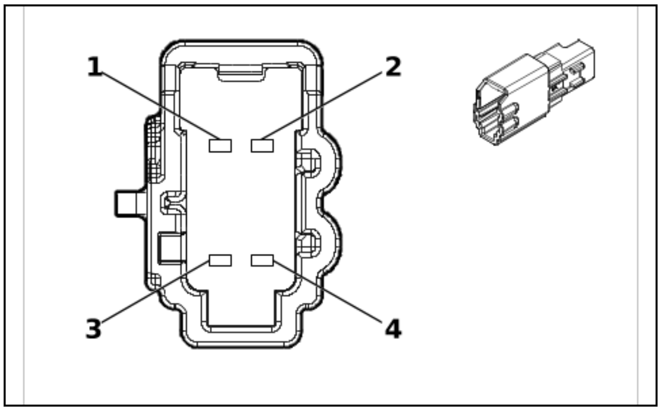
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	85528055	J-35616-2A (GY)	J-38125-217

E13RA Front Headlamp - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75 (1) 1	(1) BK (1) BK	(1) 650 (1) 650	(1) Ground (1) Ground	(1) I (1) I	(1) - GFF (1) GFF
(2) 2	(2) 1.5	(2) RD / YE	(2) 740	(2) Battery Positive Voltage	(2) I	(2) —
(3) 3	(3) 1	(3) YE	(3) 312	(3) Right Headlamp Low Beam Control	(3) I	(3) —
(4) 4	(4) 0.75	(4) WH	(4) 311	(4) Right Headlamp High Beam Control	(4) I	(4) —
(5) 5	(5) 0.35	(5) BU / BN	(5) 7539	(5) Right Front DRL Control	(5) I	(5) —
(6) 6	(6) 0.5	(6) BU / GN	(6) 1253	(6) Right Front Park Lamp Control	(6) I	(6) —
(7) 7	(7) 0.5	(7) GN / VT	(7) 1315	(7) Right Front Turn Signal Lamp Control	(7) I	(7) —
(8) 8	(8) 0.35	(8) WH / YE	(8) 7545	(8) Right Front Turn Signal Lamp Feedback Signal	(8) I	(8) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(9) 9	(9) 0.5	(9) YE / GN	(9) 2024	(9) Animation Lighting Control	(9) I	(9) —
(10) 10	(10) 0.5	(10) BU / WH	(10) 1314	(10) Left Front Turn Signal Lamp Control	(10) I	(10) —
11 - 12	—	—	—	Not Occupied	—	—

E14A Front Seat Back Heater - Driver (KA1)



5423974

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series(GY)

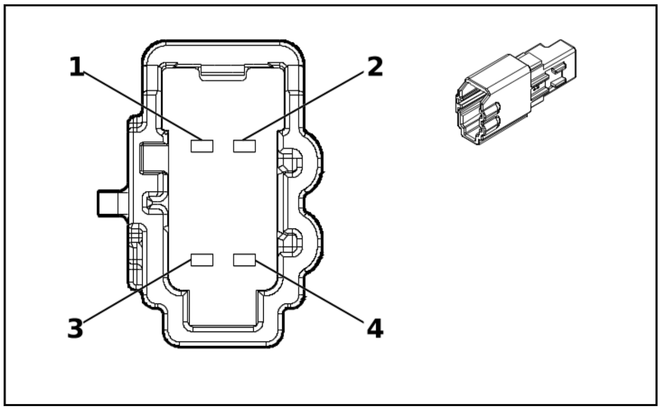
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

E14A Front Seat Back Heater - Driver (KA1)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BN	(1) 2432	(1) Driver Seat Back Heating Element Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU	(2) 2425	(2) Driver Seat Back Heating Temperature Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / YE	(3) 2080	(3) Driver Heated Seat Thermistor Low Reference	(3) I	(3) —
(4) 4	(4) 0.75	(4) BN / BK	(4) 2078	(4) Driver Seat Heating Element Low Reference	(4) I	(4) —

E14B Front Seat Cushion Heater - Driver (KA1)



5360963

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-9046
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series(BK)

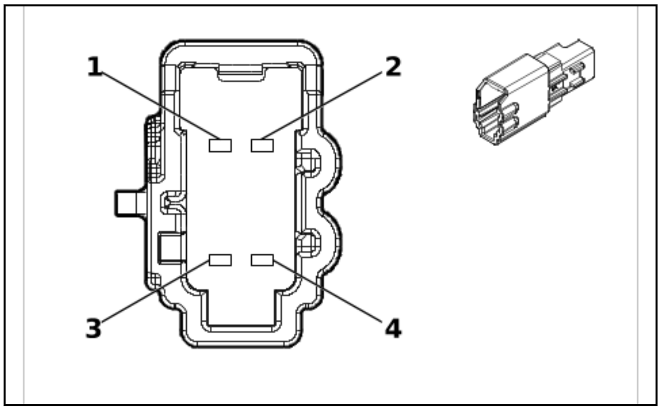
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

E14B Front Seat Cushion Heater - Driver (KA1)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BN / VT	(1) 2077	(1) Driver Seat Heating Element Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / GY	(2) 2079	(2) Driver Seat Heating Temperature Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / YE	(3) 2080	(3) Driver Heated Seat Thermistor Low Reference	(3) I	(3) —
(4) 4	(4) 0.75	(4) BN / BK	(4) 2078	(4) Driver Seat Heating Element Low Reference	(4) I	(4) —

E14C Front Seat Back Heater - Passenger (KA1)



5423974

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series(GY)

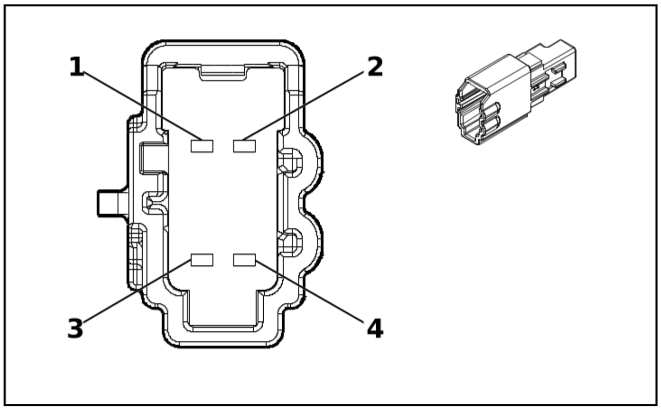
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

E14C Front Seat Back Heater - Passenger (KA1)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) WH / BN	(1) 2481	(1) Passenger Seat Back Heating Element Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / BU	(2) 2436	(2) Passenger Seat Back Heating Temperature Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / GN	(3) 2482	(3) Passenger Heated Back Thermistor Low Reference	(3) I	(3) —
(4) 4	(4) 0.75	(4) GY / BK	(4) 2480	(4) Passenger Seat Heating Element Low Reference	(4) I	(4) —

E14D Front Seat Cushion Heater - Passenger (KA1)



5360963

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-9046
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series(BK)

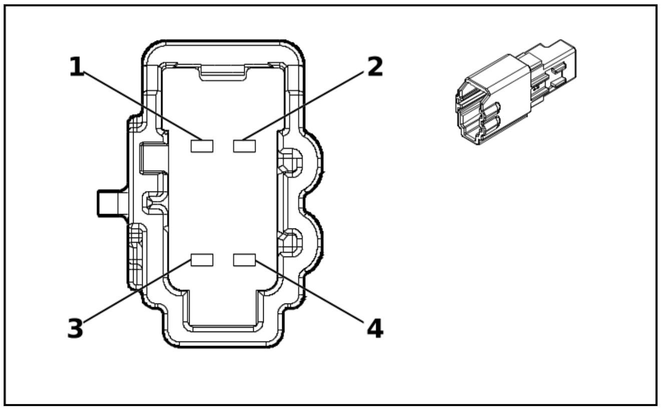
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

E14D Front Seat Cushion Heater - Passenger (KA1)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BN / BU	(1) 2479	(1) Passenger Seat Heating Element Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / GY	(2) 2434	(2) Passenger Seat Heating Temperature Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / GY	(3) 2435	(3) Passenger Heated Seat Thermistor Low Reference	(3) I	(3) —
(4) 4	(4) 0.75	(4) GY / BK	(4) 2480	(4) Passenger Seat Heating Element Low Reference	(4) I	(4) —

E14F Rear Seat Cushion Heater - Left Rear (KA6)



5360963

Connector Part Information

- Harness Type: Rear Seat Heater Control Wiring Harness
- OEM Connector: 6098-9046
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series(BK)

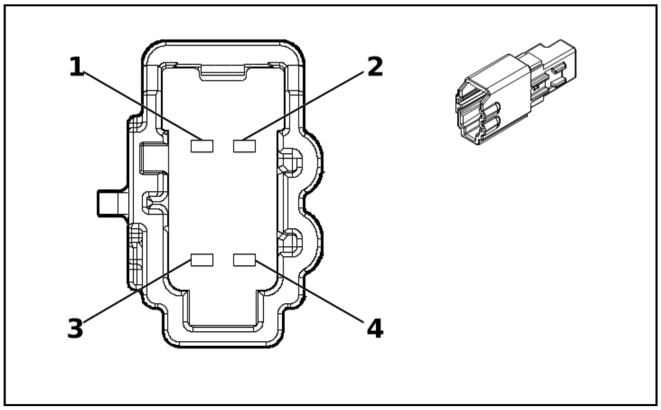
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

E14F Rear Seat Cushion Heater - Left Rear (KA6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) GY	(1) 2294	(1) Left Rear Seat Cushion Heating Element Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) WH / BU	(2) 7047	(2) Left Rear Seat Cushion Temperature Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.75	(3) BU / WH	(3) 7048	(3) Left Rear Cushion Thermistor Feedback Signal	(3) I	(3) —
(4) 4	(4) 0.75	(4) BN / BK	(4) 2295	(4) Left Rear Seat Cushion Heating Element Low Reference	(4) I	(4) —

E14H Rear Seat Cushion Heater - Right Rear (KA6)



5360963

Connector Part Information

- Harness Type: Rear Seat Heater Control Wiring Harness
- OEM Connector: 6098-9046
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series(BK)

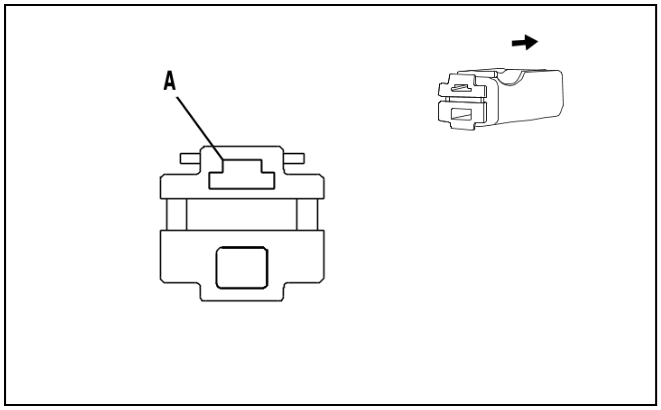
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

E14H Rear Seat Cushion Heater - Right Rear (KA6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) GN / BN	(1) 2296	(1) Right Rear Seat Cushion Heating Element Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) YE / WH	(2) 7053	(2) Right Rear Seat Cushion Temperature Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.75	(3) WH / BK	(3) 7054	(3) Right Rear Cushion Thermistor Feedback Signal	(3) I	(3) —
(4) 4	(4) 0.75	(4) GN / BK	(4) 2297	(4) Right Rear Seat Cushion Heating Element Low Reference	(4) I	(4) —

E18 Rear Window Defogger Grid X1



4248834

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 7123-5014-30
- Service Connector: 19367647
- Description: 1-Way F 250 Series(BK)

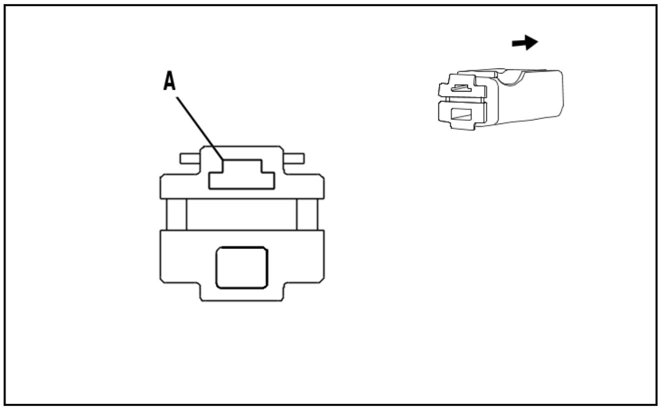
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-42 (RD)	No Tool Required

E18 Rear Window Defogger Grid X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	2.5	BN / VT	293	Rear Defogger Grid Control	I	—

E18 Rear Window Defogger Grid X2



4248834

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 7123-5014-30
- Service Connector: 19367647
- Description: 1-Way F 250 Series(BK)

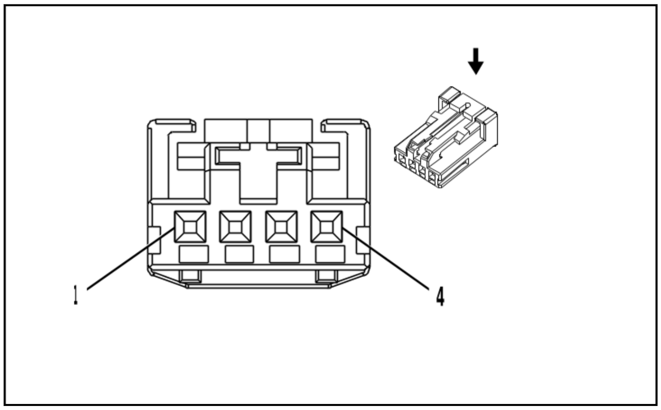
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-42 (RD)	No Tool Required

E18 Rear Window Defogger Grid X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	2.5	BK	1450	Ground	I	—

E28 Front Floor Console Compartment Lamp (D07)



2717162

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

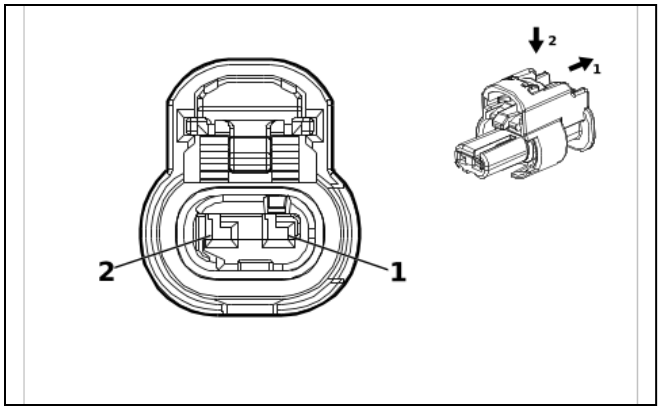
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

E28 Front Floor Console Compartment Lamp (D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK	(1) 1451	(1) Signal Ground	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) GN / VT	(3) 4786	(3) Dome/Reading Lamp Enable Signal	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

E29LF Front Fog Lamp - Left (T3U - VHU)



4649903

Connector Part Information
- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 13512365
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

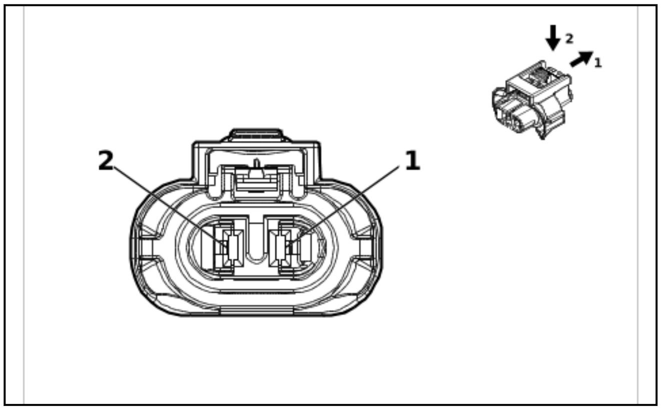
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

E29LF Front Fog Lamp - Left (T3U - VHU)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK	(1) 650	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / GY	(2) 5061	(2) Left Front Fog Lamp Control	(2) I	(2) —

E29LF Front Fog Lamp - Left (T3U & VHU)



6543452

Connector Part Information
- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 13518683
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 APEX Series, Sealed(BK)

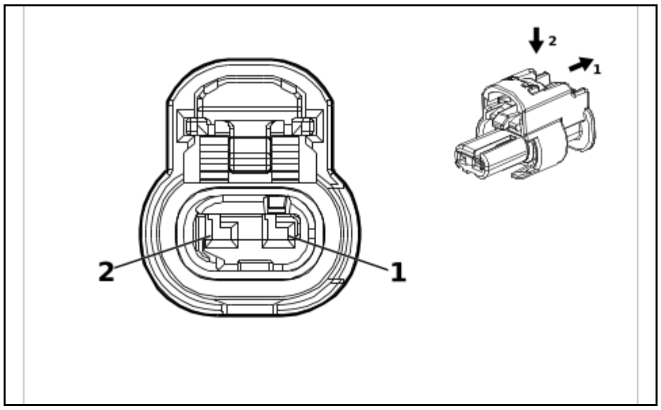
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

E29LF Front Fog Lamp - Left (T3U & VHU)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK	(1) 650	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / GY	(2) 5061	(2) Left Front Fog Lamp Control	(2) I	(2) —

E29RF Front Fog Lamp - Right (T3U - VHU)



4649903

Connector Part Information
- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 13512365
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

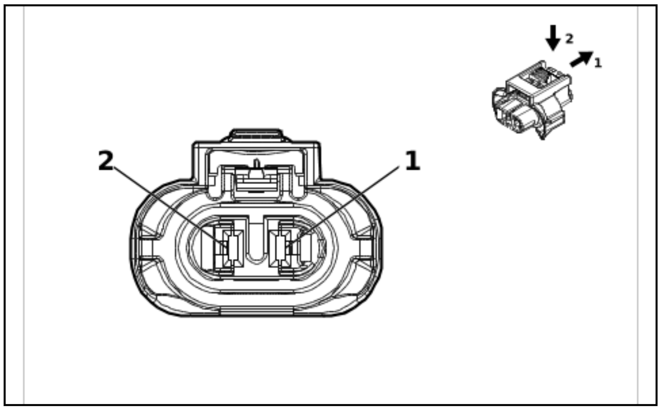
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

E29RF Front Fog Lamp - Right (T3U - VHU)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK	(1) 650	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / GN	(2) 5062	(2) Right Front Fog Lamp Control	(2) I	(2) —

E29RF Front Fog Lamp - Right (T3U & VHU)



6543452

Connector Part Information

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 13518683
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 APEX Series, Sealed(BK)

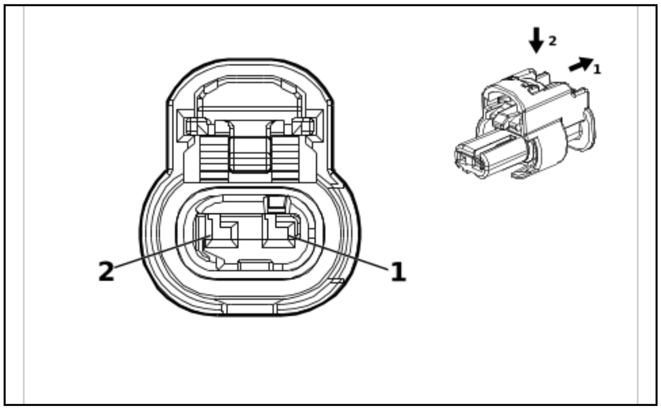
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

E29RF Front Fog Lamp - Right (T3U & VHU)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK	(1) 650	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / GN	(2) 5062	(2) Right Front Fog Lamp Control	(2) I	(2) —

E33L Cargo Lamp - Left



4649903

Connector Part Information

- Harness Type: Rear Body Structure Stop Lamp
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

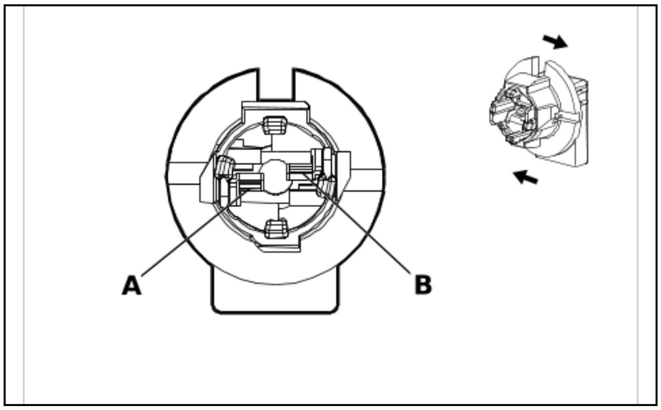
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

E33L Cargo Lamp - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 18	(1) BU	(1) 7762	(1) Cargo Lamp Control	(1) I	(1) —
(2) 2	(2) 18	(2) BK	(2) 1951	(2) Signal Ground	(2) I	(2) —

E33LB Cargo Box Lamp Bulb - Left



5913172

Connector Part Information

- Harness Type: High Mount Stop Lamp Wiring Harness
- OEM Connector: ZCF-02075-01
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F Socket(GY)

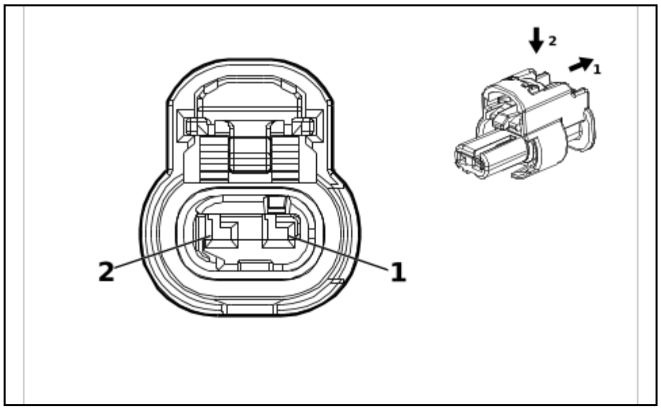
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

E33LB Cargo Box Lamp Bulb - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	18	BN	1430	Exterior Courtesy Lamp Control	I	—
B	18	BK	1050	Ground	I	—

E33R Cargo Lamp - Right



4649903

Connector Part Information

- Harness Type: Rear Body Structure Stop Lamp
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

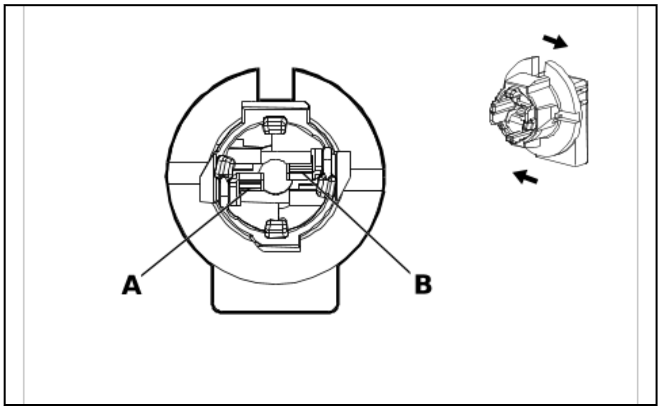
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

E33R Cargo Lamp - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 18	(1) BU	(1) 7762	(1) Cargo Lamp Control	(1) I	(1) —
(2) 2	(2) 18	(2) BK	(2) 1850	(2) Ground	(2) I	(2) —

E33RB Cargo Box Lamp Bulb - Right



5913172

Connector Part Information

- Harness Type: High Mount Stop Lamp Wiring Harness
- OEM Connector: ZCF-02075-01
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F Socket(GY)

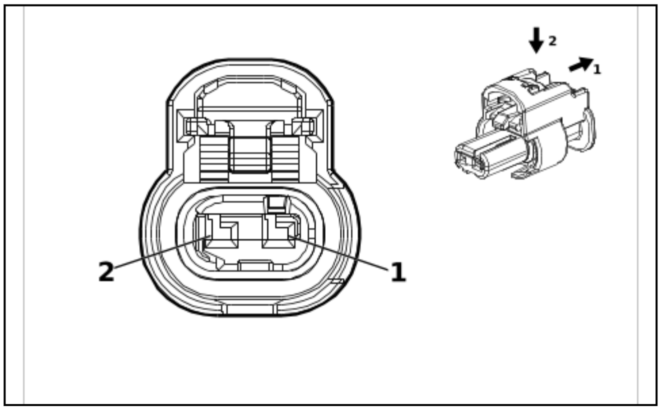
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

E33RB Cargo Box Lamp Bulb - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	18	BK	1050	Ground	I	—
B	18	BN	1430	Exterior Courtesy Lamp Control	I	—

E33TH Rear Closure Auxiliary Signal Lamp (QT5 / QT6)



4649903

Connector Part Information
- Harness Type: Endgate Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

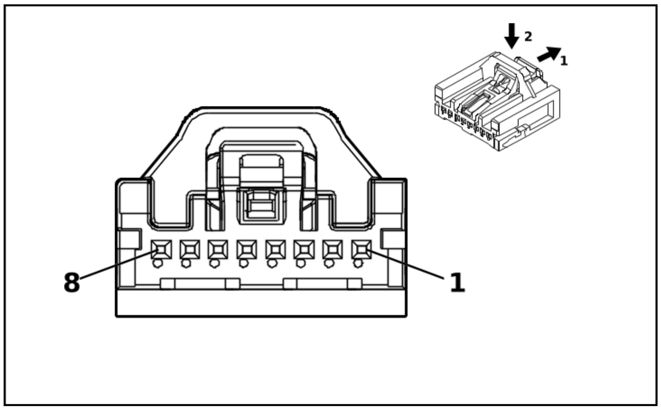
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

E33TH Rear Closure Auxiliary Signal Lamp (QT5 / QT6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / VT	(1) 1430	(1) Exterior Courtesy Lamp Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 1850	(2) Ground	(2) I	(2) —

E37SMC Rear Seat Position Center Reading and Courtesy Lamp



5200269

Connector Part Information

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 35068228
- Service Connector: 84769201
- Description: 8-Way F Mini 50 Series(BK)

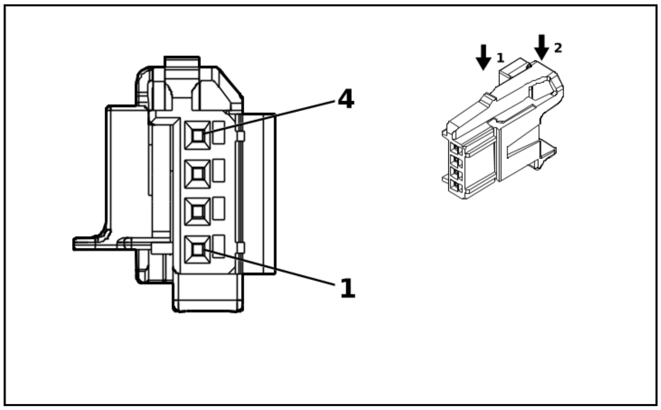
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

E37SMC Rear Seat Position Center Reading and Courtesy Lamp

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GN / YE	(1) 2903	(1) Row 2 Dome Reading Lamp Interior Lamp Control	(1) I	(1) —
(2) 2	(2) 0.35	(2) BN / BU	(2) 2905	(2) Row 2 Dome Reading Lamp 2 Interior Lamp Control	(2) I	(2) —
(3) 3	(3) 0.35	(3) BK	(3) 1050	(3) Ground	(3) I	(3) —
(4) 4	(4) 0.35	(4) WH / BN	(4) 2904	(4) Row 2 Dome Reading Lamp Switch Signal	(4) I	(4) —
(5) 5	(5) 0.35	(5) VT / GY	(5) 2906	(5) Row 2 Dome Reading Lamp 2 Switch Signal	(5) I	(5) —
6 - 8	—	—	—	Not Occupied	—	—

E40 Air Heater X2 (C32)



5191926

Connector Part Information
- Harness Type: Heater Wiring Harness
- OEM Connector: 2294399-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

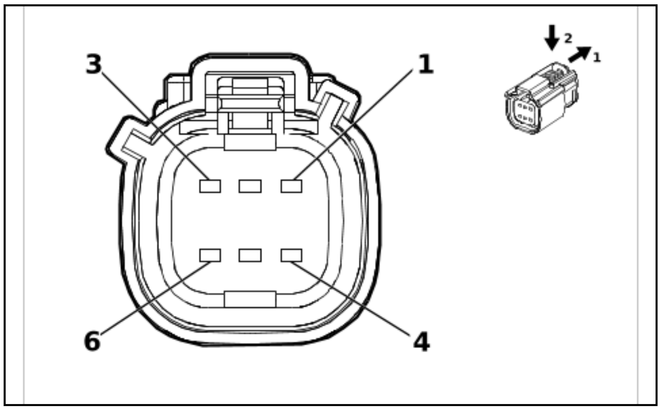
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

E40 Air Heater X2 (C32)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.35	(2) BN / VT	(2) 339	(2) Run/Crank Ignition 1 Voltage	(2) I	(2) —
(3) 3	(3) 0.35	(3) BU	(3) 2852	(3) Body Control Module LIN Bus 6	(3) I	(3) —
(4) 4	(4) 0.35	(4) BK	(4) 1050	(4) Ground	(4) I	(4) —

E42R Rear Body Structure Stop Lamp - Right



5926694

Connector Part Information

- Harness Type: Rear Body Structure Stop Lamp
- OEM Connector: 33472-0617
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.5 Series, Sealed(GY)

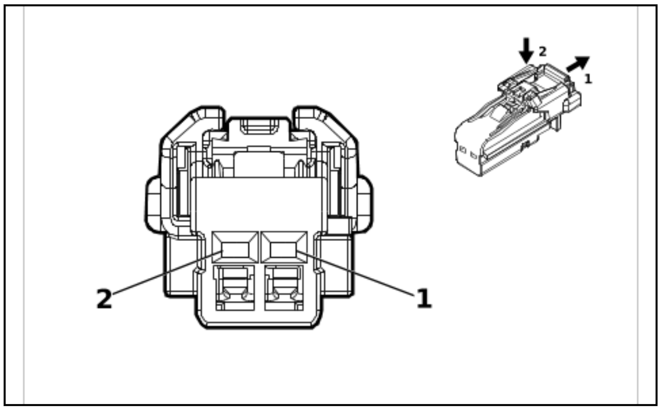
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

E42R Rear Body Structure Stop Lamp - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 18	(1) BN	(1) 6995	(1) Right Rear Park Lamp Control	(1) I	(1) —
(2) 2	(2) 18	(2) RD	(2) 7544	(2) Right Rear Turn Signal Lamp Feedback Signal	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 18	(4) GN	(4) 24	(4) Backup Lamp Control	(4) I	(4) —
(5) 5	(5) 18	(5) GN	(5) 1335	(5) Right Rear Turn Signal Lamp Control 2	(5) I	(5) —
(6) 6	(6) 18	(6) BK	(6) 1850	(6) Ground	(6) I	(6) —

E63D Front Side Door Inside Handle Illumination Lamp - Left (A45)



4115691

Connector Part Information

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Driver
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

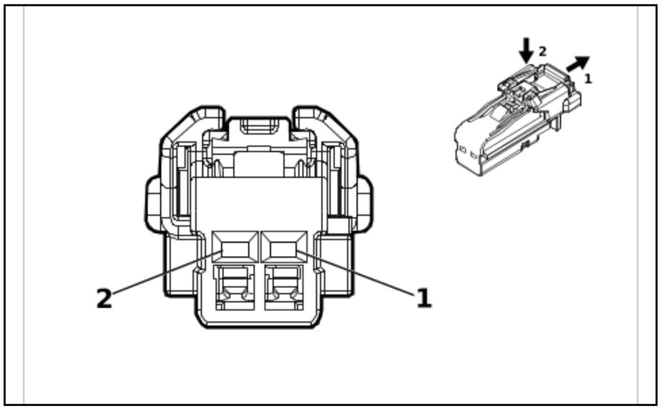
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

E63D Front Side Door Inside Handle Illumination Lamp - Left (A45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / VT	(1) 2767	(1) LED Ambient Lighting Control Left Front Door	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 1550	(2) Ground	(2) I	(2) —

E63P Front Side Door Inside Handle Illumination Lamp - Right (A45)



4115691

Connector Part Information

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Passenger
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

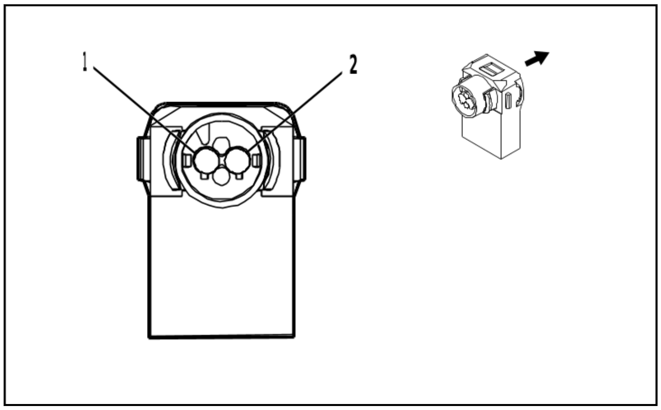
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

E63P Front Side Door Inside Handle Illumination Lamp - Right (A45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / BN	(1) 2768	(1) LED Ambient Lighting Control Right Front Door	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 1350	(2) Ground	(2) I	(2) —

F105LF Front Row Roof Rail Airbag - Left



4679778

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 33345783
- Service Connector: 85666124
- Description: 2-Way F ABX-5 Series(GY with YE Cover)

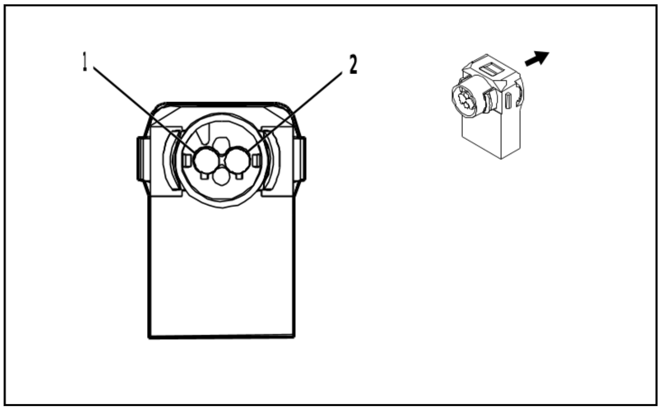
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F105LF Front Row Roof Rail Airbag - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / GN	(1) 5019	(1) Left Front Roof Rail Air Bag High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / OG	(2) 5020	(2) Left Front Roof Rail Air Bag Low Control	(2) I	(2) —

F105RF Front Row Roof Rail Airbag - Right



4679778

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 33345783
- Service Connector: 85666124
- Description: 2-Way F ABX-5 Series(GY with YE Cover)

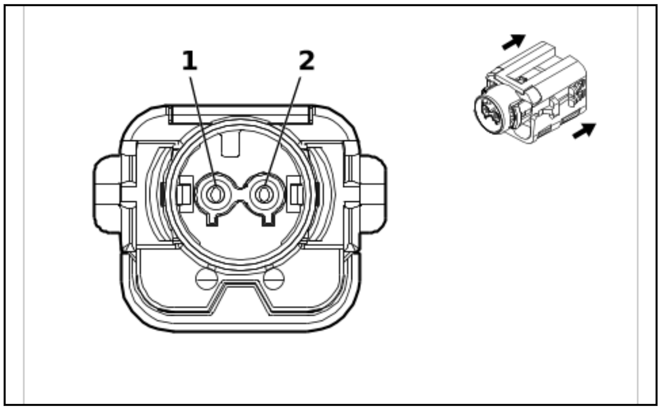
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F105RF Front Row Roof Rail Airbag - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / GY	(1) 5021	(1) Right Front Roof Rail Air Bag High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / OG	(2) 5022	(2) Right Front Roof Rail Air Bag Low Control	(2) I	(2) —

F106D Front Seat Outboard Seat Back Airbag - Driver



5499727

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 35212936
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series(PK with YE Cover)

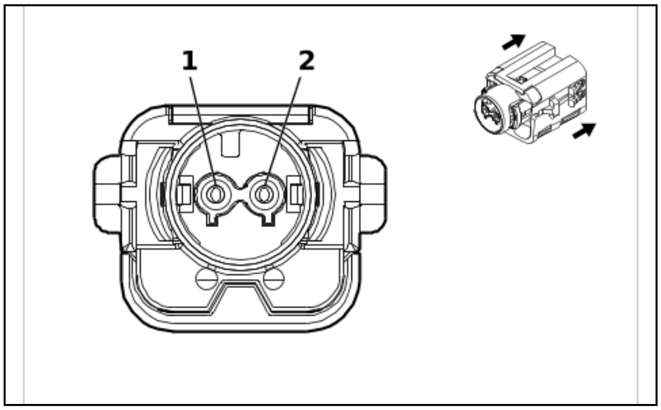
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F106D Front Seat Outboard Seat Back Airbag - Driver

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / BU	(1) 4962	(1) Driver Seat Back Air Bag High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / OG	(2) 4963	(2) Driver Seat Back Air Bag Low Control	(2) I	(2) —

F106P Front Seat Outboard Seat Back Airbag - Passenger



5499727

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 35212936
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series(PK with YE Cover)

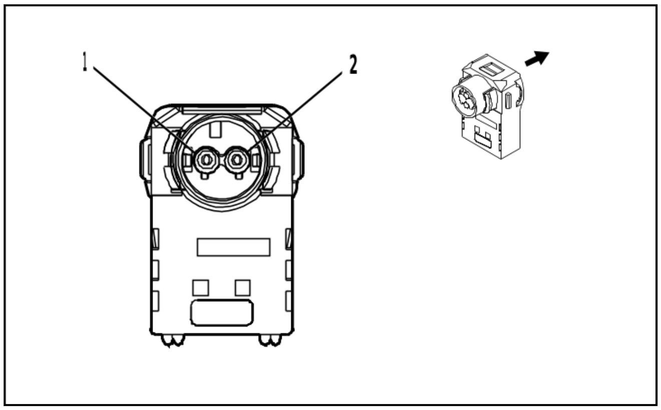
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F106P Front Seat Outboard Seat Back Airbag - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / GY	(1) 4956	(1) Passenger Seat Back Air Bag High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / OG	(2) 4957	(2) Passenger Seat Back Air Bag Low Control	(2) I	(2) —

F107 Steering Wheel Airbag X1 (N57 - D07)



4231869

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 35504152
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series(PK with YE Cover)

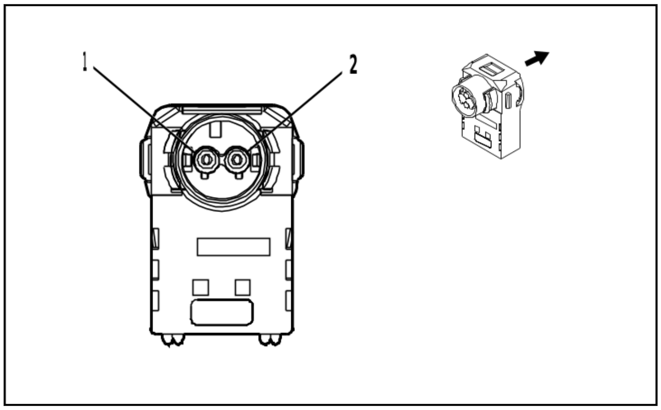
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F107 Steering Wheel Airbag X1 (N57 - D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / OG	(1) 3021	(1) Steering Wheel Air Bag Stage 1 High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) OG / WH	(2) 3020	(2) Steering Wheel Air Bag Stage 1 Low Control	(2) I	(2) —

F107 Steering Wheel Airbag X1 (N57 & D07)



4231869

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 35504152
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series(PK with YE Cover)

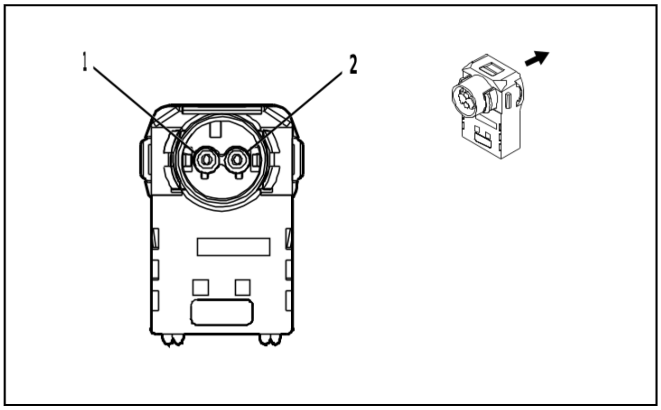
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F107 Steering Wheel Airbag X1 (N57 & D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / VT	(1) 3021	(1) Steering Wheel Air Bag Stage 1 High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / OG	(2) 3020	(2) Steering Wheel Air Bag Stage 1 Low Control	(2) I	(2) —

F107 Steering Wheel Airbag X1 (NK5)



4231869

Connector Part Information
- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 35504152
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series(PK with YE Cover)

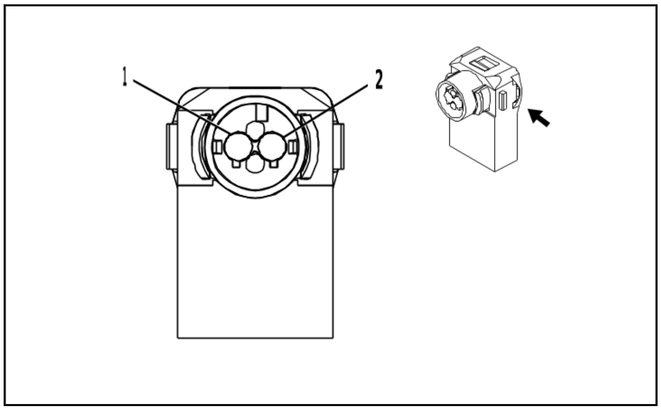
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F107 Steering Wheel Airbag X1 (NK5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / VT	(1) 3021	(1) Steering Wheel Air Bag Stage 1 High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / OG	(2) 3020	(2) Steering Wheel Air Bag Stage 1 Low Control	(2) I	(2) —

F107 Steering Wheel Airbag X2 (N57 - D07)



4241364

Connector Part Information
- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 35504153
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series(PU with YE Cover)

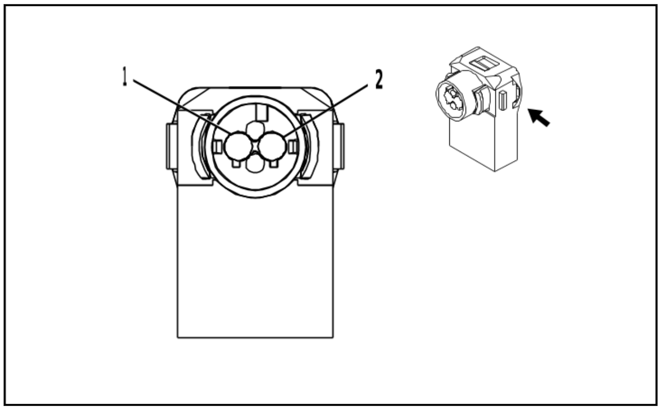
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F107 Steering Wheel Airbag X2 (N57 - D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / OG	(1) 3023	(1) Steering Wheel Air Bag Stage 2 High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) OG / VT	(2) 3022	(2) Steering Wheel Air Bag Stage 2 Low Control	(2) I	(2) —

F107 Steering Wheel Airbag X2 (N57 & D07)



4241364

Connector Part Information
- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 35504153
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series(PU with YE Cover)

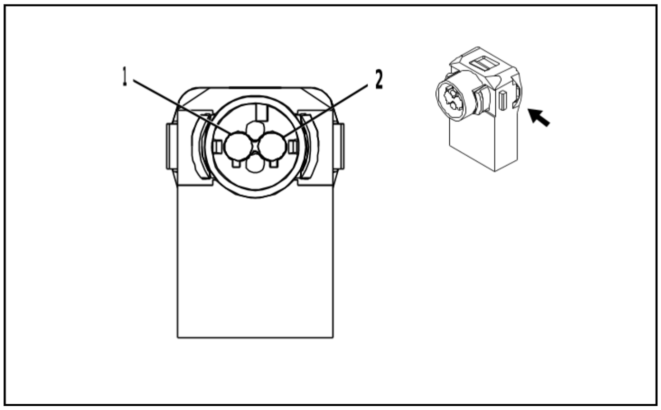
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F107 Steering Wheel Airbag X2 (N57 & D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / GN	(1) 3023	(1) Steering Wheel Air Bag Stage 2 High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / OG	(2) 3022	(2) Steering Wheel Air Bag Stage 2 Low Control	(2) I	(2) —

F107 Steering Wheel Airbag X2 (NK5)



4241364

Connector Part Information
- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 35504153
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series(PU with YE Cover)

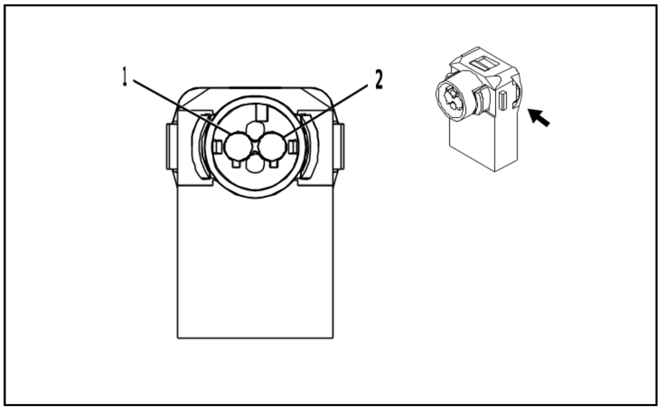
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F107 Steering Wheel Airbag X2 (NK5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / GN	(1) 3023	(1) Steering Wheel Air Bag Stage 2 High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / OG	(2) 3022	(2) Steering Wheel Air Bag Stage 2 Low Control	(2) I	(2) —

F112D Front Seat Belt Retractor - Driver



4241364

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 33345778
- Service Connector: 85666123
- Description: 2-Way F ABX-5 Series(PU with YE Cover)

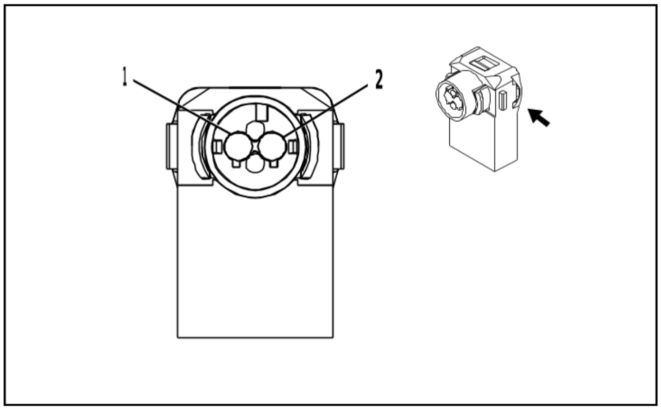
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F112D Front Seat Belt Retractor - Driver

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / WH	(1) 3477	(1) Driver Seat Belt Retractor Pretensioner High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / OG	(2) 3478	(2) Driver Seat Belt Retractor Pretensioner Low Control	(2) I	(2) —

F112P Front Seat Belt Retractor - Passenger



4241364

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 33345778
- Service Connector: 85666123
- Description: 2-Way F ABX-5 Series(PU with YE Cover)

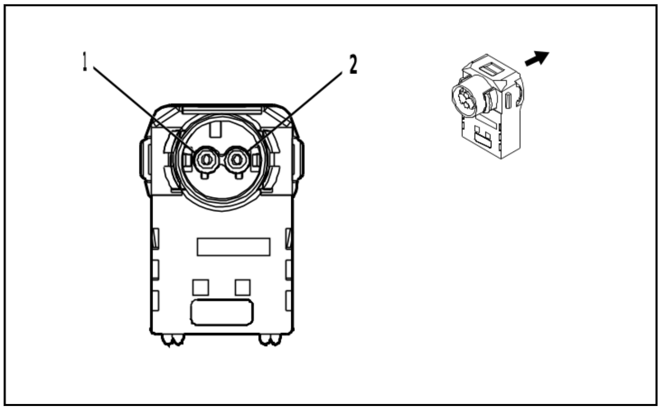
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F112P Front Seat Belt Retractor - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / GN	(1) 3475	(1) Passenger Seat Belt Retractor Pretensioner High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / OG	(2) 3476	(2) Passenger Seat Belt Retractor Pretensioner Low Control	(2) I	(2) —

F113D Front Seat Belt Anchor Plate Tensioner - Driver



4231869

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 33345777
- Service Connector: 85666122
- Description: 2-Way F ABX-5 Series(PK with YE Cover)

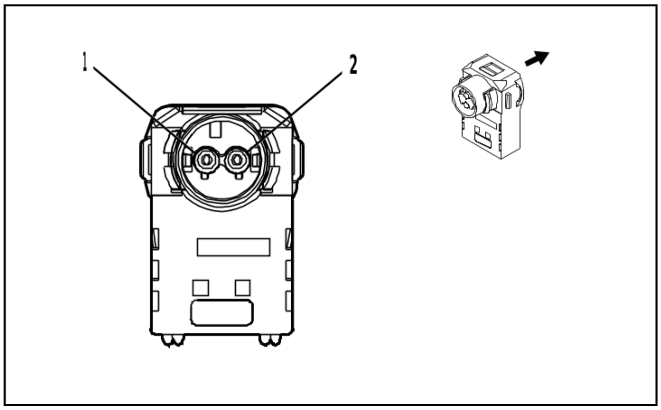
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F113D Front Seat Belt Anchor Plate Tensioner - Driver

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / YE	(1) 3481	(1) Driver Seat Belt Anchor Pretensioner High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / OG	(2) 3482	(2) Driver Seat Belt Anchor Pretensioner Low Control	(2) I	(2) —

F113P Front Seat Belt Anchor Plate Tensioner - Passenger



4231869

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 33345777
- Service Connector: 85666122
- Description: 2-Way F ABX-5 Series(PK with YE Cover)

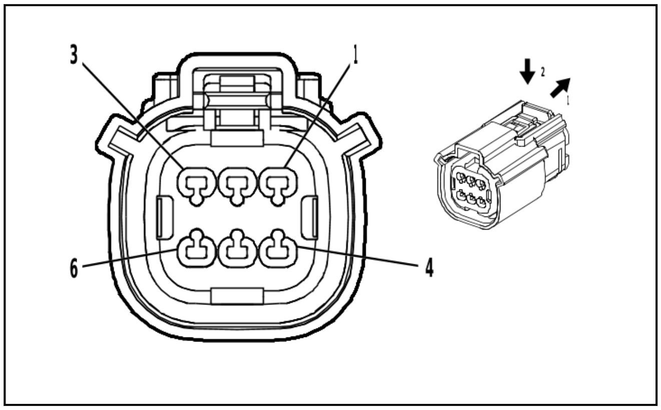
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-10 (GN)	No Tool Required

F113P Front Seat Belt Anchor Plate Tensioner - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) OG / BN	(1) 3479	(1) Passenger Seat Belt Anchor Pretensioner High Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY / OG	(2) 3480	(2) Passenger Seat Belt Anchor Pretensioner Low Control	(2) I	(2) —

G5 Automatic Transmission Auxiliary Fluid Pump (MFC)



4574736

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 160038-3009
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.5 MX Series, Sealed(WH)

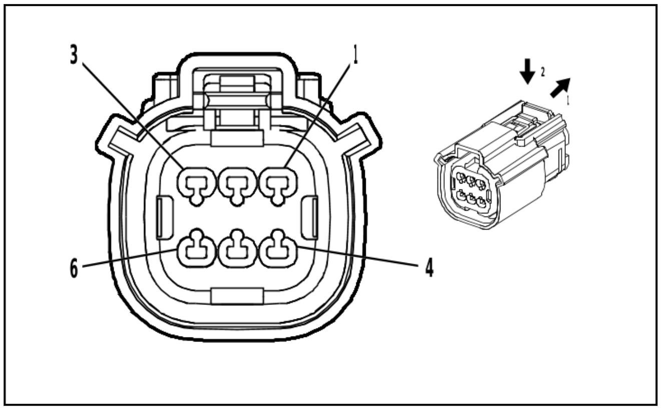
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-2A (GY)	No Tool Required

G5 Automatic Transmission Auxiliary Fluid Pump (MFC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) RD / GY	(1) 8540	(1) Battery Positive Voltage	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) BN / GY	(3) 6387	(3) Transmission High Side Driver 1 Control	(3) II	(3) —
(4) 4	(4) 0.5	(4) GN / WH	(4) 2968	(4) Transmission Auxiliary Fluid Pump Control	(4) II	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 1.5	(6) BK / YE	(6) 450	(6) Ground	(6) I	(6) —

G5 Automatic Transmission Auxiliary Fluid Pump (MHS / MHT / MQB / MQC)



4574736

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 160038-3009
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.5 MX Series, Sealed(WH)

Terminal Part Information

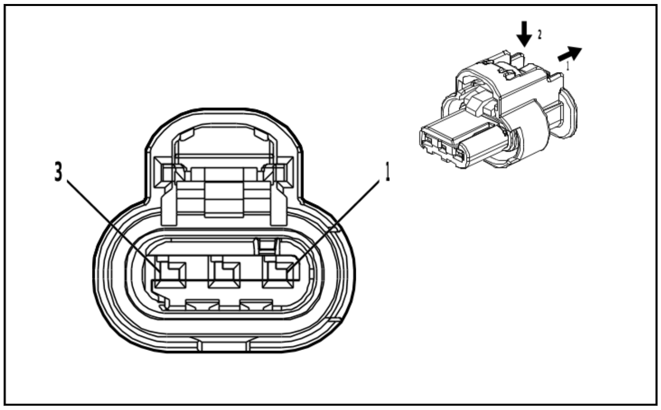
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

G5 Automatic Transmission Auxiliary Fluid Pump (MHS / MHT / MQB / MQC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) GN / VT	(1) 8540	(1) Battery Positive Voltage	(1) I	(1) —
2	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(3) 3	(3) 0.5	(3) BN	(3) 6387	(3) Transmission High Side Driver 1 Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) GY / OG	(4) 2968	(4) Transmission Auxiliary Fluid Pump Control	(4) I	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 1.5	(6) BK / YE	(6) 450	(6) Ground	(6) I	(6) —

G8 Engine Coolant Pump - Auxiliary (L84 / L87)



4581126

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

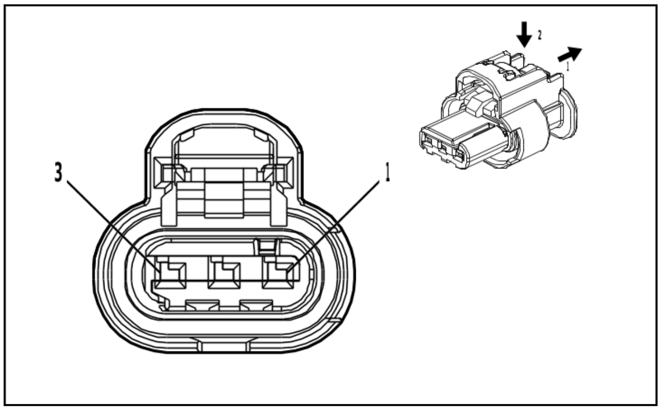
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

G8 Engine Coolant Pump - Auxiliary (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) BK	(1) 450	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.5	(2) RD / BU	(2) 6040	(2) Battery Positive Voltage	(2) I	(2) —
(3) 3	(3) 0.5	(3) GN / VT	(3) 4621	(3) Engine Control Module LIN Bus 1	(3) I	(3) —

G8 Engine Coolant Pump - Auxiliary (LZ0)



4581126

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

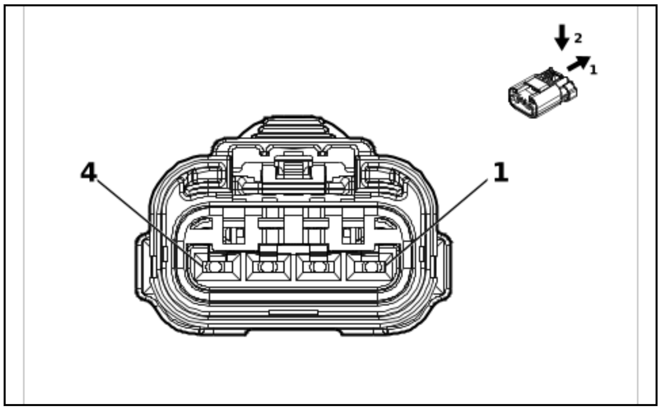
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

G8 Engine Coolant Pump - Auxiliary (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 450	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.5	(2) RD / BU	(2) 6040	(2) Battery Positive Voltage	(2) I	(2) —
(3) 3	(3) 0.5	(3) GN / VT	(3) 4621	(3) Engine Control Module LIN Bus 1	(3) I	(3) —

G10L Cooling Fan Motor - Left (L3B)



5838592

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 35243535
- Service Connector: 19371208
- Description: 4-Way F 2.8 APEX Series, Sealed(BK)

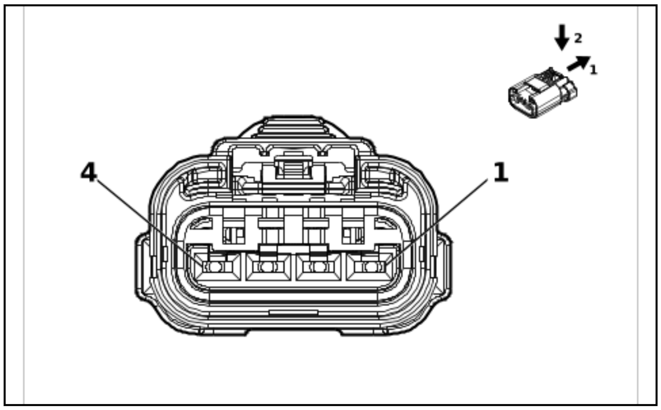
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required
II	Not required	J-35616-4A (PU)	No Tool Required

G10L Cooling Fan Motor - Left (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 5	(1) BK	(1) 6550	(1) Ground	(1) II	(1) —
(2) 2	(2) 5	(2) RD / GN	(2) 3840	(2) Battery Positive Voltage	(2) II	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.75	(4) GN / VT	(4) 4621	(4) Engine Control Module LIN Bus 1	(4) I	(4) —

G10L Cooling Fan Motor - Left (L84 / L87)



5838592

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 35243535
- Service Connector: 19371208
- Description: 4-Way F 2.8 APEX Series, Sealed(BK)

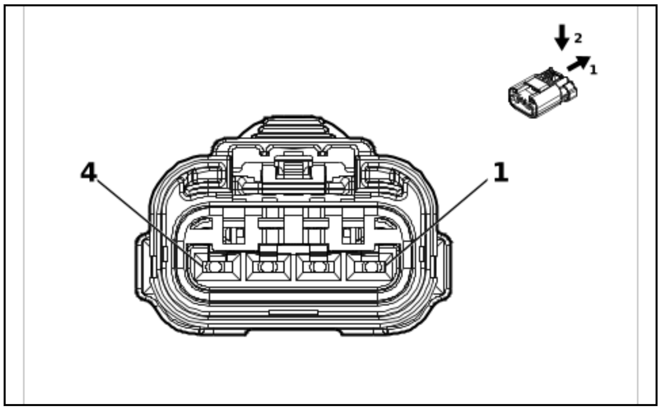
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-4A (PU)	No Tool Required

G10L Cooling Fan Motor - Left (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 5	(1) BK	(1) 450	(1) Ground	(1) II	(1) —
(2) 2	(2) 5	(2) RD / GN	(2) 3840	(2) Battery Positive Voltage	(2) II	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.75	(4) GN / VT	(4) 4621	(4) Engine Control Module LIN Bus 1	(4) I	(4) —

G10L Cooling Fan Motor - Left (LZ0)



5838592

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 35243535
- Service Connector: 19371208
- Description: 4-Way F 2.8 APEX Series, Sealed(BK)

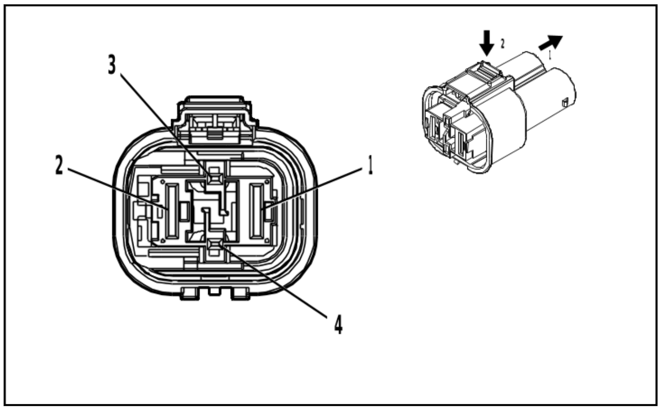
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required
II	Not required	J-35616-4A (PU)	No Tool Required

G10L Cooling Fan Motor - Left (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 5	(1) BK	(1) 4450	(1) Ground	(1) II	(1) —
(2) 2	(2) 5	(2) RD / GN	(2) 3840	(2) Battery Positive Voltage	(2) II	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.75	(4) GN / VT	(4) 4621	(4) Engine Control Module LIN Bus 1	(4) I	(4) —

G10LW Cooling Fan Motor - Lower (L3B)



4847569

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 4-2286732-1
- Service Connector: 84766431
- Description: 4-Way F 1.2, 9.5 MCON Series, Sealed(BK)

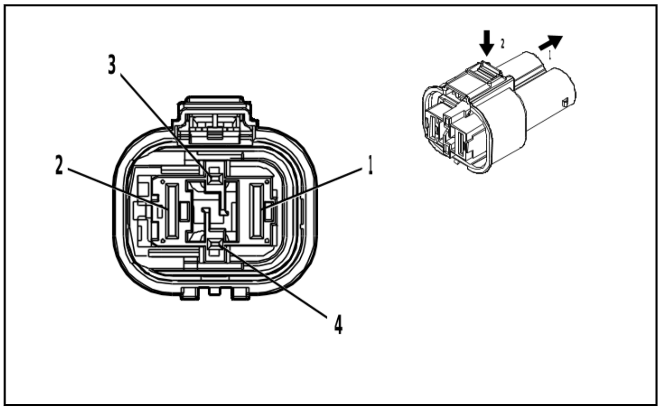
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required
II	Not required	J-35616-22 (RD)	No Tool Required

G10LW Cooling Fan Motor - Lower (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 5	(1) RD / GY	(1) 4140	(1) Battery Positive Voltage	(1) II	(1) —
(2) 2	(2) 5	(2) BK	(2) 6550	(2) Ground	(2) II	(2) —
(3) 3	(3) 0.5	(3) GN / YE	(3) 4623	(3) Engine Control Module LIN Bus 3	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

G10LW Cooling Fan Motor - Lower (LZ0 / L3B)



4847569

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 4-2286732-1
- Service Connector: 84766431
- Description: 4-Way F 1.2, 9.5 MCON Series, Sealed(BK)

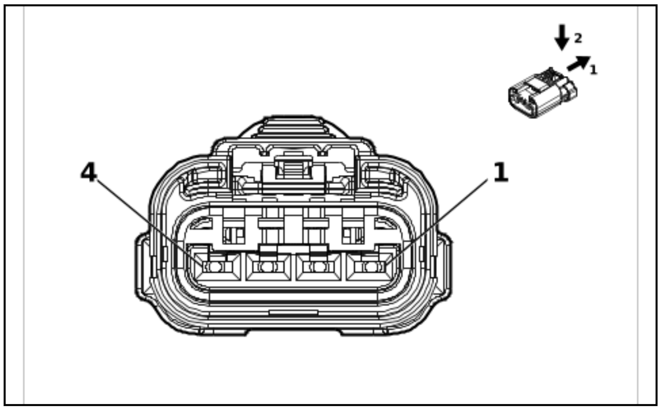
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required
II	Not required	J-35616-22 (RD)	No Tool Required

G10LW Cooling Fan Motor - Lower (LZ0 / L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 5	(1) RD / GY	(1) 4140	(1) Battery Positive Voltage	(1) II	(1) —
(2) 2	(2) 5	(2) BK	(2) 4450	(2) Ground	(2) II	(2) —
(3) 3	(3) 0.5	(3) GN / YE	(3) 4623	(3) Engine Control Module LIN Bus 3	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

G10R Cooling Fan Motor - Right (L3B)



5838592

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 35243535
- Service Connector: 19371208
- Description: 4-Way F 2.8 APEX Series, Sealed(BK)

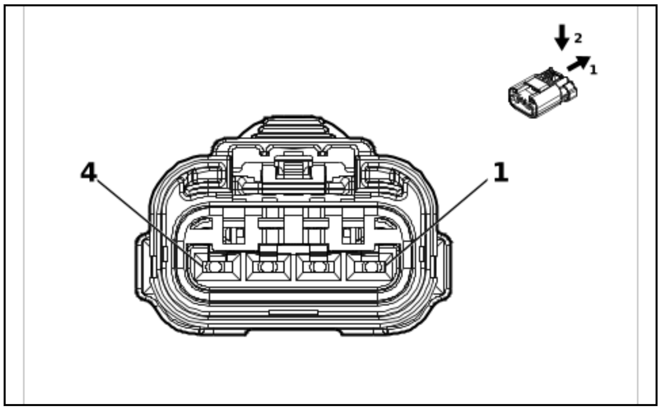
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required
II	Not required	J-35616-4A (PU)	No Tool Required

G10R Cooling Fan Motor - Right (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 5	(1) BK	(1) 6550	(1) Ground	(1) II	(1) —
(2) 2	(2) 5	(2) RD / VT	(2) 4040	(2) Battery Positive Voltage	(2) II	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.75	(4) GN / VT	(4) 4621	(4) Engine Control Module LIN Bus 1	(4) I	(4) —

G10R Cooling Fan Motor - Right (L84 / L87)



5838592

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 35243535
- Service Connector: 19371208
- Description: 4-Way F 2.8 APEX Series, Sealed(BK)

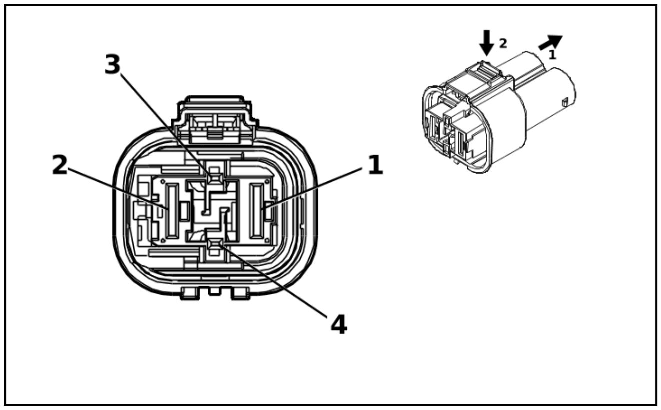
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-4A (PU)	No Tool Required

G10R Cooling Fan Motor - Right (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 5	(1) BK	(1) 450	(1) Ground	(1) II	(1) —
(2) 2	(2) 5	(2) RD / VT	(2) 4040	(2) Battery Positive Voltage	(2) II	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.75	(4) GN / VT	(4) 4621	(4) Engine Control Module LIN Bus 1	(4) I	(4) —

G10R Cooling Fan Motor - Right (LZ0)



5187743

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 4-2286732-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2, 9.5 MCON Series(GY)

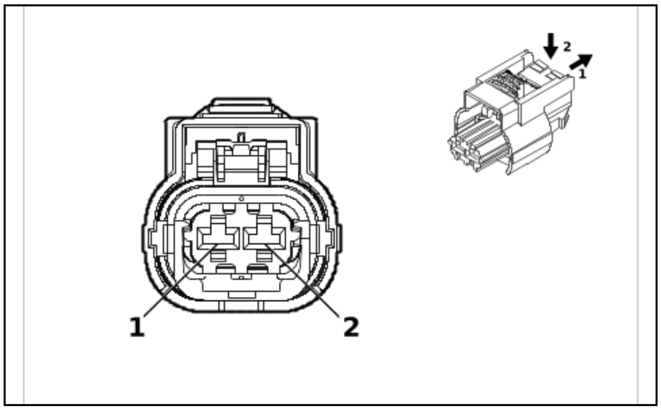
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required
II	Not required	J-35616-22 (RD)	No Tool Required

G10R Cooling Fan Motor - Right (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 8	(1) RD / BN	(1) 1742	(1) Battery Positive Voltage	(1) II	(1) —
(2) 2	(2) 8	(2) BK	(2) 4450	(2) Ground	(2) II	(2) —
(3) 3	(3) 0.5	(3) GN / VT	(3) 4621	(3) Engine Control Module LIN Bus 1	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

G13 Generator X1 (L3B)



4992524

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 35182447
- Service Connector: 84941154
- Description: 2-Way F 2.8 MCP Series, Sealed(BK)

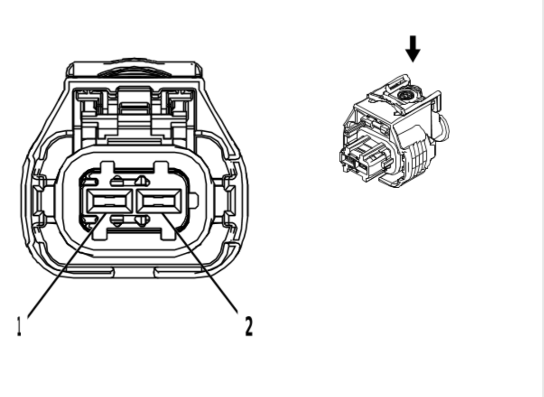
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

G13 Generator X1 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN	(1) 25	(1) Charge Indicator Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY	(2) 23	(2) Generator Field Duty Cycle Signal	(2) I	(2) —

G13 Generator X1 (L84 / L87)



2577394

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1 928 405 714
- Service Connector: 13384371
- Description: 2-Way F 2.8 Series, Sealed(BK)

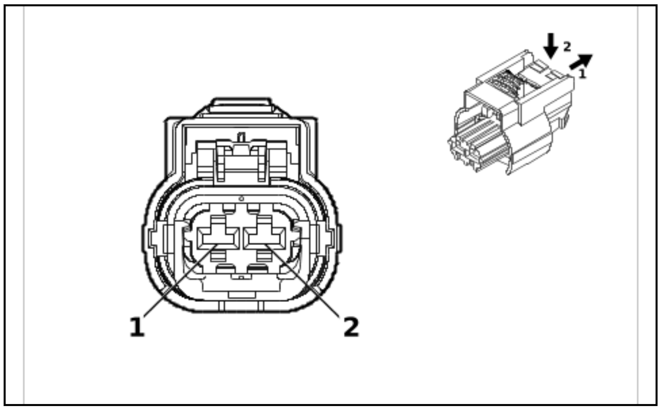
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

G13 Generator X1 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN	(1) 25	(1) Charge Indicator Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY	(2) 23	(2) Generator Field Duty Cycle Signal	(2) I	(2) —

G13 Generator X1 (LZ0)



4992524

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 35182447
- Service Connector: 84941154
- Description: 2-Way F 2.8 MCP Series, Sealed(BK)

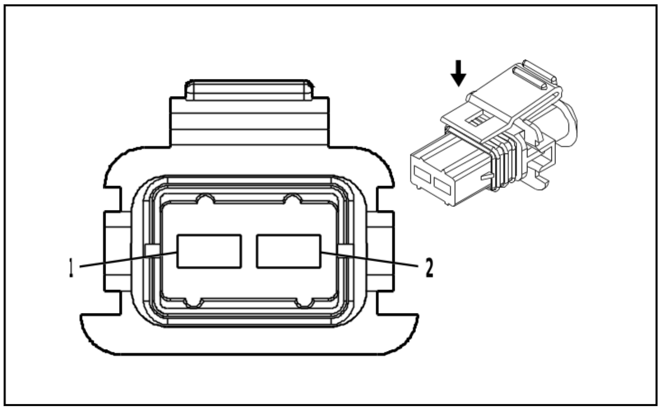
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

G13 Generator X1 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN	(1) 25	(1) Charge Indicator Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY	(2) 23	(2) Generator Field Duty Cycle Signal	(2) I	(2) —

G13 Generator X1 (VYU)



1522871

Connector Part Information

- Harness Type: Accessory Wiring Harness
- OEM Connector: 12186308
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F Junior Power Timer Series, Sealed(BK)

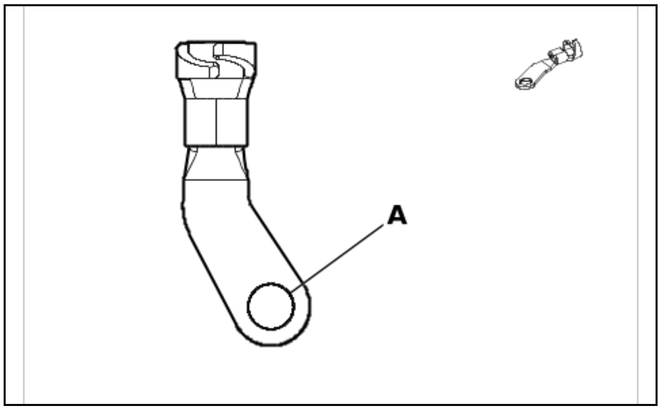
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

G13 Generator X1 (VYU)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN	(1) 9025	(1) Charge Indicator Control Switch Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY	(2) 23	(2) Generator Field Duty Cycle Signal	(2) I	(2) —

G13 Generator X2 ((L84 / L87) & KW5)



5911279

Connector Part Information

- Harness Type: Starter Solenoid Cable
- OEM Connector: 84238913
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

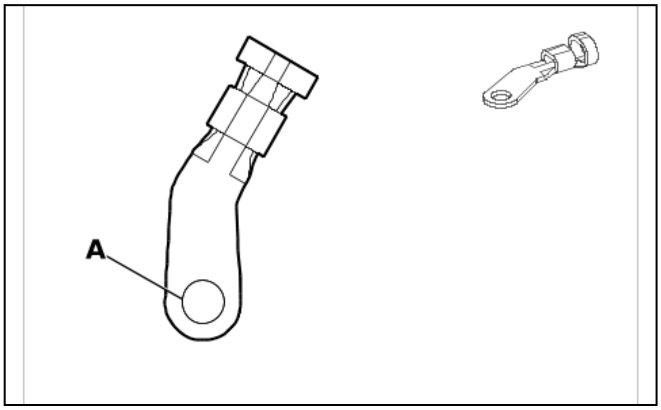
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

G13 Generator X2 ((L84 / L87) & KW5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35	RD / BU	42	Battery Positive Voltage	I	L3B or LM2 or KW5+ L84/ L87

G13 Generator X2 ((L84 / L87) & KW7)



6444786

Connector Part Information

- Harness Type: Generator Battery Jumper Cable
- OEM Connector: 84223343
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

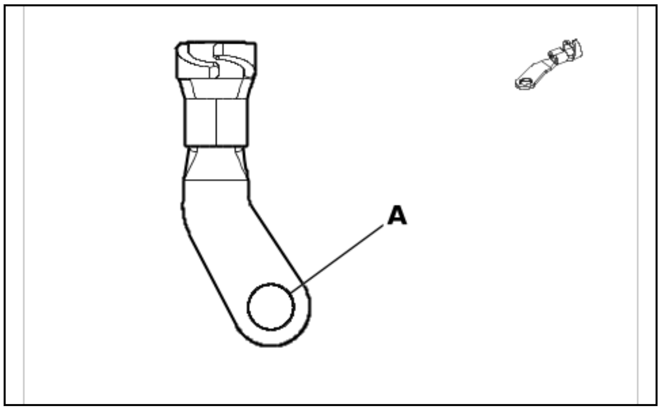
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

G13 Generator X2 ((L84 / L87) & KW7)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	25	RD / YE	42	Battery Positive Voltage	I	KW7+ L84/ L87

G13 Generator X2 (L3B / LZ0)



5911279

Connector Part Information

- Harness Type: Power Steering Wiring Harness
- OEM Connector: 84238913
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

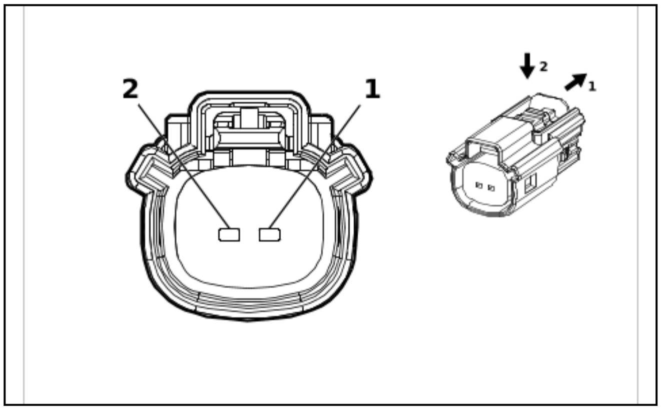
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

G13 Generator X2 (L3B / LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35	RD / BU	42	Battery Positive Voltage	I	—

G18 Fuel Pump - High Pressure (L3B)



2474713

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 33471-0206
- Service Connector: 13577534
- Description: 2-Way F 1.5 Series, Sealed(BK)

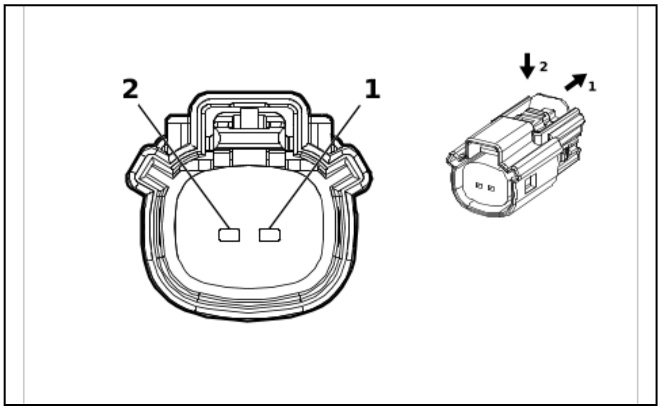
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

G18 Fuel Pump - High Pressure (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BK	(1) 7300	(1) High Pressure Fuel Pump Low Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE	(2) 7301	(2) High Pressure Fuel Pump High Control	(2) I	(2) —

G18 Fuel Pump - High Pressure (L84 / L87)



2474713

Connector Part Information
- Harness Type: Fuel Injector Wiring Harness - Bank 2
- OEM Connector: 33471-0206
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed(BK)

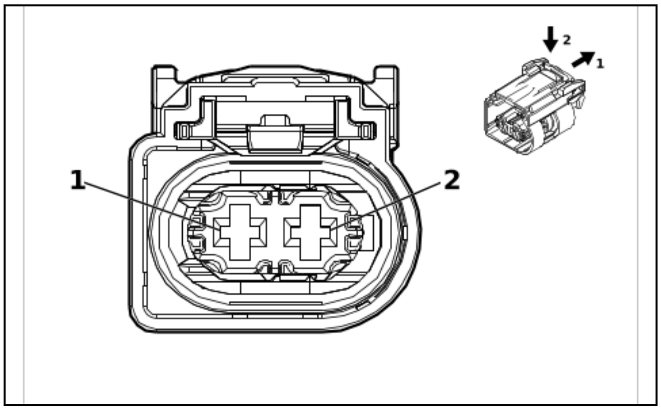
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

G18 Fuel Pump - High Pressure (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) VT / BK	(1) 7300	(1) High Pressure Fuel Pump Low Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) YE	(2) 7301	(2) High Pressure Fuel Pump High Control	(2) I	(2) —

G24 Windshield Washer Pump



5580410

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 2425741-1
- Service Connector: 85005016
- Description: 2-Way F 2.8 MCP Series, Sealed(BK)

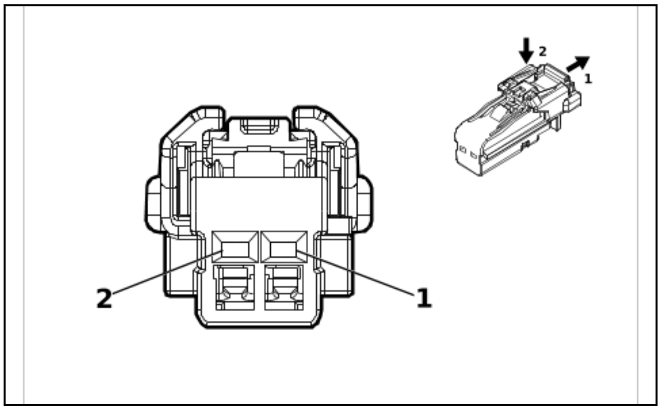
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

G24 Windshield Washer Pump

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) GY / VT	(1) 228	(1) Windshield Washer Pump Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) BK	(2) 150	(2) Ground	(2) I	(2) —

G31D Front Seat Back Lumbar Pump - Driver ((AVK - A45) / (A45 & AVK - AF6))



4115691

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

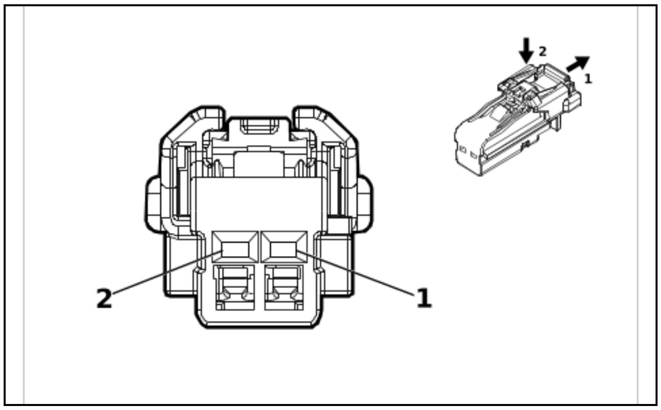
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

G31D Front Seat Back Lumbar Pump - Driver ((AVK - A45) / (A45 & AVK - AF6))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / BU	(1) 4891	(1) Driver Seat Lumbar/Bolster Pump Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / BK	(2) 2305	(2) Driver Seat Bolster Pump Low Reference	(2) I	(2) —

G31D Front Seat Back Lumbar Pump - Driver (A45 & AF6)



4115691

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

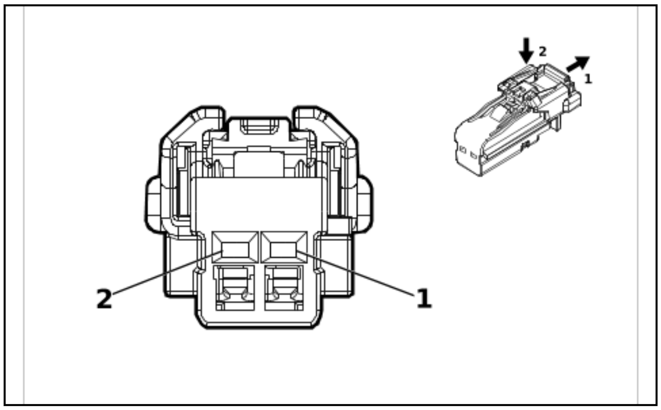
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

G31D Front Seat Back Lumbar Pump - Driver (A45 & AF6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / BU	(1) 4891	(1) Driver Seat Lumbar/Bolster Pump Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / BK	(2) 2305	(2) Driver Seat Bolster Pump Low Reference	(2) I	(2) —

G31P Front Seat Back Lumbar Pump - Passenger (AVU - (AHH / AKE))



4115691

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

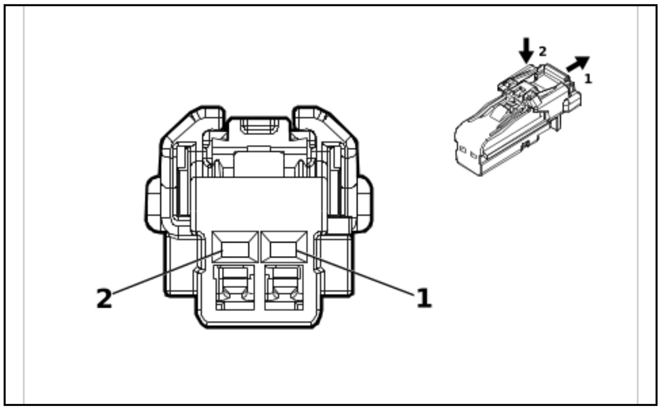
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

G31P Front Seat Back Lumbar Pump - Passenger (AVU - (AHH / AKE))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / WH	(1) 4890	(1) Passenger Seat Lumbar/Bolster Pump Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 1350	(2) Ground	(2) I	(2) —

G31P Front Seat Back Lumbar Pump - Passenger (AVU & (AHH / AKE))



4115691

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

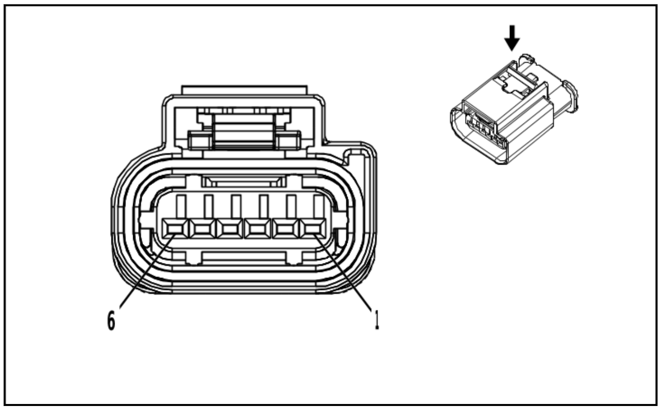
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

G31P Front Seat Back Lumbar Pump - Passenger (AVU & (AHH / AKE))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / WH	(1) 4890	(1) Passenger Seat Lumbar/Bolster Pump Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY / BK	(2) 2306	(2) Passenger Seat Bolster Pump Low Reference	(2) I	(2) —

G58 Evaporative Emission Canister Purge Pump (L3B)



3747579

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 2272975-1
- Service Connector: 19354437
- Description: 6-Way F 1.2 MCON Series, Sealed(BK)

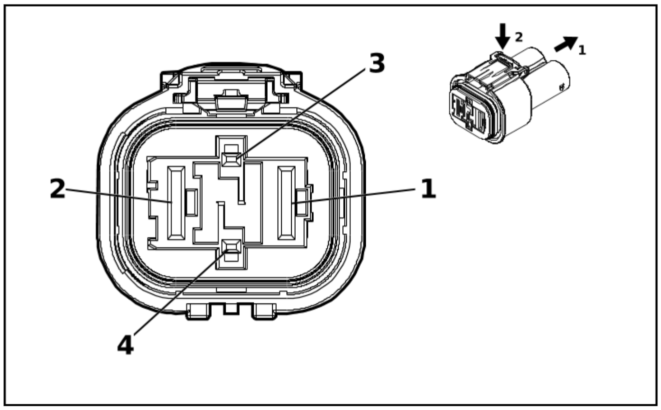
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

G58 Evaporative Emission Canister Purge Pump (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / BU	(1) 2447	(1) Evaporative Purge Pump Pressure Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / YE	(2) 548	(2) Engine Control Sensors Low Reference 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / RD	(3) 460	(3) Engine Control Sensors 5 Volt Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) GN / BN	(4) 2732	(4) Engine Control Module LIN Bus 4	(4) I	(4) —
(5) 5	(5) 0.75	(5) BK	(5) 6550	(5) Ground	(5) I	(5) —
(6) 6	(6) 0.75	(6) VT / BU	(6) 5294	(6) Powertrain Main Relay Fused Supply Voltage 5	(6) I	(6) —

G59 Engine Coolant Pump (L3B)



5389785

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2332470-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2, 9.5 MCON Series(BK)

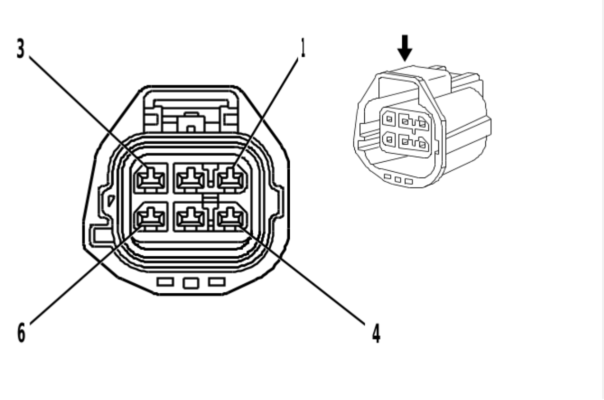
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-22 (RD)	No Tool Required

G59 Engine Coolant Pump (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 10	(1) RD / BN	(1) 1742	(1) Battery Positive Voltage	(1) II	(1) —
(2) 2	(2) 10	(2) BK	(2) 6550	(2) Ground	(2) II	(2) —
(3) 3	(3) 0.5	(3) GN / BN	(3) 2732	(3) Engine Control Module LIN Bus 4	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

K4 Running Board Control Module X1 (BRS)



1420587

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 7287-9814-10
- Service Connector: 19368306
- Description: 6-Way F 2.8 Series, Sealed(GY)

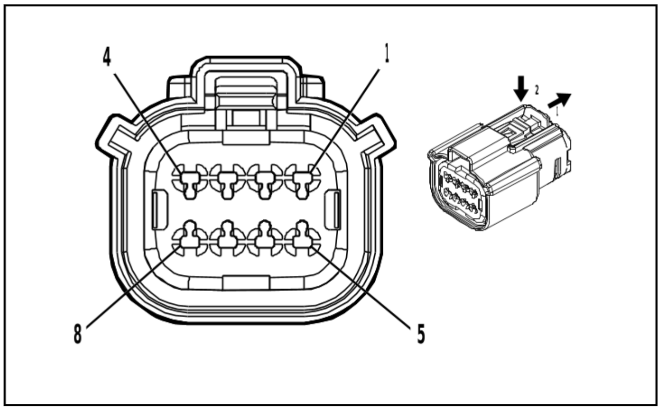
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

K4 Running Board Control Module X1 (BRS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) RD / WH	(1) 1040	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 2	(2) GY	(2) 7472	(2) Left Running Board Step Motor Control Retract	(2) I	(2) —
(3) 3	(3) 2	(3) BU	(3) 7470	(3) Right Running Board Step Motor Control Extend	(3) I	(3) —
(4) 4	(4) 2.5	(4) BK	(4) 1650	(4) Ground	(4) I	(4) —
(5) 5	(5) 2	(5) WH / BN	(5) 7471	(5) Left Running Board Step Motor Control Extend	(5) I	(5) —
(6) 6	(6) 2	(6) GN	(6) 7469	(6) Right Left Running Board Step Motor Control Retract	(6) I	(6) —

K4 Running Board Control Module X2 (BRS)



4846407

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 33472-4816
- Service Connector: 84928314
- Description: 8-Way F 1.5 MX Series, Sealed(BK)

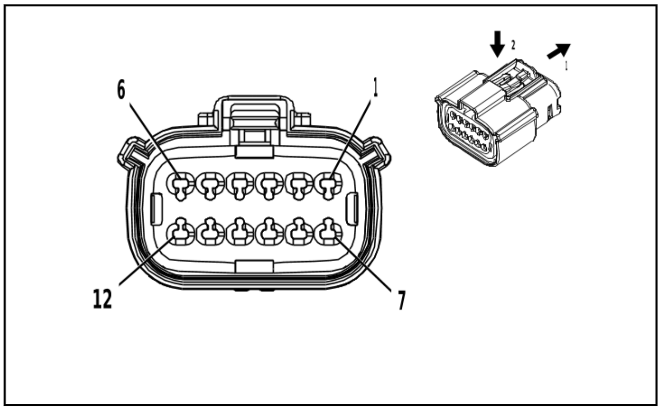
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

K4 Running Board Control Module X2 (BRS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 4986	(1) AUTOSAR CAN Bus [-] 1 Serial Data	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH	(2) 4986	(2) AUTOSAR CAN Bus [-] 1 Serial Data	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU	(3) 4987	(3) AUTOSAR CAN Bus [+] 1 Serial Data	(3) I	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) BU	(5) 4987	(5) AUTOSAR CAN Bus [+] 1 Serial Data	(5) I	(5) —
(6) 6	(6) 0.5	(6) WH	(6) 4986	(6) AUTOSAR CAN Bus [-] 1 Serial Data	(6) I	(6) —
(7) 7	(7) 0.5	(7) BU	(7) 4987	(7) AUTOSAR CAN Bus [+] 1 Serial Data	(7) I	(7) —
8	—	—	—	Not Occupied	—	—

K4 Running Board Control Module X3 (BRS)



2871860

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 35554985
- Service Connector: 19352907
- Description: 12-Way F 1.5 MX Series, Sealed(BK)

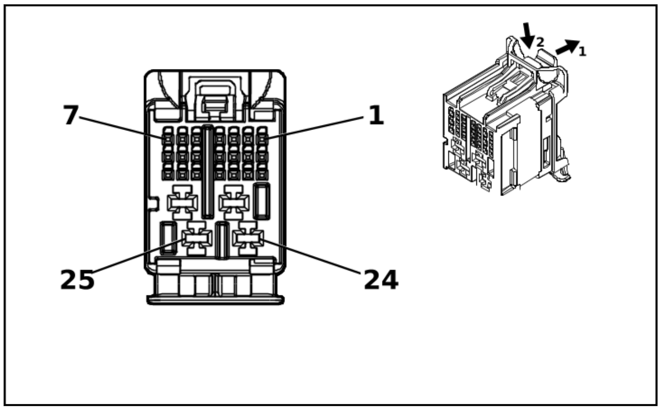
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	85528055	J-35616-2A (GY)	J-38125-217

K4 Running Board Control Module X3 (BRS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / RD	(1) 7464	(1) Right Running Board Step Motor Hall Sensor Voltage Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT	(2) 7465	(2) Right Running Board Step Motor Hall Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / BK	(3) 7463	(3) Right Running Board Step Motor Hall Sensor Low Reference	(3) I	(3) —
4 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) VT / RD	(7) 7468	(7) Left Running Board Step Motor Hall Sensor Voltage Reference	(7) I	(7) —
(8) 8	(8) 0.5	(8) YE	(8) 7467	(8) Left Running Board Step Motor Hall Sensor Signal	(8) I	(8) —
(9) 9	(9) 0.5	(9) YE / BN	(9) 7466	(9) Left Running Board Step Motor Hall Sensor Low Reference	(9) I	(9) —
(10) 10	(10) 0.5	(10) BU / GN	(10) 4746	(10) Running Board Step Left Kick Switch Signal	(10) I	(10) —
(11) 11	(11) 0.5	(11) WH	(11) 4747	(11) Running Board Step Right Kick Switch Signal	(11) I	(11) —
12	—	—	—	Not Occupied	—	—

K9 Body Control Module X1



5203995

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160027-0013
- Service Connector: 13534967
- Description: 25-Way F 0.5 MQS, 2.8 MCP Series(BK with GY Inner Connector)

Terminal Part Information

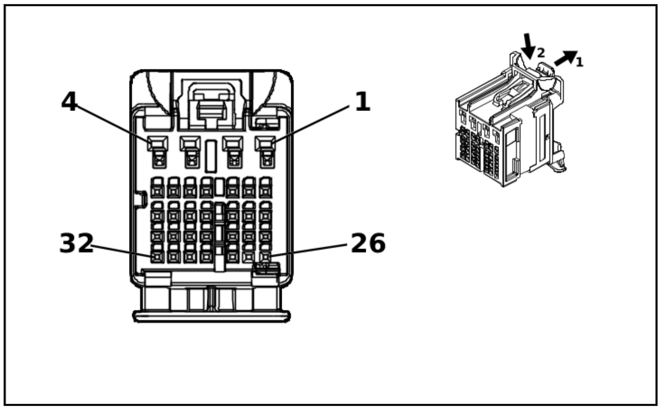
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	87814662	J-35616-35 (VT)	J-38125-557

K9 Body Control Module X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.35	(2) BU / GN	(2) 4248	(2) Cargo Lamp Indicator Control	(2) I	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.35	(5) BU / GY	(5) 754	(5) Blower Motor Speed Control	(5) I	(5) —
(6) 6	(6) 0.35	(6) WH / YE	(6) 4634	(6) HVAC Remote Enable Signal	(6) I	(6) —
(7) 7	(7) 0.35	(7) WH / GY	(7) 7297	(7) Minor Endgate High Relay Control	(7) I	(7) —
8 - 10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.35	(11) GY / GN	(11) 4636	(11) HVAC System Enable Signal	(11) I	(11) —
(12) 12	(12) 0.35	(12) GY	(12) 728	(12) Security Indicator Control	(12) I	(12) —
(13) 13	(13) 0.35	(13) YE	(13) 6812	(13) Out of Park Signal	(13) I	(13) —
14	—	—	—	Not Occupied	—	—
(15) 15	(15) 0.35	(15) GY	(15) 590	(15) Driver Solar Sensor Signal	(15) I	(15) —
(16) 16	(16) 0.35	(16) GY	(16) 6137	(16) Air Conditioning Evaporator Temperature Sensor Signal	(16) I	(16) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(17) 17	(17) 0.35	(17) WH / BU	(17) 278	(17) Ambient Light Sensor Signal	(17) I	(17) —
(18) 18	(18) 0.35	(18) BU / WH	(18) 734	(18) Inside Air Temperature Sensor Signal	(18) I	(18) —
(19) 19	(19) 0.35	(19) GY	(19) 158	(19) Cargo Lamp Switch Signal	(19) I	(19) —
(20) 20	(20) 0.35	(20) GN / VT	(20) 2852	(20) Body Control Module LIN Bus 6	(20) I	(20) —
21 - 22	—	—	—	Not Occupied	—	—
(23) 23	(23) 1	(23) RD / GY	(23) 2140	(23) Battery Positive Voltage	(23) II	(23) —
24	—	—	—	Not Occupied	—	—
(25) 25	(25) 1	(25) GN / YE	(25) 6840	(25) Auxiliary Device 2 Switched Voltage	(25) II	(25) —

K9 Body Control Module X2



5204222

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160028-0015
- Service Connector: 13534980
- Description: 32-Way F 0.5 NANO, 1.2 MCON, stAK50h Series(PK with GY Inner Connector)

Terminal Part Information

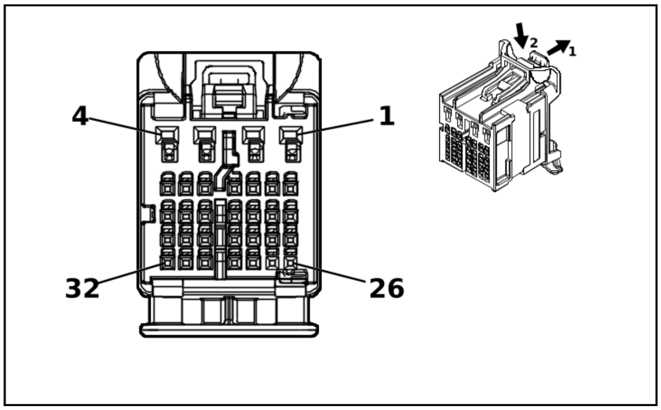
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58

K9 Body Control Module X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.35	(5) BU / GN	(5) 5723	(5) Ignition Mode Switch Mode Voltage	(5) I	(5) —
6 - 8	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(9) 9	(9) 0.35 (9) 0.35	(9) VT / YE (9) GN / BU	(9) 5526 (9) 3738	(9) Tap Up/Tap Down Switch Signal (9) Tap Up/Tap Down Switch Signal 2	(9) I (9) I	(9) (MQC/ MHS) - N38 (9) MI2/ MHT/ MQB
(10) 10	(10) 0.35	(10) WH / BN	(10) 2203	(10) Enhanced Driver Mode 2 Switch Signal	(10) I	(10) —
(11) 11	(11) 0.35	(11) GY	(11) 1198	(11) Endgate Release Switch Analog Signal Interior	(11) I	(11) —
(12) 12	(12) 0.35	(12) YE / BU	(12) 1714	(12) Windshield Wiper Switch Low Signal	(12) I	(12) —
(13) 13	(13) 0.35	(13) GY / GN	(13) 5737	(13) Distance Sensing Cruise Control Gap Up/Down Switch Signal	(13) I	(13) —
(14) 14	(14) 0.35	(14) BN / GN	(14) 1884	(14) Cruise Control Set/Coast/Resume/Accelerate Switch Signal	(14) I	(14) —
15	—	—	—	Not Occupied	—	—
(16) 16	(16) 0.35	(16) BN / BK	(16) 5720	(16) Ignition Mode Switch Accessory LED Signal	(16) I	(16) —
17 - 18	—	—	—	Not Occupied	—	—
(19) 19	(19) 0.35	(19) WH / VT	(19) 103	(19) Headlamp Switch On Signal	(19) I	(19) —
(20) 20	(20) 0.35	(20) GN / GY	(20) 13	(20) Headlamp Switch Park Lamp Signal	(20) I	(20) —
(21) 21	(21) 0.35	(21) GN / BN	(21) 306	(21) Headlamp Switch Off Signal	(21) I	(21) —
22	—	—	—	Not Occupied	—	—
(23) 23	(23) 0.35	(23) VT / BU	(23) 2916	(23) Right Turn Signal Switch Signal	(23) I	(23) —
24	—	—	—	Not Occupied	—	—
(25) 25	(25) 0.35	(25) BK / GY	(25) 6009	(25) Windshield Wiper Switch Low Reference	(25) I	(25) —
(26) 26	(26) 0.35	(26) WH / BK	(26) 94	(26) Windshield Washer Switch Signal	(26) I	(26) —
(27) 27	(27) 0.35	(27) YE / BN	(27) 307	(27) Headlamp Switch Flash Signal	(27) I	(27) —
(28) 28	(28) 0.35	(28) GN / WH	(28) 3287	(28) Horn Switch Signal	(28) I	(28) —
(29) 29	(29) 0.35	(29) WH / GN	(29) 2915	(29) Left Turn Signal Switch Signal	(29) I	(29) —
(30) 30	(30) 0.35	(30) BK / YE	(30) 407	(30) Sensor Low Reference	(30) I	(30) —
(31) 31	(31) 0.35	(31) GN / WH	(31) 111	(31) Hazard Warning Switch Signal	(31) I	(31) —
(32) 32	(32) 0.35	(32) WH	(32) 524	(32) High Beam Select Switch High Beam Signal	(32) I	(32) —

K9 Body Control Module X3



5203925

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160028-0012
- Service Connector: 13534977
- Description: 32-Way F 0.5 NANO, 1.2 MCON, stAK50h Series(BU with GY Inner Connector)

Terminal Part Information

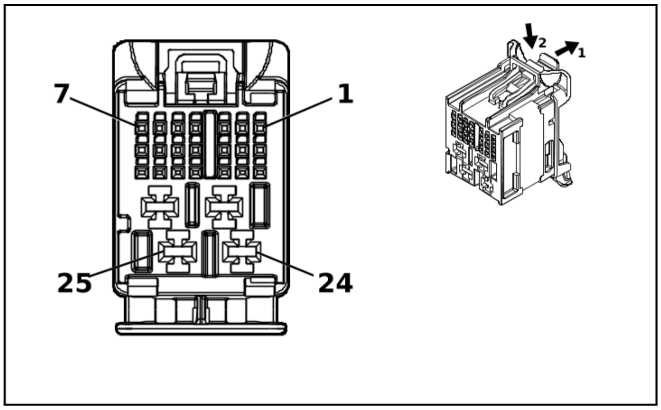
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	84729890	J-35616-12 (BU)	J-38125-215A

K9 Body Control Module X3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) GN / VT	(3) 4786	(3) Dome/Reading Lamp Enable Signal	(3) II	(3) —
4 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.35	(7) WH / BN	(7) 7555	(7) Headlamp Switch Signal	(7) I	(7) —
8 - 9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.35	(10) GN / BK	(10) 2858	(10) Body Control Module LIN Bus 12	(10) I	(10) —
11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0.35	(12) YE / WH	(12) 816	(12) Brake Transmission Shift Interlock Solenoid Actuator Control	(12) I	(12) —
(13) 13	(13) 0.35	(13) WH	(13) 3152	(13) Lane Departure Warning Indicator Control	(13) I	(13) —
(14) 14	(14) 0.35	(14) GN / BN	(14) 5852	(14) Rear Parking Assist Disable LED Signal	(14) I	(14) —
(15) 15	(15) 0.35	(15) GN	(15) 1110	(15) Stop/Start Indicator Control	(15) I	(15) —
(16) 16	(16) 0.35	(16) GN / BU	(16) 761	(16) Blower Speed Feedback Signal	(16) I	(16) —
(17) 17	(17) 0.35	(17) VT / BK	(17) 7553	(17) Park Lock Solenoid Actuator Control	(17) I	(17) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(18) 18	(18) 0.35	(18) YE	(18) 7556	(18) Headlamp Switch Reference	(18) I	(18) —
(19) 19	(19) 0.35	(19) BU / BK	(19) 5719	(19) Ignition Mode Switch Start LED Signal	(19) I	(19) —
20	—	—	—	Not Occupied	—	—
(21) 21	(21) 0.35	(21) BN	(21) 7291	(21) Major Endgate Release Switch Signal Interior	(21) I	(21) —
22	—	—	—	Not Occupied	—	—
(23) 23	(23) 0.35	(23) BU	(23) 1111	(23) Stop/Start Switch Signal	(23) I	(23) —
(24) 24	(24) 0.35	(24) WH / BU	(24) 3691	(24) Trailer Brake Apply Signal	(24) I	(24) —
(25) 25	(25) 0.35	(25) BU / GY	(25) 4990	(25) Driver Mode 1 Switch Signal	(25) I	(25) —
(26) 26	(26) 0.35	(26) GY / BN	(26) 3904	(26) Auto High Beam Assist Switch Signal	(26) I	(26) —
(27) 27	(27) 0.35	(27) GY / WH	(27) 3153	(27) Lane Departure Warning Disable Switch Signal	(27) I	(27) —
28 - 29	—	—	—	Not Occupied	—	—
(30) 30	(30) 0.35	(30) BU / YE	(30) 6844	(30) ABS/Traction Control Hill Descent Control Switch Signal	(30) I	(30) —
(31) 31	(31) 0.35	(31) GY / GN	(31) 2555	(31) Rear Parking Assist Disable Signal	(31) I	(31) —
32	—	—	—	Not Occupied	—	—

K9 Body Control Module X4



5203893

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160027-0018
- Service Connector: 13534970
- Description: 25-Way F 0.5 MQS, 2.8 MCP Series(GY)

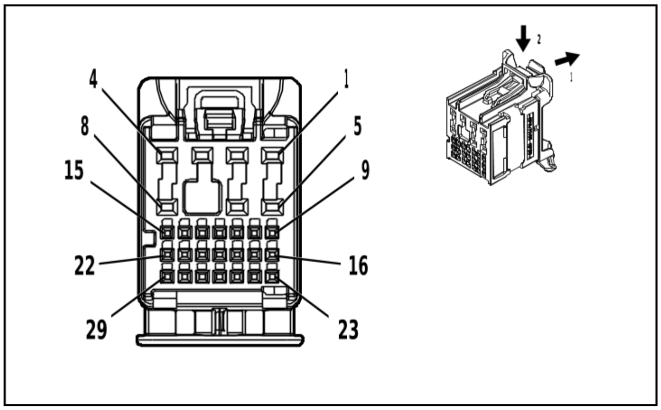
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	87814662	J-35616-35 (VT)	J-38125-557

K9 Body Control Module X4

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BN / BK	(1) 3552	(1) Interior Passive Entry Antenna 1 High Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) WH	(2) 3553	(2) Interior Passive Entry Antenna 1 Low Signal	(2) I	(2) —
(3) 3	(3) 0.35	(3) BK / VT	(3) 1449	(3) Steering Wheel Resistor Ladder Low Reference	(3) I	(3) —
(4) 4	(4) 0.35	(4) WH / GN	(4) 7728	(4) Major Endgate High Relay Control	(4) I	(4) —
(5) 5	(5) 0.35	(5) GN / VT	(5) 5199	(5) Run/Crank Relay Coil Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.35	(7) BN / BK	(7) 4996	(7) Immobilizer Antenna Signal [+]	(7) I	(7) —
8 - 9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.35	(10) GY / GN	(10) 4083	(10) Retained Accessory Power Relay 2 Coil Control	(10) I	(10) —
(11) 11	(11) 0.35	(11) BU / YE	(11) 7176	(11) All Windows Open Switch Signal	(11) I	(11) —
(12) 12	(12) 0.35	(12) BU / VT	(12) 7729	(12) Major Endgate Low Relay Control	(12) I	(12) —
13	—	—	—	Not Occupied	—	—
(14) 14	(14) 0.35	(14) WH / GY	(14) 4997	(14) Immobilizer Antenna Low Signal	(14) I	(14) —
(15) 15	(15) 0.35	(15) BU / VT	(15) 1788	(15) Traction Control Switch Signal 1	(15) I	(15) —
(16) 16	(16) 0.35	(16) GN / WH	(16) 4115	(16) Body Control Module LIN Bus 5	(16) I	(16) —
17 - 18	—	—	—	Not Occupied	—	—
(19) 19	(19) 0.35	(19) BU / GN	(19) 4979	(19) AUTOSAR CAN Bus [+] 2 Serial Data	(19) I	(19) —
(20) 20	(20) 0.35	(20) WH / BN	(20) 4978	(20) AUTOSAR CAN Bus [-] 2 Serial Data	(20) I	(20) —
(21) 21	(21) 0.35	(21) WH	(21) 6816	(21) Indicator Dimming Control	(21) I	(21) —
(22) 22	(22) 0.5	(22) RD / WH	(22) 2740	(22) Battery Positive Voltage	(22) II	(22) —
(23) 23	(23) 2	(23) RD / BU	(23) 2540	(23) Battery Positive Voltage	(23) II	(23) —
(24) 24	(24) 1	(24) BK	(24) 1050	(24) Ground	(24) II	(24) —
(25) 25	(25) 1	(25) BK	(25) 1050	(25) Ground	(25) II	(25) —

K9 Body Control Module X5



4584346

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 160014-0012
- Service Connector: 13534972
- Description: 29-Way F 0.5 NANO, 1.2 MCON Series(GN)

Terminal Part Information

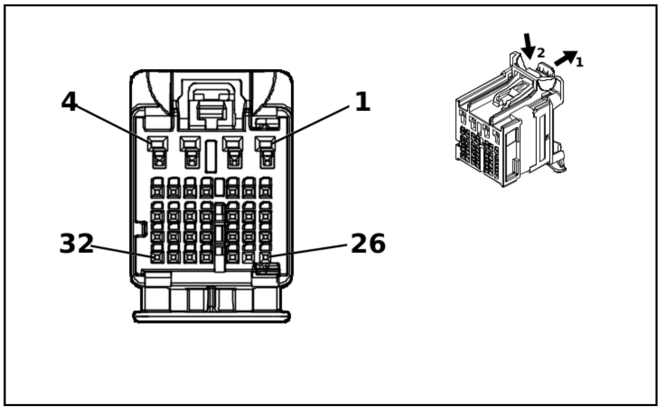
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	84729890	J-35616-12 (BU)	J-38125-215A

K9 Body Control Module X5

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.5	(2) BU / BN	(2) 7573	(2) Air Conditioning Compressor Solenoid Valve Control	(2) II	(2) —
(3) 3	(3) 0.5	(3) BU / YE	(3) 7574	(3) Air Conditioning Compressor Solenoid Valve Control	(3) II	(3) —
(4) 4	(4) 0.75	(4) WH	(4) 2679	(4) Lock Actuators Unlock Control 1	(4) II	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.5	(6) YE	(6) 6817	(6) LED Backlight Dimming Control 1	(6) II	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.75	(8) GY	(8) 2681	(8) Left Front Door Lock Actuator Lock Control	(8) II	(8) —
9 - 10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.35	(11) BN / WH	(11) 28	(11) Horn Relay Control	(11) I	(11) —
(12) 12	(12) 0.35	(12) WH	(12) 4978	(12) AUTOSAR CAN Bus [-] 2 Serial Data	(12) I	(12) —
(13) 13	(13) 0.35	(13) BU / YE	(13) 4979	(13) AUTOSAR CAN Bus [+] 2 Serial Data	(13) I	(13) —
14 - 15	—	—	—	Not Occupied	—	—
(16) 16	(16) 0.35	(16) VT	(16) 4301	(16) Passive Entry Left Antenna Signal High	(16) I	(16) —
(17) 17	(17) 0.35	(17) GN / YE	(17) 2855	(17) Body Control Module LIN Bus 9	(17) I	(17) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(18) 18	(18) 0.35	(18) VT / GY	(18) 126	(18) Left Front Door Open Switch Signal	(18) I	(18) —
(19) 19	(19) 0.35	(19) GN / YE	(19) 6134	(19) Body Control Module LIN Bus 3	(19) I	(19) —
20	—	—	—	Not Occupied	—	—
(21) 21	(21) 0.35	(21) WH / BU	(21) 6311	(21) Cruise/ETC/TCC Brake Signal	(21) I	(21) —
(22) 22	(22) 0.35	(22) BN / VT	(22) 193	(22) Rear Defogger Relay Control	(22) I	(22) —
(23) 23	(23) 0.35	(23) VT / WH	(23) 4302	(23) Passive Entry Left Antenna Signal Low	(23) I	(23) —
(24) 24	(24) 0.35	(24) WH	(24) 5359	(24) Brake Apply Sensor Control	(24) I	(24) —
(25) 25	(25) 0.35	(25) BU / YE	(25) 5361	(25) Brake Apply Sensor Signal	(25) I	(25) —
(26) 26	(26) 0.35	(26) BK / BN	(26) 5360	(26) Brake Apply Sensor Low Reference	(26) I	(26) —
(27) 27	(27) 0.35	(27) YE	(27) 1144	(27) Endgate Release Switch Discrete Signal Exterior	(27) I	(27) —
28 - 29	—	—	—	Not Occupied	—	—

K9 Body Control Module X6



5202291

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 160028-0017
- Service Connector: 13534981
- Description: 32-Way F 0.5 MQS, 1.2 OCS Series(BN with GY Inner Connector)

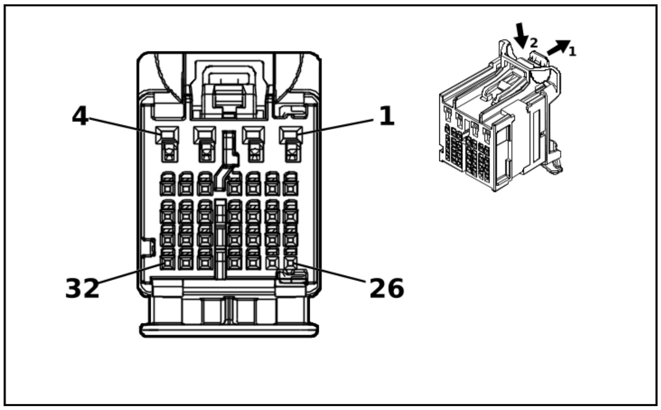
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	84729890	J-35616-12 (BU)	J-38125-215A

K9 Body Control Module X6

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.75	(2) VT / WH	(2) 1094	(2) Right Rear Door Lock Actuator Lock Control	(2) II	(2) —
(3) 3	(3) 0.75	(3) GY / BK	(3) 2680	(3) Lock Actuators Unlock Control 2	(3) II	(3) —
4 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.35	(7) BN / GN	(7) 3568	(7) Rear Closure Passive Entry Antenna High Signal	(7) I	(7) —
(8) 8	(8) 0.35	(8) GN / GY	(8) 3569	(8) Rear Closure Passive Entry Antenna Low Signal	(8) I	(8) —
9 - 10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.35	(11) GN / BU	(11) 6133	(11) Body Control Module LIN Bus 2	(11) I	(11) —
(12) 12	(12) 0.35	(12) GY	(12) 7292	(12) Major Endgate Release Switch Signal Exterior	(12) I	(12) —
13	—	—	—	Not Occupied	—	—
(14) 14	(14) 0.35	(14) VT	(14) 801	(14) Retained Accessory Power Control	(14) I	(14) —
15 - 18	—	—	—	Not Occupied	—	—
(19) 19	(19) 0.35	(19) YE	(19) 7294	(19) Minor Endgate Release Switch Discrete Signal Exterior	(19) I	(19) —
20	—	—	—	Not Occupied	—	—
(21) 21	(21) 0.35	(21) YE / BU	(21) 7295	(21) Left Minor Endgate Ajar Signal	(21) I	(21) —
(22) 22	(22) 0.35	(22) BN / GN	(22) 4064	(22) Hood Status B Signal	(22) I	(22) —
23 - 27	—	—	—	Not Occupied	—	—
(28) 28	(28) 0.35	(28) BU	(28) 2675	(28) Left Front Exterior Door Handle Switch Unlock Signal	(28) I	(28) —
29 - 32	—	—	—	Not Occupied	—	—

K9 Body Control Module X7



5202294

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 160028-0014
- Service Connector: 13534979
- Description: 32-Way F 0.5 MQS, 1.2 OCS Series(PU with GY Inner Connector)

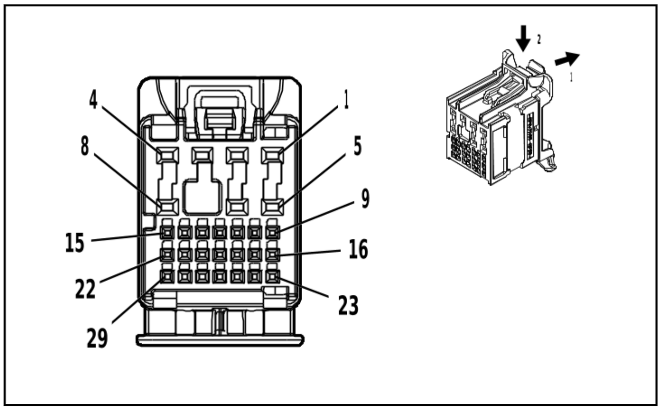
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58

K9 Body Control Module X7

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.35	(9) YE	(9) 900	(9) Not Used	(9) I	(9) —
10 - 18	—	—	—	Not Occupied	—	—
(19) 19	(19) 0.35	(19) GN / VT	(19) 2857	(19) Body Control Module LIN Bus 11	(19) I	(19) —
(20) 20	(20) 0.35	(20) YE	(20) 901	(20) Not Used	(20) I	(20) —
21	—	—	—	Not Occupied	—	—
(22) 22	(22) 0.35	(22) YE	(22) 902	(22) Not Used	(22) I	(22) —
23 - 32	—	—	—	Not Occupied	—	—

K9 Body Control Module X8



4578560

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 160014-0011
- Service Connector: 13534971
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series(DK-GY with GY Inner Connector)

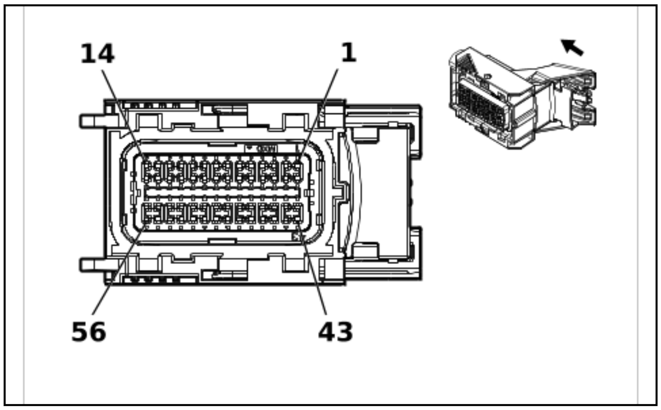
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	84729890	J-35616-12 (BU)	J-38125-215A

K9 Body Control Module X8

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.75	(3) BU / YE	(3) 1091	(3) Left Rear Door Lock Actuator Lock Control	(3) II	(3) —
(4) 4	(4) 0.75	(4) YE / GN	(4) 2682	(4) Right Front Door Lock Actuator Lock Control	(4) II	(4) —
5 - 8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.35	(9) GN / BK	(9) 4304	(9) Passive Entry Right Antenna Signal Low	(9) I	(9) —
(10) 10	(10) 0.35	(10) GN / YE	(10) 4303	(10) Passive Entry Right Antenna Signal High	(10) I	(10) —
11 - 16	—	—	—	Not Occupied	—	—
(17) 17	(17) 0.35	(17) GN / YE	(17) 2862	(17) Body Control Module LIN Bus 16	(17) I	(17) —
(18) 18	(18) 0.35	(18) GN / WH	(18) 2854	(18) Body Control Module LIN Bus 8	(18) I	(18) —
19 - 27	—	—	—	Not Occupied	—	—
(28) 28	(28) 0.35	(28) GY / VT	(28) 2676	(28) Right Front Door Exterior Switch Unlock Signal	(28) I	(28) —
(29) 29	(29) 0.35	(29) GN / GY	(29) 6135	(29) Body Control Module LIN Bus 4	(29) I	(29) —

K19 Suspension Control Module (Z45)



5377109

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 216742-0001
- Service Connector: 85758037
- Description: 56-Way F 0.64 MX123 Series, Sealed(BK with BU Terminal Position Assurance)

Terminal Part Information

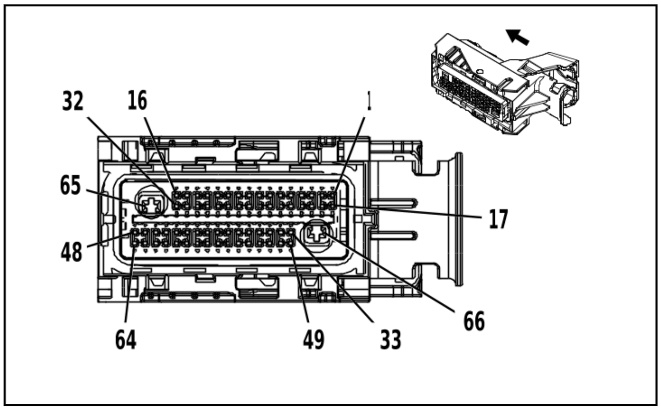
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19351723	J-35616-64B (L-BU)	J-38125-213

K19 Suspension Control Module (Z45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU / GY	(1) 1114	(1) Left Rear Shock Absorber Actuator Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / WH	(2) 1207	(2) Left Front Suspension Position Sensor Signal	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.5	(4) BK / BU	(4) 1206	(4) Left Front Suspension Position Sensor Low Reference	(4) I	(4) —
(5) 5	(5) 0.5	(5) GN / WH	(5) 1210	(5) Left Rear Suspension Position Sensor Signal	(5) I	(5) —
6 - 10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.5	(11) YE / WH	(11) 1213	(11) Right Front Suspension Position Sensor Signal	(11) I	(11) —
12 - 13	—	—	—	Not Occupied	—	—
(14) 14	(14) 0.75	(14) BN / GN	(14) 1118	(14) Right Rear Shock Absorber Actuator Control	(14) I	(14) —
(15) 15	(15) 0.75	(15) GN / VT	(15) 1115	(15) Left Rear Shock Absorber Actuator Control	(15) I	(15) —
(16) 16	(16) 0.5	(16) BU / RD	(16) 1205	(16) Left Front Suspension Position Sensor Voltage Reference	(16) I	(16) —
(17) 17	(17) 0.75	(17) BK / WH	(17) 1951	(17) Signal Ground	(17) I	(17) —
18 - 19	—	—	—	Not Occupied	—	—
(20) 20	(20) 0.5	(20) WH	(20) 4986	(20) AUTOSAR CAN Bus [-] 1 Serial Data	(20) I	(20) —
21 - 22	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(23) 23	(23) 0.5	(23) BU	(23) 4987	(23) AUTOSAR CAN Bus [+] 1 Serial Data	(23) I	(23) —
24 - 25	—	—	—	Not Occupied	—	—
(26) 26	(26) 0.75	(26) RD / GN	(26) 2440	(26) Battery Positive Voltage	(26) I	(26) —
27	—	—	—	Not Occupied	—	—
(28) 28	(28) 0.75	(28) GN / GY	(28) 1119	(28) Right Rear Shock Absorber Actuator Control	(28) I	(28) —
(29) 29	(29) 0.75	(29) BN / WH	(29) 1107	(29) Left Front Shock Absorber Actuator Control	(29) I	(29) —
(30) 30	(30) 0.75	(30) GY / BU	(30) 1113	(30) Left Front Shock Absorber Actuator Control	(30) I	(30) —
31	—	—	—	Not Occupied	—	—
(32) 32	(32) 0.5	(32) BK / GN	(32) 1209	(32) Left Rear Suspension Position Sensor Low Reference	(32) I	(32) —
(33) 33	(33) 0.5	(33) YE / RD	(33) 1208	(33) Left Rear Suspension Position Sensor Voltage Reference	(33) I	(33) —
(34) 34	(34) 0.5	(34) WH	(34) 4986	(34) AUTOSAR CAN Bus [-] 1 Serial Data	(34) I	(34) —
(35) 35	(35) 0.5	(35) WH	(35) 4986	(35) AUTOSAR CAN Bus [-] 1 Serial Data	(35) I	(35) —
(36) 36	(36) 0.5	(36) BU	(36) 4987	(36) AUTOSAR CAN Bus [+] 1 Serial Data	(36) I	(36) —
(37) 37	(37) 0.5	(37) BU	(37) 4987	(37) AUTOSAR CAN Bus [+] 1 Serial Data	(37) I	(37) —
(38) 38	(38) 0.5	(38) BK / GY	(38) 1212	(38) Right Front Suspension Position Sensor Low Reference	(38) I	(38) —
(39) 39	(39) 0.5	(39) BN / RD	(39) 1211	(39) Right Front Suspension Position Sensor Voltage Reference	(39) I	(39) —
40	—	—	—	Not Occupied	—	—
(41) 41	(41) 0.75	(41) GY / WH	(41) 1117	(41) Right Front Shock Absorber Actuator Control	(41) I	(41) —
(42) 42	(42) 0.75	(42) BN / BU	(42) 1116	(42) Right Front Shock Absorber Actuator Control	(42) I	(42) —
43 - 56	—	—	—	Not Occupied	—	—

K20 Engine Control Module X1 (L3B)



4504420

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 216741-0003
- Service Connector: 85786016
- Description: 66-Way F 0.64, 2.8 MX123 Series, Sealed(BK with BU Terminal Position Assurance)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13587518	J-35616-35 (VT)	J-38125-11A
II	19351723	J-35616-64B (L-BU)	J-38125-213

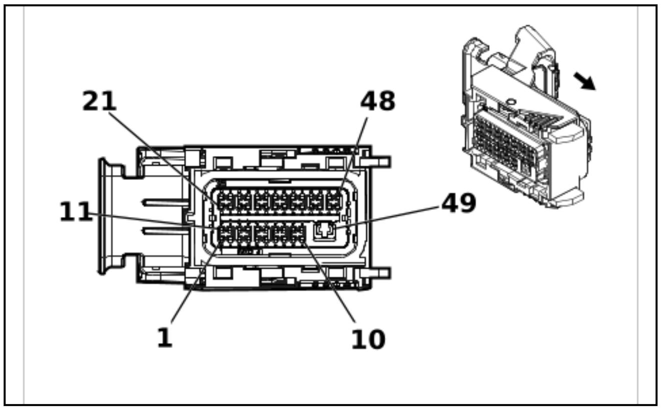
K20 Engine Control Module X1 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE	(1) 5991	(1) Powertrain Relay Coil Control	(1) II	(1) —
(2) 2	(2) 0.5	(2) YE / BK	(2) 625	(2) Starter Enable Relay Control	(2) II	(2) —
(3) 3	(3) 0.5	(3) YE / VT	(3) 4325	(3) Starter Pinion Solenoid Actuator Relay Control	(3) II	(3) —
4 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.5	(6) VT / GY	(6) 3615	(6) Intake Camshaft Profile Actuator 1 Control A	(6) II	(6) —
(7) 7	(7) 0.5	(7) GN / BK	(7) 3616	(7) Intake Camshaft Profile Actuator 1 Control B	(7) II	(7) —
(8) 8	(8) 0.5	(8) GN	(8) 3585	(8) Intake Camshaft Profile Actuator 2 Control A	(8) II	(8) —
(9) 9	(9) 0.5	(9) BU	(9) 3584	(9) Intake Camshaft Profile Actuator 2 Control B	(9) II	(9) —
(10) 10	(10) 0.5	(10) YE / BU	(10) 3587	(10) Intake Camshaft Profile Actuator 3 Control A	(10) II	(10) —
(11) 11	(11) 0.5	(11) GY	(11) 3586	(11) Intake Camshaft Profile Actuator 3 Control B	(11) II	(11) —
(12) 12	(12) 0.5	(12) BU / WH	(12) 3589	(12) Intake Camshaft Profile Actuator 1 Position Sensor Signal	(12) II	(12) —
(13) 13	(13) 0.5	(13) GN / WH	(13) 3592	(13) Intake Camshaft Profile Actuator 2 Position Sensor Signal	(13) II	(13) —
(14) 14	(14) 0.5	(14) BK / GN	(14) 3593	(14) Intake Camshaft Profile Actuator 3 Position Sensor Signal	(14) II	(14) —
(15) 15	(15) 0.5	(15) WH / BU	(15) 6311	(15) Cruise/ETC/TCC Brake Signal	(15) II	(15) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(16) 16	(16) 0.75	(16) VT / BU	(16) 5291	(16) Powertrain Main Relay Fused Supply Voltage 2	(16) II	(16) —
(17) 17	(17) 0.5	(17) GN / GY	(17) 465	(17) Fuel Pump Primary Relay Control	(17) II	(17) —
(18) 18	(18) 0.5	(18) WH / GY	(18) 459	(18) Air Conditioning Compressor Clutch Relay Control	(18) II	(18) —
19 - 21	—	—	—	Not Occupied	—	—
(22) 22	(22) 0.5	(22) GN / YE	(22) 1402	(22) Intake Camshaft Profile Actuator 4 Control A	(22) II	(22) —
(23) 23	(23) 0.5	(23) GY / YE	(23) 1502	(23) Intake Camshaft Profile Actuator 4 Control B	(23) II	(23) —
(24) 24	(24) 0.5	(24) YE / VT	(24) 6265	(24) Exhaust Camshaft Profile Actuator 2 Control B	(24) II	(24) —
(25) 25	(25) 0.5	(25) VT / BK	(25) 6264	(25) Exhaust Camshaft Profile Actuator 2 Control A	(25) II	(25) —
(26) 26	(26) 0.5	(26) GY / BN	(26) 6262	(26) Exhaust Camshaft Profile Actuator 3 Control B	(26) II	(26) —
(27) 27	(27) 0.5	(27) GN / BN	(27) 6261	(27) Exhaust Camshaft Profile Actuator 3 Control A	(27) II	(27) —
(28) 28	(28) 0.5	(28) YE / BN	(28) 1702	(28) Intake Camshaft Profile Actuator 4 Position Sensor Signal	(28) II	(28) —
(29) 29	(29) 0.5	(29) GN / BK	(29) 6266	(29) Exhaust Camshaft Profile Actuator 2 Position Sensor Signal	(29) II	(29) —
(30) 30	(30) 0.5	(30) YE	(30) 6263	(30) Exhaust Camshaft Profile Actuator 3 Position Sensor Signal	(30) II	(30) —
31	—	—	—	Not Occupied	—	—
(32) 32	(32) 0.5	(32) VT / GN	(32) 439	(32) Run/Crank Ignition 1 Voltage	(32) II	(32) —
(33) 33	(33) 0.5	(33) BK / BU	(33) 1271	(33) Accelerator Pedal Position Low Reference 1	(33) II	(33) —
(34) 34	(34) 0.5	(34) YE / WH	(34) 3746	(34) Camshaft Exhaust Lobe Axial Position Signal 1	(34) II	(34) —
(35) 35	(35) 0.5	(35) BK / VT	(35) 1272	(35) Accelerator Pedal Position Low Reference 2	(35) II	(35) —
(36) 36	(36) 0.5	(36) YE / GN	(36) 3747	(36) Camshaft Exhaust Lobe Axial Position Signal 2	(36) II	(36) —
37	—	—	—	Not Occupied	—	—
(38) 38	(38) 0.5	(38) YE	(38) 4063	(38) Hood Status A Signal	(38) II	(38) —
(39) 39	(39) 0.5	(39) YE / WH	(39) 1161	(39) Accelerator Pedal Position Signal 1	(39) II	(39) —
40 - 41	—	—	—	Not Occupied	—	—
(42) 42	(42) 0.5	(42) GN / BN	(42) 2732	(42) Engine Control Module LIN Bus 4	(42) II	(42) —
43 - 44	—	—	—	Not Occupied	—	—
(45) 45	(45) 0.5	(45) BU / GY	(45) 4054	(45) Private Serial Data Powertrain CAN Bus [-] Serial Data	(45) II	(45) —
(46) 46	(46) 0.5	(46) WH	(46) 4055	(46) Private Serial Data Powertrain CAN Bus [+] Serial Data	(46) II	(46) —
(47) 47	(47) 0.5	(47) GN / WH	(47) 492	(47) Mass Air Flow Sensor Signal	(47) II	(47) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(48) 48	(48) 0.5	(48) RD / BN	(48) 440	(48) Battery Positive Voltage	(48) II	(48) —
(49) 49	(49) 0.5	(49) WH / RD	(49) 1164	(49) Accelerator Pedal Position 5V Reference 1	(49) II	(49) —
(50) 50	(50) 0.5	(50) VT / WH	(50) 3744	(50) Camshaft Intake Lobe Axial Position Signal 1	(50) II	(50) —
(51) 51	(51) 0.5	(51) BN / RD	(51) 1274	(51) Accelerator Pedal Position 5V Reference 2	(51) II	(51) —
(52) 52	(52) 0.5	(52) VT / GN	(52) 3745	(52) Camshaft Intake Lobe Axial Position Signal 2	(52) II	(52) —
(53) 53	(53) 0.5	(53) BU / GY	(53) 636	(53) Ambient Air Temperature Sensor Signal	(53) II	(53) —
54	—	—	—	Not Occupied	—	—
(55) 55	(55) 0.5	(55) GN	(55) 380	(55) Air Conditioning Refrigerant Pressure Sensor Signal	(55) II	(55) —
(56) 56	(56) 0.5	(56) WH / GN	(56) 5380	(56) Brake Position Sensor Signal	(56) II	(56) —
(57) 57	(57) 0.5	(57) GN / WH	(57) 1162	(57) Accelerator Pedal Position Signal 2	(57) II	(57) —
58	—	—	—	Not Occupied	—	—
(59) 59	(59) 0.5	(59) WH	(59) 4978	(59) AUTOSAR CAN Bus [-] 2 Serial Data	(59) II	(59) —
(60) 60	(60) 0.5	(60) BU / YE	(60) 4979	(60) AUTOSAR CAN Bus [+] 2 Serial Data	(60) II	(60) —
61 - 62	—	—	—	Not Occupied	—	—
(63) 63	(63) 0.5	(63) WH	(63) 4976	(63) AUTOSAR CAN Bus [-] 3 Serial Data	(63) II	(63) —
(64) 64	(64) 0.5	(64) BU / BK	(64) 4977	(64) AUTOSAR CAN Bus [+] 3 Serial Data	(64) II	(64) —
(65) 65	(65) 2	(65) BK / WH	(65) 251	(65) Signal Ground	(65) I	(65) —
(66) 66	(66) 2	(66) VT / BU	(66) 5290	(66) Powertrain Main Relay Fused Supply Voltage 1	(66) I	(66) —

K20 Engine Control Module X1 (L84 / L87)



5663663

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 216744-0003
- Service Connector: 85669159
- Description: 49-Way F 0.64, 2.8 Series, Sealed(BK with BU Terminal Position Assurance)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13587518	J-35616-35 (VT)	J-38125-11A
II	19351723	J-35616-64B (L-BU)	J-38125-213

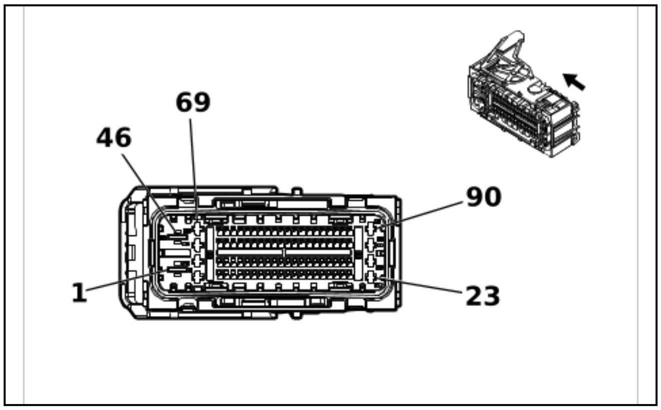
K20 Engine Control Module X1 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / WH	(1) 492	(1) Mass Air Flow Sensor Signal	(1) II	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) BU / GY	(3) 4054	(3) Private Serial Data Powertrain CAN Bus [-] Serial Data	(3) II	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) WH	(5) 4976	(5) AUTOSAR CAN Bus [-] 3 Serial Data	(5) II	(5) —
(6) 6	(6) 0.5	(6) WH / BU	(6) 6311	(6) Cruise/ETC/TCC Brake Signal	(6) II	(6) —
(7) 7	(7) 0.5	(7) WH	(7) 4978	(7) AUTOSAR CAN Bus [-] 2 Serial Data	(7) II	(7) —
8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.5	(9) YE	(9) 5991	(9) Powertrain Relay Coil Control	(9) II	(9) —
10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.5	(11) YE	(11) 4063	(11) Hood Status A Signal	(11) II	(11) —
(12) 12	(12) 0.5	(12) BU / GY	(12) 636	(12) Ambient Air Temperature Sensor Signal	(12) II	(12) —
(13) 13	(13) 0.5	(13) WH	(13) 4055	(13) Private Serial Data Powertrain CAN Bus [+] Serial Data	(13) II	(13) —
(14) 14	(14) 0.5	(14) WH / GN	(14) 5380	(14) Brake Position Sensor Signal	(14) II	(14) —
(15) 15	(15) 0.5	(15) BU / BK	(15) 4977	(15) AUTOSAR CAN Bus [+] 3 Serial Data	(15) II	(15) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
16	—	—	—	Not Occupied	—	—
(17) 17	(17) 0.5	(17) BU / YE	(17) 4979	(17) AUTOSAR CAN Bus [+] 2 Serial Data	(17) II	(17) —
(18) 18	(18) 0.5	(18) WH / GY	(18) 459	(18) Air Conditioning Compressor Clutch Relay Control	(18) II	(18) —
19 - 20	—	—	—	Not Occupied	—	—
(21) 21	(21) 0.5	(21) GN / BU	(21) 428	(21) EVAP Canister Purge Solenoid Control	(21) II	(21) —
(22) 22	(22) 0.5	(22) BN / GN	(22) 4305	(22) Exhaust Flow Control Valve 1	(22) II	(22) —
(23) 23	(23) 0.5	(23) BK / GN	(23) 580	(23) Engine Control Sensors Low Reference 2	(23) II	(23) —
(24) 24	(24) 0.5	(24) BK / BU	(24) 1271	(24) Accelerator Pedal Position Low Reference 1	(24) II	(24) —
25 - 26	—	—	—	Not Occupied	—	—
(27) 27	(27) 0.5	(27) GN / YE	(27) 3337	(27) Transmission Internal Mode Switch Mode Control Y	(27) II	(27) —
(28) 28	(28) 0.5	(28) BN / GN	(28) 1174	(28) Oil Level Switch Signal	(28) II	(28) —
29	—	—	—	Not Occupied	—	—
(30) 30	(30) 0.5	(30) BK / VT	(30) 1272	(30) Accelerator Pedal Position Low Reference 2	(30) II	(30) —
31	—	—	—	Not Occupied	—	—
(32) 32	(32) 0.75	(32) VT / BU	(32) 5291	(32) Powertrain Main Relay Fused Supply Voltage 2	(32) II	(32) —
33	—	—	—	Not Occupied	—	—
(34) 34	(34) 0.5	(34) RD / BN	(34) 440	(34) Battery Positive Voltage	(34) II	(34) —
35	—	—	—	Not Occupied	—	—
(36) 36	(36) 0.5	(36) YE / BK	(36) 625	(36) Starter Enable Relay Control	(36) II	(36) —
(37) 37	(37) 0.5	(37) GN / GY	(37) 465	(37) Fuel Pump Primary Relay Control	(37) II	(37) —
(38) 38	(38) 0.5	(38) WH / RD	(38) 1164	(38) Accelerator Pedal Position 5V Reference 1	(38) II	(38) —
(39) 39	(39) 0.5	(39) YE / WH	(39) 1161	(39) Accelerator Pedal Position Signal 1	(39) II	(39) —
(40) 40	(40) 0.5	(40) YE / BN	(40) 331	(40) Oil Pressure Sensor Signal	(40) II	(40) —
(41) 41	(41) 0.5	(41) GN	(41) 380	(41) Air Conditioning Refrigerant Pressure Sensor Signal	(41) II	(41) —
42 - 43	—	—	—	Not Occupied	—	—
(44) 44	(44) 0.5	(44) GN / WH	(44) 1162	(44) Accelerator Pedal Position Signal 2	(44) II	(44) —
(45) 45	(45) 0.5	(45) BN / RD	(45) 1274	(45) Accelerator Pedal Position 5V Reference 2	(45) II	(45) —
46	—	—	—	Not Occupied	—	—
(47) 47	(47) 0.5	(47) VT / GN	(47) 439	(47) Run/Crank Ignition 1 Voltage	(47) II	(47) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(48) 48	(48) 0.75	(48) VT / BU	(48) 5291	(48) Powertrain Main Relay Fused Supply Voltage 2	(48) II	(48) —
(49) 49	(49) 2	(49) VT / BU	(49) 5290	(49) Powertrain Main Relay Fused Supply Voltage 1	(49) I	(49) —

K20 Engine Control Module X1 (LZ0)



5492269

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 2344715-1
- Service Connector: 84941451
- Description: 90-Way F 0.64 GEN-Y, 2.8, 6.3 MCP Series, Sealed(BK with BU Terminal Position Assurance)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19367373	J-35616-64B (L-BU)	J-38125-215A
II	19371214	J-35616-35 (VT)	J-38125-556
III	84616649	J-35616-42 (RD)	J-38125-556

K20 Engine Control Module X1 (LZ0)

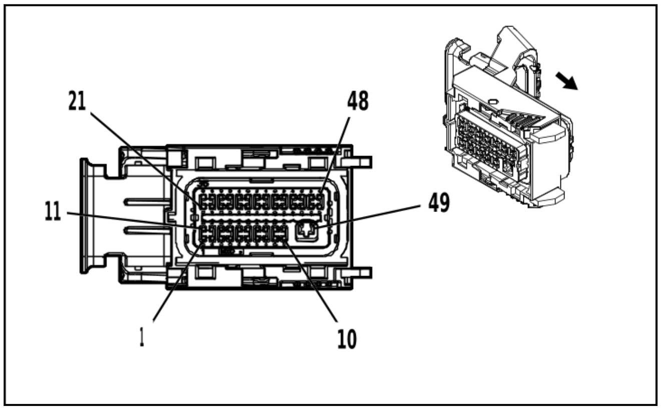
Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 6	(1) BN / BU	(1) 104	(1) Glow Plug Control	(1) III	(1) —
(2) 2	(2) 2.5	(2) GY / YE	(2) 1584	(2) Glow Plug 4 Control	(2) II	(2) —
3 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.5	(6) WH / GY	(6) 459	(6) Air Conditioning Compressor Clutch Relay Control	(6) I	(6) —
(7) 7	(7) 0.75	(7) RD / BN	(7) 440	(7) Battery Positive Voltage	(7) I	(7) —
(8) 8	(8) 0.5	(8) GN / WH	(8) 492	(8) Mass Air Flow Sensor Signal	(8) I	(8) —
9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.5	(10) WH / BU	(10) 6311	(10) Cruise/ETC/TCC Brake Signal	(10) I	(10) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(11) 11	(11) 0.5	(11) GY	(11) 2973	(11) Coolant Flow Control Valve Position Signal	(11) I	(11) —
(12) 12	(12) 0.5	(12) GN / GY	(12) 7316	(12) Intake Manifold Runner Valve Actuator Control	(12) I	(12) —
(13) 13	(13) 0.5	(13) GN	(13) 10289	(13) Exhaust Gas Temperature Sensor SENT 1 Signal	(13) I	(13) —
(14) 14	(14) 0.5	(14) BU	(14) 10290	(14) Exhaust Gas Temperature Sensor SENT 2 Signal	(14) I	(14) —
(15) 15	(15) 0.5	(15) BN / GN	(15) 4305	(15) Exhaust Flow Control Valve 1	(15) I	(15) —
(16) 16	(16) 0.5	(16) WH	(16) 4055	(16) Private Serial Data Powertrain CAN Bus [+] Serial Data	(16) I	(16) —
(17) 17	(17) 0.5	(17) BU / BK	(17) 4977	(17) AUTOSAR CAN Bus [+] 3 Serial Data	(17) I	(17) —
(18) 18	(18) 0.5	(18) BU / YE	(18) 4979	(18) AUTOSAR CAN Bus [+] 2 Serial Data	(18) I	(18) —
(19) 19	(19) 0.5	(19) BK / GN	(19) 580	(19) Engine Control Sensors Low Reference 2	(19) I	(19) —
20	—	—	—	Not Occupied	—	—
(21) 21	(21) 0.75	(21) GY / BK	(21) 1330	(21) Variable Geometry Turbocharger Position Sensor Motor Close Control	(21) I	(21) —
(22) 22	(22) 0.75	(22) WH / BN	(22) 1313	(22) Variable Geometry Turbocharger Position Sensor Motor Open Control	(22) I	(22) —
(23) 23	(23) 2.5	(23) GY / GN	(23) 1583	(23) Glow Plug 3 Control	(23) II	(23) —
(24) 24	(24) 2.5	(24) GY / BN	(24) 1582	(24) Glow Plug 2 Control	(24) II	(24) —
(25) 25	(25) 0.75	(25) VT / GN	(25) 439	(25) Run/Crank Ignition 1 Voltage	(25) I	(25) —
(26) 26	(26) 0.5	(26) YE	(26) 5991	(26) Powertrain Relay Coil Control	(26) I	(26) —
27	—	—	—	Not Occupied	—	—
(28) 28	(28) 0.5	(28) GN / BN	(28) 507	(28) Wait To Start Indicator Control	(28) I	(28) —
29	—	—	—	Not Occupied	—	—
(30) 30	(30) 0.5	(30) BK / GY	(30) 626	(30) Engine Control Vehicle Sensors Low Reference 1	(30) I	(30) —
31 - 32	—	—	—	Not Occupied	—	—
(33) 33	(33) 0.5	(33) WH / BN	(33) 2363	(33) Exhaust Pressure Sensor SENT 1 Signal	(33) I	(33) —
(34) 34	(34) 0.5	(34) VT / YE	(34) 5947	(34) Turbocharger Vane Position Sensor Signal	(34) I	(34) —
(35) 35	(35) 0.5	(35) BN / WH	(35) 5763	(35) Exhaust Gas Recirculation Position Signal	(35) I	(35) —
(36) 36	(36) 0.5	(36) BU / GY	(36) 2978	(36) Coolant Diverter Valve Position Signal	(36) I	(36) —
(37) 37	(37) 0.5	(37) GN	(37) 10478	(37) Low Pressure Exhaust Gas Recirculation Sensor SENT Signal	(37) I	(37) —
(38) 38	(38) 0.5	(38) BU / GY	(38) 4054	(38) Private Serial Data Powertrain CAN Bus [-] Serial Data	(38) I	(38) —
(39) 39	(39) 0.5	(39) WH	(39) 4976	(39) AUTOSAR CAN Bus [-] 3 Serial Data	(39) I	(39) —
(40) 40	(40) 0.5	(40) WH	(40) 4978	(40) AUTOSAR CAN Bus [-] 2 Serial Data	(40) I	(40) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
41	—	—	—	Not Occupied	—	—
(42) 42	(42) 0.5	(42) YE / BK	(42) 625	(42) Starter Enable Relay Control	(42) I	(42) —
(43) 43	(43) 0.75	(43) VT / BK	(43) 5746	(43) Exhaust Gas Recirculation Valve Low Control	(43) I	(43) —
(44) 44	(44) 0.75	(44) WH / VT	(44) 5764	(44) Exhaust Gas Recirculation Valve High Control	(44) I	(44) —
(45) 45	(45) 2.5	(45) GY / WH	(45) 1585	(45) Glow Plug 5 Control	(45) II	(45) —
(46) 46	(46) 4	(46) BK / WH	(46) 251	(46) Signal Ground	(46) III	(46) —
(47) 47	(47) 2.5	(47) GY / VT	(47) 1586	(47) Glow Plug 6 Control	(47) II	(47) —
(48) 48	(48) 0.5	(48) WH / RD	(48) 480	(48) Engine Control Vehicle Sensors 5 Volt Reference 1	(48) I	(48) —
(49) 49	(49) 0.5	(49) GN / WH	(49) 1162	(49) Accelerator Pedal Position Signal 2	(49) I	(49) —
(50) 50	(50) 0.5	(50) BK / VT	(50) 1272	(50) Accelerator Pedal Position Low Reference 2	(50) I	(50) —
(51) 51	(51) 0.5	(51) BK / BU	(51) 1271	(51) Accelerator Pedal Position Low Reference 1	(51) I	(51) —
(52) 52	(52) 0.5	(52) WH / GN	(52) 5380	(52) Brake Position Sensor Signal	(52) I	(52) —
53 - 54	—	—	—	Not Occupied	—	—
(55) 55	(55) 0.5	(55) YE	(55) 4063	(55) Hood Status A Signal	(55) I	(55) —
56 - 58	—	—	—	Not Occupied	—	—
(59) 59	(59) 0.5	(59) GN	(59) 380	(59) Air Conditioning Refrigerant Pressure Sensor Signal	(59) I	(59) —
(60) 60	(60) 0.5	(60) YE / BN	(60) 331	(60) Oil Pressure Sensor Signal	(60) I	(60) —
(61) 61	(61) 0.5	(61) YE / GY	(61) 3926	(61) Crankcase Differential Pressure Sensor Signal	(61) I	(61) —
62 - 63	—	—	—	Not Occupied	—	—
(64) 64	(64) 0.5	(64) GN / BU	(64) 3889	(64) Powertrain Sensor Bus Relay Control	(64) I	(64) —
65	—	—	—	Not Occupied	—	—
(66) 66	(66) 0.75	(66) BN	(66) 1421	(66) Exhaust Restrictor Motor Closed Control	(66) I	(66) —
(67) 67	(67) 0.75	(67) YE / BN	(67) 1420	(67) Exhaust Restrictor Motor Open Control	(67) I	(67) —
(68) 68	(68) 2.5	(68) GY / BU	(68) 1581	(68) Glow Plug 1 Control	(68) II	(68) —
(69) 69	(69) 2.5	(69) VT / BU	(69) 5291	(69) Powertrain Main Relay Fused Supply Voltage 2	(69) II	(69) —
(70) 70	(70) 0.5	(70) BU / RD	(70) 460	(70) Engine Control Sensors 5 Volt Reference 1	(70) I	(70) —
(71) 71	(71) 0.5	(71) BN / RD	(71) 1274	(71) Accelerator Pedal Position 5V Reference 2	(71) I	(71) —
(72) 72	(72) 0.5	(72) WH / RD	(72) 1164	(72) Accelerator Pedal Position 5V Reference 1	(72) I	(72) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(73) 73	(73) 0.5	(73) YE / WH	(73) 1161	(73) Accelerator Pedal Position Signal 1	(73) I	(73) —
(74) 74	(74) 0.5	(74) BU / GY	(74) 636	(74) Ambient Air Temperature Sensor Signal	(74) I	(74) —
(75) 75	(75) 0.5	(75) VT	(75) 7485	(75) Engine Oil Temperature Sensor 2 Signal	(75) I	(75) —
76 - 85	—	—	—	Not Occupied	—	—
(86) 86	(86) 0.5	(86) GN / GY	(86) 465	(86) Fuel Pump Primary Relay Control	(86) I	(86) —
(87) 87	(87) 0.75	(87) VT / BU	(87) 5294	(87) Powertrain Main Relay Fused Supply Voltage 5	(87) I	(87) —
(88) 88	(88) 0.75	(88) GY / BN	(88) 2972	(88) Coolant Flow Control Actuator Control Close	(88) I	(88) —
(89) 89	(89) 0.75	(89) GY / BU	(89) 2971	(89) Coolant Flow Control Actuator Control Open	(89) I	(89) —
(90) 90	(90) 2.5	(90) VT / BU	(90) 5290	(90) Powertrain Main Relay Fused Supply Voltage 1	(90) II	(90) —

K20 Engine Control Module X2 (L3B)



4596458

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 216744-0001
- Service Connector: 85786015
- Description: 49-Way F 0.64, 2.8 MX123 Series, Sealed(BK with BK Terminal Position Assurance)

Terminal Part Information

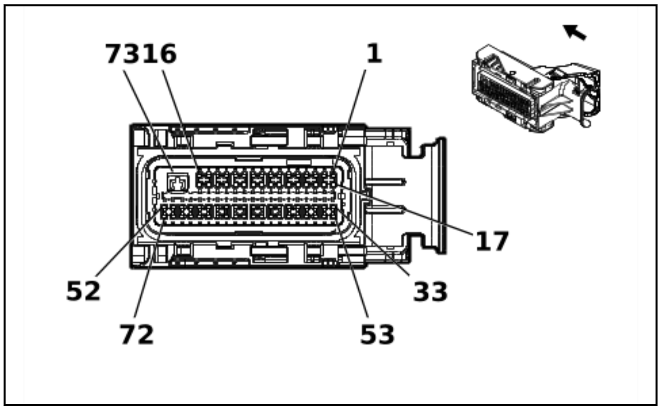
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13587518	J-35616-35 (VT)	J-38125-11A
II	19351723	J-35616-64B (L-BU)	J-38125-213

K20 Engine Control Module X2 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / GN	(1) 4320	(1) Powertrain Sensor Bus Enable	(1) II	(1) —
(2) 2	(2) 0.5	(2) BU / RD	(2) 460	(2) Engine Control Sensors 5 Volt Reference 1	(2) II	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) BN / BU	(5) 2447	(5) Evaporative Purge Pump Pressure Signal	(5) II	(5) —
6 - 8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.75	(9) VT / BU	(9) 5294	(9) Powertrain Main Relay Fused Supply Voltage 5	(9) II	(9) —
(10) 10	(10) 0.5	(10) BU / GY	(10) 2978	(10) Coolant Diverter Valve Position Signal	(10) II	(10) —
11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0.5	(12) BK / GN	(12) 580	(12) Engine Control Sensors Low Reference 2	(12) II	(12) —
13 - 14	—	—	—	Not Occupied	—	—
(15) 15	(15) 0.5	(15) GN / YE	(15) 3337	(15) Transmission Internal Mode Switch Mode Control Y	(15) II	(15) —
(16) 16	(16) 0.5	(16) YE / BN	(16) 331	(16) Oil Pressure Sensor Signal	(16) II	(16) —
17 - 18	—	—	—	Not Occupied	—	—
(19) 19	(19) 0.5	(19) BU / WH	(19) 10786	(19) Fuel Rail Pressure Sensor SENT 1 Signal	(19) II	(19) —
(20) 20	(20) 0.5	(20) WH	(20) 2590	(20) Turbocharger Wastegate Motor Feedback Signal	(20) II	(20) —
21	—	—	—	Not Occupied	—	—
(22) 22	(22) 0.5	(22) BK / GY	(22) 626	(22) Engine Control Vehicle Sensors Low Reference 1	(22) II	(22) —
(23) 23	(23) 0.5	(23) VT	(23) 7485	(23) Engine Oil Temperature Sensor 2 Signal	(23) II	(23) —
(24) 24	(24) 0.5	(24) BN / BU	(24) 357	(24) Oil Temperature Sensor Signal	(24) II	(24) —
(25) 25	(25) 0.5	(25) YE / WH	(25) 3200	(25) Throttle Inlet Absolute Pressure Sensor Signal	(25) II	(25) —
26 - 28	—	—	—	Not Occupied	—	—
(29) 29	(29) 0.5	(29) YE / GY	(29) 3926	(29) Crankcase Differential Pressure Sensor Signal	(29) II	(29) —
30	—	—	—	Not Occupied	—	—
(31) 31	(31) 0.5	(31) YE / GY	(31) 6936	(31) HO2S Signal	(31) II	(31) —
(32) 32	(32) 0.5	(32) BN	(32) 6934	(32) HO2S Ground	(32) II	(32) —
(33) 33	(33) 0.5	(33) GN / YE	(33) 4623	(33) Engine Control Module LIN Bus 3	(33) II	(33) —
(34) 34	(34) 0.5	(34) GY / WH	(34) 3113	(34) HO2S Heater Low Control Bank 1 Sensor 1	(34) II	(34) —
35	—	—	—	Not Occupied	—	—
(36) 36	(36) 0.5	(36) WH / RD	(36) 480	(36) Engine Control Vehicle Sensors 5 Volt Reference 1	(36) II	(36) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(37) 37	(37) 0.5	(37) YE / BK	(37) 3000	(37) Coolant Temperature Sensor 2 Signal	(37) II	(37) —
38 - 39	—	—	—	Not Occupied	—	—
(40) 40	(40) 0.5	(40) GY / VT	(40) 2404	(40) Engine Block Coolant Temperature Signal	(40) II	(40) —
41 - 44	—	—	—	Not Occupied	—	—
(45) 45	(45) 0.5	(45) GN	(45) 6935	(45) HO2S Pump Current Trim Signal	(45) II	(45) —
(46) 46	(46) 0.5	(46) BN / WH	(46) 6933	(46) HO2S Pump Current Signal	(46) II	(46) —
(47) 47	(47) 0.5	(47) GN / VT	(47) 4621	(47) Engine Control Module LIN Bus 1	(47) II	(47) —
(48) 48	(48) 0.5	(48) GN / YE	(48) 4622	(48) Engine Control Module LIN Bus 2	(48) II	(48) —
(49) 49	(49) 2	(49) BK / WH	(49) 251	(49) Signal Ground	(49) I	(49) —

K20 Engine Control Module X2 (L84 / L87)



1673472

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 216739-0001
- Service Connector: 85761019
- Description: 73-Way F 0.64, 2.8 MX123 Series, Sealed(BK with BK Terminal Position Assurance)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13587518	J-35616-35 (VT)	J-38125-11A
II	19354746	J-35616-64B (L-BU)	J-38125-213

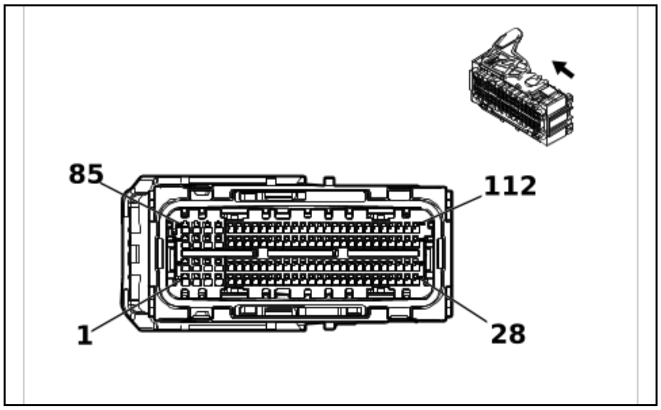
K20 Engine Control Module X2 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / YE	(1) 3212	(1) HO2S Heater Low Control Bank 2 Sensor 1	(1) II	(1) —
(2) 2	(2) 0.5	(2) GY	(2) 5493	(2) Cylinder Deactivation Solenoid Valve Control 3	(2) II	(2) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(3) 3	(3) 0.5	(3) BK / YE	(3) 548	(3) Engine Control Sensors Low Reference 1	(3) II	(3) —
4 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) GN / YE	(7) 4622	(7) Engine Control Module LIN Bus 2	(7) II	(7) —
(8) 8	(8) 0.5	(8) GN / VT	(8) 4621	(8) Engine Control Module LIN Bus 1	(8) II	(8) —
(9) 9	(9) 0.5	(9) BU / WH	(9) 4306	(9) Exhaust Flow Control Valve 1 - Cylinder Deactivation Feedback Signal	(9) II	(9) —
(10) 10	(10) 0.5	(10) VT / GY	(10) 3110	(10) HO2S High Signal Bank 1 Sensor 1	(10) II	(10) —
(11) 11	(11) 0.5	(11) WH / BK	(11) 3111	(11) HO2S Low Signal Bank 1 Sensor 1	(11) II	(11) —
(12) 12	(12) 0.5	(12) YE / BU	(12) 2124	(12) Ignition Control 4	(12) II	(12) —
(13) 13	(13) 0.5	(13) BN / BU	(13) 2126	(13) Ignition Control 6	(13) II	(13) —
(14) 14	(14) 0.5	(14) VT / BU	(14) 5294	(14) Powertrain Main Relay Fused Supply Voltage 5	(14) II	(14) —
(15) 15	(15) 0.5	(15) VT / BU	(15) 5294	(15) Powertrain Main Relay Fused Supply Voltage 5	(15) II	(15) —
(16) 16	(16) 0.5	(16) VT / BU	(16) 5294	(16) Powertrain Main Relay Fused Supply Voltage 5	(16) II	(16) —
(17) 17	(17) 0.5	(17) GY / WH	(17) 3113	(17) HO2S Heater Low Control Bank 1 Sensor 1	(17) II	(17) —
(18) 18	(18) 0.5	(18) YE / GY	(18) 2493	(18) Cylinder Shutoff Solenoid Enable Signal 3	(18) II	(18) —
19 - 21	—	—	—	Not Occupied	—	—
(22) 22	(22) 0.5	(22) GN	(22) 6935	(22) HO2S Pump Current Trim Signal	(22) II	(22) —
(23) 23	(23) 0.5	(23) BN / WH	(23) 6933	(23) HO2S Pump Current Signal	(23) II	(23) —
(24) 24	(24) 0.5	(24) BN	(24) 6934	(24) HO2S Ground	(24) II	(24) —
(25) 25	(25) 0.5	(25) YE / GY	(25) 6936	(25) HO2S Signal	(25) II	(25) —
(26) 26	(26) 0.5	(26) VT / WH	(26) 3210	(26) HO2S High Signal Bank 2 Sensor 1	(26) II	(26) —
(27) 27	(27) 0.5	(27) YE / WH	(27) 3211	(27) HO2S Low Signal Bank 2 Sensor 1	(27) II	(27) —
(28) 28	(28) 0.5	(28) GN / BU	(28) 2123	(28) Ignition Control 3	(28) II	(28) —
(29) 29	(29) 0.5	(29) BU / GY	(29) 2125	(29) Ignition Control 5	(29) II	(29) —
(30) 30	(30) 0.5	(30) BK / GY	(30) 2130	(30) Ignition Control Low Reference Bank 2	(30) II	(30) —
(31) 31	(31) 0.5	(31) BN	(31) 5496	(31) Cylinder Deactivation Solenoid Valve Control 6	(31) II	(31) —
(32) 32	(32) 0.5	(32) YE / BN	(32) 2496	(32) Cylinder Shutoff Solenoid Enable Signal 6	(32) II	(32) —
(33) 33	(33) 0.5	(33) WH / BN	(33) 3223	(33) HO2S Heater Low Control Bank 2 Sensor 2	(33) II	(33) —
34	—	—	—	Not Occupied	—	—
(35) 35	(35) 0.5	(35) BU	(35) 179	(35) Engine Oil Pump Control	(35) II	(35) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(36) 36	(36) 0.5	(36) YE / GN	(36) 2494	(36) Cylinder Shutoff Solenoid Enable Signal 4	(36) II	(36) —
(37) 37	(37) 0.5	(37) VT / BU	(37) 5294	(37) Powertrain Main Relay Fused Supply Voltage 5	(37) II	(37) —
38	—	—	—	Not Occupied	—	—
(39) 39	(39) 0.5	(39) WH / RD	(39) 480	(39) Engine Control Vehicle Sensors 5 Volt Reference 1	(39) II	(39) —
40 - 45	—	—	—	Not Occupied	—	—
(46) 46	(46) 0.5	(46) YE / BU	(46) 3221	(46) HO2S Low Signal Bank 2 Sensor 2	(46) II	(46) —
(47) 47	(47) 0.5	(47) VT / GN	(47) 3220	(47) HO2S High Signal Bank 2 Sensor 2	(47) II	(47) —
(48) 48	(48) 0.5	(48) BU	(48) 2572	(48) Heated Oxygen Sensor 2 Current Adjust Signal	(48) II	(48) —
(49) 49	(49) 0.5	(49) YE / WH	(49) 2570	(49) Heated Oxygen Sensor 2 Pump Current Signal	(49) II	(49) —
(50) 50	(50) 0.75	(50) BK / GY	(50) 2303	(50) Knock Sensor Low Reference 2	(50) II	(50) —
(51) 51	(51) 0.75	(51) BK / YE	(51) 1716	(51) Knock Sensor Low Reference 1	(51) II	(51) —
(52) 52	(52) 0.5	(52) BN / WH	(52) 582	(52) Throttle Actuator Close Control	(52) II	(52) —
(53) 53	(53) 0.5	(53) GY / WH	(53) 3122	(53) HO2S Heater Low Control Bank 1 Sensor 2	(53) II	(53) —
(54) 54	(54) 0.5	(54) VT	(54) 5495	(54) Cylinder Deactivation Solenoid Valve Control 5	(54) II	(54) —
(55) 55	(55) 0.5	(55) WH / VT	(55) 2495	(55) Cylinder Shutoff Solenoid Enable Signal 5	(55) II	(55) —
(56) 56	(56) 0.5	(56) YE / BU	(56) 5494	(56) Cylinder Deactivation Solenoid Valve Control 4	(56) II	(56) —
(57) 57	(57) 0.5	(57) GN	(57) 5492	(57) Cylinder Deactivation Solenoid Valve Control 2	(57) II	(57) —
(58) 58	(58) 0.5	(58) WH / GN	(58) 2492	(58) Cylinder Shutoff Solenoid Enable Signal 2	(58) II	(58) —
(59) 59	(59) 0.5	(59) BU / RD	(59) 460	(59) Engine Control Sensors 5 Volt Reference 1	(59) II	(59) —
60 - 65	—	—	—	Not Occupied	—	—
(66) 66	(66) 0.5	(66) WH / YE	(66) 3121	(66) HO2S Low Signal Bank 1 Sensor 2	(66) II	(66) —
(67) 67	(67) 0.5	(67) VT / BU	(67) 3120	(67) HO2S High Signal Bank 1 Sensor 2	(67) II	(67) —
(68) 68	(68) 0.5	(68) WH	(68) 2571	(68) Heated Oxygen Sensor 2 Common Bank 2 Sensor 1 Signal	(68) II	(68) —
(69) 69	(69) 0.5	(69) BN / GY	(69) 2573	(69) Heated Oxygen Sensor 2 Collector Signal	(69) II	(69) —
(70) 70	(70) 0.75	(70) WH / GY	(70) 1876	(70) Knock Sensor 2 Signal	(70) II	(70) —
(71) 71	(71) 0.75	(71) VT / GY	(71) 496	(71) Knock Sensor 1 Signal	(71) II	(71) —
(72) 72	(72) 0.5	(72) YE	(72) 581	(72) Throttle Actuator Open Control	(72) II	(72) —
(73) 73	(73) 2.5	(73) BK / WH	(73) 251	(73) Signal Ground	(73) I	(73) —

K20 Engine Control Module X2 (LZ0)



5491584

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 2344717-2
- Service Connector: 84941452
- Description: 112-Way F 0.64 GEN-Y, 1.2 MCON Series, Sealed(BK with BK Terminal Position Assurance)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19367373	J-35616-64B (L-BU)	J-38125-215A
II	84963773	J-35616-12 (BU)	J-38125-215A

K20 Engine Control Module X2 (LZ0)

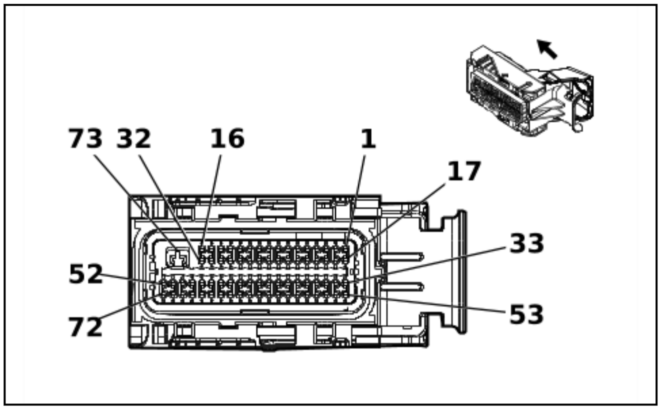
Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) GN	(1) 4803	(1) Direct Fuel Injector High Voltage Control Cylinder 3	(1) II	(1) —
(2) 2	(2) 1.5	(2) GY / BU	(2) 4804	(2) Direct Fuel Injector High Voltage Control Cylinder 4	(2) II	(2) —
(3) 3	(3) 0.75	(3) YE / VT	(3) 2420	(3) Fuel High Pressure Pump Low Enable Signal	(3) II	(3) —
(4) 4	(4) 0.75	(4) YE / VT	(4) 7245	(4) High Pressure Fuel Pump Low Enable Signal	(4) II	(4) —
(5) 5	(5) 0.5	(5) GY / YE	(5) 5297	(5) Exhaust Camshaft Position Sensor 1 Voltage Reference	(5) I	(5) —
(6) 6	(6) 0.5	(6) GN	(6) 6271	(6) Crankshaft Position Sensor Signal	(6) I	(6) —
(7) 7	(7) 0.5	(7) VT / BU	(7) 6270	(7) Crankshaft Position Sensor Voltage	(7) I	(7) —
8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.5	(9) BN	(9) 25	(9) Charge Indicator Control	(9) I	(9) —
(10) 10	(10) 0.75	(10) BU / YE	(10) 11616	(10) Diesel Exhaust Fluid Dosing Valve Low Control 2	(10) I	(10) —
(11) 11	(11) 0.5	(11) BK / GN	(11) 3235	(11) Exhaust Gas Recirculation Temperature Sensor 3 Low Reference	(11) I	(11) —
(12) 12	(12) 0.5	(12) YE / BU	(12) 3680	(12) Charge Air Cooler Outlet Temperature Sensor Low Reference	(12) I	(12) —
(13) 13	(13) 0.5	(13) YE / BK	(13) 3682	(13) Charge Air Cooler Inlet Temperature Sensor Low Reference	(13) I	(13) —
14 - 22	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(23) 23	(23) 0.75	(23) BN / WH	(23) 3100	(23) Diesel Exhaust Fluid Dosing Valve Low Control	(23) I	(23) —
(24) 24	(24) 0.5	(24) BK / YE	(24) 2834	(24) Fuel Rail Pressure Solenoid Valve Low Control	(24) I	(24) —
(25) 25	(25) 0.5	(25) BU	(25) 179	(25) Engine Oil Pump Control	(25) I	(25) —
26	—	—	—	Not Occupied	—	—
(27) 27	(27) 0.75	(27) BN / WH	(27) 582	(27) Throttle Actuator Close Control	(27) I	(27) —
(28) 28	(28) 0.75	(28) YE	(28) 581	(28) Throttle Actuator Open Control	(28) I	(28) —
(29) 29	(29) 1.5	(29) GN / GY	(29) 4903	(29) Direct Fuel Injector High Voltage Supply Cylinder 3	(29) II	(29) —
(30) 30	(30) 1.5	(30) BU / WH	(30) 4904	(30) Direct Fuel Injector High Voltage Supply Cylinder 4	(30) II	(30) —
(31) 31	(31) 0.75	(31) GY / BN	(31) 2419	(31) Fuel High Pressure Pump High Side Supply Voltage	(31) II	(31) —
(32) 32	(32) 0.75	(32) GY / BN	(32) 7244	(32) High Pressure Fuel Pump High Side Control	(32) II	(32) —
(33) 33	(33) 0.5	(33) BK / GY	(33) 5296	(33) Exhaust Camshaft Position Sensor Low Reference 1	(33) I	(33) —
(34) 34	(34) 0.5	(34) VT / BK	(34) 5273	(34) Exhaust Camshaft Position Sensor 1	(34) I	(34) —
(35) 35	(35) 0.5	(35) BK / VT	(35) 6272	(35) Crankshaft Position Sensor Low Reference	(35) I	(35) —
36	—	—	—	Not Occupied	—	—
(37) 37	(37) 0.5	(37) BU	(37) 3017	(37) Fuel Heater Relay 1 Control	(37) I	(37) —
38	—	—	—	Not Occupied	—	—
(39) 39	(39) 0.5	(39) WH / GY	(39) 3234	(39) Exhaust Gas Recirculation Temperature Sensor 3 Signal	(39) I	(39) —
(40) 40	(40) 0.5	(40) BN	(40) 3681	(40) Charge Air Cooler Outlet Temperature Sensor Signal	(40) I	(40) —
(41) 41	(41) 0.5	(41) GN	(41) 3683	(41) Charge Air Cooler Inlet Temperature Sensor Signal	(41) I	(41) —
42 - 48	—	—	—	Not Occupied	—	—
(49) 49	(49) 0.75	(49) BU	(49) 11615	(49) Diesel Exhaust Fluid Dosing Valve High Control 2	(49) I	(49) —
50	—	—	—	Not Occupied	—	—
(51) 51	(51) 0.75	(51) BN	(51) 3099	(51) Diesel Exhaust Fluid Dosing Valve High Control	(51) I	(51) —
(52) 52	(52) 0.5	(52) BU / WH	(52) 2530	(52) Fuel Rail Pressure Solenoid Valve Control	(52) I	(52) —
(53) 53	(53) 0.5	(53) YE / BN	(53) 106	(53) Oil Pump Motor Control	(53) I	(53) —
54	—	—	—	Not Occupied	—	—
(55) 55	(55) 0.75	(55) BK / BU	(55) 1408	(55) Variable Swirl Valve Close Control	(55) I	(55) —
(56) 56	(56) 0.75	(56) BK / GN	(56) 1389	(56) Variable Swirl Valve Open Control	(56) I	(56) —
(57) 57	(57) 1.5	(57) VT / GY	(57) 4906	(57) Direct Fuel Injector High Voltage Supply Cylinder 6	(57) II	(57) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(58) 58	(58) 1.5	(58) BN / WH	(58) 4901	(58) Direct Fuel Injector High Voltage Supply Cylinder 1	(58) II	(58) —
(59) 59	(59) 1.5	(59) GN / WH	(59) 4905	(59) Direct Fuel Injector High Voltage Supply Cylinder 5	(59) II	(59) —
(60) 60	(60) 1.5	(60) BU / GY	(60) 4902	(60) Direct Fuel Injector High Voltage Supply Cylinder 2	(60) II	(60) —
61	—	—	—	Not Occupied	—	—
(62) 62	(62) 0.5	(62) GN / YE	(62) 3337	(62) Transmission Internal Mode Switch Mode Control Y	(62) I	(62) —
63 - 65	—	—	—	Not Occupied	—	—
(66) 66	(66) 0.5	(66) BN / RD	(66) 2917	(66) Fuel Rail Pressure Sensor 5V Reference	(66) I	(66) —
(67) 67	(67) 0.5	(67) BK / GN	(67) 2919	(67) Fuel Rail Pressure Sensor Low Reference	(67) I	(67) —
68	—	—	—	Not Occupied	—	—
(69) 69	(69) 0.5	(69) BN / BU	(69) 357	(69) Oil Temperature Sensor Signal	(69) I	(69) —
(70) 70	(70) 0.5	(70) YE / BK	(70) 3000	(70) Coolant Temperature Sensor 2 Signal	(70) I	(70) —
71 - 72	—	—	—	Not Occupied	—	—
(73) 73	(73) 0.5	(73) WH / BU	(73) 7329	(73) Pre-Throttle Air Temperature Signal	(73) I	(73) —
74	—	—	—	Not Occupied	—	—
(75) 75	(75) 0.5	(75) BK / YE	(75) 548	(75) Engine Control Sensors Low Reference 1	(75) I	(75) —
(76) 76	(76) 0.5	(76) GN / VT	(76) 4621	(76) Engine Control Module LIN Bus 1	(76) I	(76) —
(77) 77	(77) 0.5	(77) GN / YE	(77) 4622	(77) Engine Control Module LIN Bus 2	(77) I	(77) —
(78) 78	(78) 0.5	(78) GN / YE	(78) 4623	(78) Engine Control Module LIN Bus 3	(78) I	(78) —
79 - 82	—	—	—	Not Occupied	—	—
(83) 83	(83) 0.75	(83) BU / BN	(83) 2977	(83) Coolant Diverter Valve Actuator Control Close	(83) I	(83) —
(84) 84	(84) 0.75	(84) BU	(84) 2976	(84) Coolant Diverter Valve Actuator Control Open	(84) I	(84) —
(85) 85	(85) 1.5	(85) VT / GN	(85) 4806	(85) Direct Fuel Injector High Voltage Control Cylinder 6	(85) II	(85) —
(86) 86	(86) 1.5	(86) BN	(86) 4801	(86) Direct Fuel Injector High Voltage Control Cylinder 1	(86) II	(86) —
(87) 87	(87) 1.5	(87) BU	(87) 4802	(87) Direct Fuel Injector High Voltage Control Cylinder 2	(87) II	(87) —
(88) 88	(88) 1.5	(88) WH / GN	(88) 4805	(88) Direct Fuel Injector High Voltage Control Cylinder 5	(88) II	(88) —
89	—	—	—	Not Occupied	—	—
(90) 90	(90) 0.5	(90) BU / WH	(90) 3630	(90) Throttle Position Sensor SENT 1 Signal	(90) I	(90) —
(91) 91	(91) 0.5	(91) BU / GN	(91) 4012	(91) Exhaust Gas Recirculation 2 Valve Position Sensor Signal	(91) I	(91) —
(92) 92	(92) 0.5	(92) GY	(92) 23	(92) Generator Field Duty Cycle Signal	(92) I	(92) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
93	—	—	—	Not Occupied	—	—
(94) 94	(94) 0.5	(94) BU / WH	(94) 2918	(94) Fuel Rail Pressure Sensor Signal	(94) I	(94) —
(95) 95	(95) 0.5	(95) YE / BU	(95) 2408	(95) Engine Inlet Coolant Temperature Signal	(95) I	(95) —
(96) 96	(96) 0.5	(96) BN / YE	(96) 2161	(96) Fuel Rail Pressure Sensor 2 Signal	(96) I	(96) —
(97) 97	(97) 0.5	(97) VT	(97) 2988	(97) Engine Outlet Coolant Temperature Signal	(97) I	(97) —
98 - 100	—	—	—	Not Occupied	—	—
(101) 101	(101) 0.5	(101) GN / WH	(101) 432	(101) Manifold Absolute Pressure Sensor Signal	(101) I	(101) —
(102) 102	(102) 0.5	(102) GN / YE	(102) 37	(102) Engine Block Temperature Sensor Signal	(102) I	(102) —
(103) 103	(103) 0.5	(103) BU / BK	(103) 1422	(103) Engine Water Charge Air Coolant Temperature Signal	(103) I	(103) —
104 - 110	—	—	—	Not Occupied	—	—
(111) 111	(111) 0.75	(111) BU / BN	(111) 4013	(111) Exhaust Gas Recirculation 2 Valve Close Control	(111) I	(111) —
(112) 112	(112) 0.75	(112) BU / WH	(112) 4014	(112) Exhaust Gas Recirculation 2 Valve Open Control	(112) I	(112) —

K20 Engine Control Module X3 (L3B)



1650395

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 216739-0002
- Service Connector: 85761016
- Description: 73-Way F 0.64, 2.8 MX123 Series, Sealed(BK with GY Terminal Position Assurance)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13587518	J-35616-35 (VT)	J-38125-11A
II	19354746	J-35616-64B (L-BU)	J-38125-213

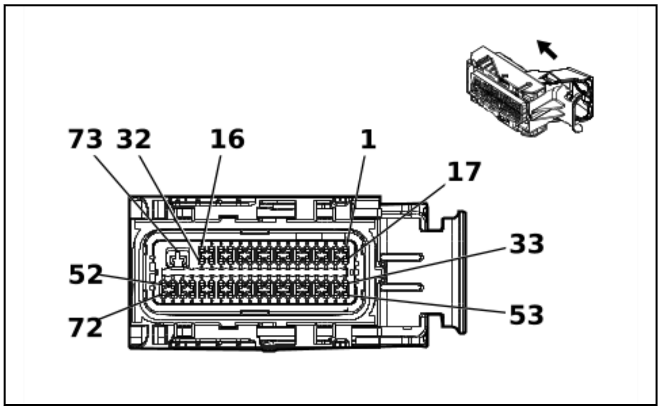
K20 Engine Control Module X3 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.5	(2) GN	(2) 3060	(2) Turbocharger Bypass Solenoid Valve Control Bank 1	(2) II	(2) —
(3) 3	(3) 0.5	(3) BN	(3) 25	(3) Charge Indicator Control	(3) II	(3) —
4 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.5	(6) VT / BU	(6) 6270	(6) Crankshaft Position Sensor Voltage	(6) II	(6) —
(7) 7	(7) 0.5	(7) BN / RD	(7) 2701	(7) Throttle Position Sensor 5V Reference	(7) II	(7) —
8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.5	(9) GN / WH	(9) 432	(9) Manifold Absolute Pressure Sensor Signal	(9) II	(9) —
(10) 10	(10) 0.5	(10) VT / BU	(10) 3120	(10) HO2S High Signal Bank 1 Sensor 2	(10) II	(10) —
(11) 11	(11) 0.5	(11) WH / YE	(11) 3121	(11) HO2S Low Signal Bank 1 Sensor 2	(11) II	(11) —
(12) 12	(12) 0.5	(12) VT / BN	(12) 5284	(12) Intake Camshaft Position Actuator Solenoid Valve 1	(12) II	(12) —
(13) 13	(13) 0.5	(13) GY / BU	(13) 5282	(13) Exhaust Camshaft Position Actuator Solenoid Valve 1	(13) II	(13) —
(14) 14	(14) 0.75	(14) BU	(14) 2976	(14) Coolant Diverter Valve Actuator Control Open	(14) II	(14) —
(15) 15	(15) 0.75	(15) WH / BN	(15) 2591	(15) Turbocharger Wastegate Motor Open Control	(15) II	(15) —
(16) 16	(16) 0.75	(16) WH / BU	(16) 2592	(16) Turbocharger Wastegate Motor Close Control	(16) II	(16) —
17 - 20	—	—	—	Not Occupied	—	—
(21) 21	(21) 0.5	(21) BK / YE	(21) 548	(21) Engine Control Sensors Low Reference 1	(21) II	(21) —
(22) 22	(22) 0.5	(22) BK / VT	(22) 6272	(22) Crankshaft Position Sensor Low Reference	(22) II	(22) —
(23) 23	(23) 0.5	(23) BK / BN	(23) 2752	(23) Throttle Position Sensor Low Reference	(23) II	(23) —
(24) 24	(24) 0.5	(24) YE / BU	(24) 2408	(24) Engine Inlet Coolant Temperature Signal	(24) II	(24) —
(25) 25	(25) 0.5	(25) VT	(25) 2988	(25) Engine Outlet Coolant Temperature Signal	(25) II	(25) —
(26) 26	(26) 0.5	(26) WH / BU	(26) 7329	(26) Pre-Throttle Air Temperature Signal	(26) II	(26) —
(27) 27	(27) 0.5	(27) BU / YE	(27) 8938	(27) Engine Integrated Exhaust Manifold Temperature Signal	(27) II	(27) —
(28) 28	(28) 0.5	(28) BK / BN	(28) 6753	(28) Camshaft Position Actuator Solenoid Valve 1 Low Reference	(28) II	(28) —
(29) 29	(29) 0.5	(29) BK / VT	(29) 6754	(29) Camshaft Position Actuator Solenoid Valve 1 Low Reference	(29) II	(29) —
(30) 30	(30) 0.5	(30) YE	(30) 581	(30) Throttle Actuator Open Control	(30) II	(30) —
(31) 31	(31) 0.5	(31) BN / WH	(31) 582	(31) Throttle Actuator Close Control	(31) II	(31) —
(32) 32	(32) 0.75	(32) BU / BN	(32) 2977	(32) Coolant Diverter Valve Actuator Control Close	(32) II	(32) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(33) 33	(33) 0.5	(33) VT / GY	(33) 496	(33) Knock Sensor 1 Signal	(33) II	(33) —
(34) 34	(34) 0.5	(34) WH / GY	(34) 1876	(34) Knock Sensor 2 Signal	(34) II	(34) —
(35) 35	(35) 0.5	(35) BK / GN	(35) 469	(35) Manifold Absolute Pressure Sensor Low Reference	(35) II	(35) —
(36) 36	(36) 0.5	(36) GN / BU	(36) 428	(36) EVAP Canister Purge Solenoid Control	(36) II	(36) —
37 - 38	—	—	—	Not Occupied	—	—
(39) 39	(39) 0.5	(39) BK / GN	(39) 5301	(39) Intake Camshaft Position Sensor Low Reference 1	(39) II	(39) —
(40) 40	(40) 0.5	(40) BK / GY	(40) 5296	(40) Exhaust Camshaft Position Sensor Low Reference 1	(40) II	(40) —
41	—	—	—	Not Occupied	—	—
(42) 42	(42) 0.5	(42) VT / BK	(42) 5273	(42) Exhaust Camshaft Position Sensor 1	(42) II	(42) —
(43) 43	(43) 0.5	(43) GN	(43) 6271	(43) Crankshaft Position Sensor Signal	(43) II	(43) —
(44) 44	(44) 0.75	(44) YE / BU	(44) 2124	(44) Ignition Control 4	(44) II	(44) —
(45) 45	(45) 0.75	(45) BU / WH	(45) 2122	(45) Ignition Control 2	(45) II	(45) —
(46) 46	(46) 0.75	(46) BK / BU	(46) 2129	(46) Ignition Control Low Reference Bank 1	(46) II	(46) —
(47) 47	(47) 0.5	(47) GY / WH	(47) 3122	(47) HO2S Heater Low Control Bank 1 Sensor 2	(47) II	(47) —
(48) 48	(48) 0.5	(48) BU / WH	(48) 3630	(48) Throttle Position Sensor SENT 1 Signal	(48) II	(48) —
(49) 49	(49) 0.75	(49) BU / WH	(49) 4904	(49) Direct Fuel Injector High Voltage Supply Cylinder 4	(49) II	(49) —
(50) 50	(50) 0.75	(50) GY / BU	(50) 4804	(50) Direct Fuel Injector High Voltage Control Cylinder 4	(50) II	(50) —
(51) 51	(51) 0.75	(51) BU / GY	(51) 4902	(51) Direct Fuel Injector High Voltage Supply Cylinder 2	(51) II	(51) —
(52) 52	(52) 0.75	(52) BU	(52) 4802	(52) Direct Fuel Injector High Voltage Control Cylinder 2	(52) II	(52) —
(53) 53	(53) 0.5	(53) BK / YE	(53) 1716	(53) Knock Sensor Low Reference 1	(53) II	(53) —
(54) 54	(54) 0.5	(54) BK / GY	(54) 2303	(54) Knock Sensor Low Reference 2	(54) II	(54) —
(55) 55	(55) 0.5	(55) GY / RD	(55) 2704	(55) Manifold Absolute Pressure Sensor 5V Reference	(55) II	(55) —
(56) 56	(56) 0.5	(56) YE / BN	(56) 106	(56) Oil Pump Motor Control	(56) II	(56) —
(57) 57	(57) 0.5	(57) BU	(57) 179	(57) Engine Oil Pump Control	(57) II	(57) —
58	—	—	—	Not Occupied	—	—
(59) 59	(59) 0.5	(59) GY / BU	(59) 5300	(59) Intake Camshaft Position Sensor 1 Voltage Reference	(59) II	(59) —
(60) 60	(60) 0.5	(60) GY / YE	(60) 5297	(60) Exhaust Camshaft Position Sensor 1 Voltage Reference	(60) II	(60) —
(61) 61	(61) 0.5	(61) GY	(61) 23	(61) Generator Field Duty Cycle Signal	(61) II	(61) —
62	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(63) 63	(63) 0.5	(63) YE / VT	(63) 5275	(63) Intake Camshaft Position Sensor 1	(63) II	(63) —
(64) 64	(64) 0.75	(64) BU / VT	(64) 2121	(64) Ignition Control 1	(64) II	(64) —
(65) 65	(65) 0.75	(65) GN / BU	(65) 2123	(65) Ignition Control 3	(65) II	(65) —
66	—	—	—	Not Occupied	—	—
(67) 67	(67) 0.5	(67) VT / BK	(67) 7300	(67) High Pressure Fuel Pump Low Control	(67) II	(67) —
(68) 68	(68) 0.5	(68) YE	(68) 7301	(68) High Pressure Fuel Pump High Control	(68) II	(68) —
(69) 69	(69) 0.75	(69) BN / WH	(69) 4901	(69) Direct Fuel Injector High Voltage Supply Cylinder 1	(69) II	(69) —
(70) 70	(70) 0.75	(70) BN	(70) 4801	(70) Direct Fuel Injector High Voltage Control Cylinder 1	(70) II	(70) —
(71) 71	(71) 0.75	(71) GN / GY	(71) 4903	(71) Direct Fuel Injector High Voltage Supply Cylinder 3	(71) II	(71) —
(72) 72	(72) 0.75	(72) GN	(72) 4803	(72) Direct Fuel Injector High Voltage Control Cylinder 3	(72) II	(72) —
(73) 73	(73) 2	(73) VT / BU	(73) 5290	(73) Powertrain Main Relay Fused Supply Voltage 1	(73) I	(73) —

K20 Engine Control Module X3 (L84 / L87)



1650395

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 12707500
- Service Connector: 85761016
- Description: 73-Way F 0.64, 2.8 MX123 Series, Sealed(BK with GY Terminal Position Assurance)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13587518	J-35616-35 (VT)	J-38125-11A
II	19354746	J-35616-64B (L-BU)	J-38125-213

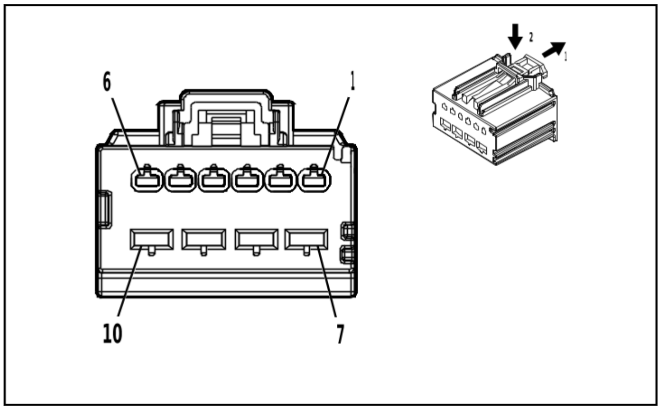
K20 Engine Control Module X3 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 5497	(1) Cylinder Deactivation Solenoid Valve Control 7	(1) II	(1) —
(2) 2	(2) 0.5	(2) GN / GY	(2) 2497	(2) Cylinder Shutoff Solenoid Enable Signal 7	(2) II	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) VT / BN	(5) 5284	(5) Intake Camshaft Position Actuator Solenoid Valve 1	(5) II	(5) —
(6) 6	(6) 0.5	(6) VT / GN	(6) 4320	(6) Powertrain Sensor Bus Enable	(6) II	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.5	(8) YE / VT	(8) 5275	(8) Intake Camshaft Position Sensor 1	(8) II	(8) —
(9) 9	(9) 0.5	(9) GY / BU	(9) 5300	(9) Intake Camshaft Position Sensor 1 Voltage Reference	(9) II	(9) —
(10) 10	(10) 0.5	(10) GN	(10) 6271	(10) Crankshaft Position Sensor Signal	(10) II	(10) —
11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0.5	(12) BU / WH	(12) 2122	(12) Ignition Control 2	(12) II	(12) —
(13) 13	(13) 0.5	(13) VT / WH	(13) 2128	(13) Ignition Control 8	(13) II	(13) —
(14) 14	(14) 0.5	(14) BN	(14) 25	(14) Charge Indicator Control	(14) II	(14) —
15	—	—	—	Not Occupied	—	—
(16) 16	(16) 0.75	(16) YE	(16) 7301	(16) High Pressure Fuel Pump High Control	(16) II	(16) —
17 - 20	—	—	—	Not Occupied	—	—
(21) 21	(21) 0.5	(21) BK / BN	(21) 6753	(21) Camshaft Position Actuator Solenoid Valve 1 Low Reference	(21) II	(21) —
22 - 23	—	—	—	Not Occupied	—	—
(24) 24	(24) 0.5	(24) BK / GN	(24) 5301	(24) Intake Camshaft Position Sensor Low Reference 1	(24) II	(24) —
(25) 25	(25) 0.5	(25) VT / BU	(25) 6270	(25) Crankshaft Position Sensor Voltage	(25) II	(25) —
(26) 26	(26) 0.5	(26) BK / VT	(26) 6272	(26) Crankshaft Position Sensor Low Reference	(26) II	(26) —
27	—	—	—	Not Occupied	—	—
(28) 28	(28) 0.5	(28) GN / GY	(28) 2127	(28) Ignition Control 7	(28) II	(28) —
(29) 29	(29) 0.5	(29) BU / VT	(29) 2121	(29) Ignition Control 1	(29) II	(29) —
(30) 30	(30) 0.5	(30) BK / BU	(30) 2129	(30) Ignition Control Low Reference Bank 1	(30) II	(30) —
31	—	—	—	Not Occupied	—	—
(32) 32	(32) 0.75	(32) VT / BK	(32) 7300	(32) High Pressure Fuel Pump Low Control	(32) II	(32) —
(33) 33	(33) 0.5	(33) YE / VT	(33) 4325	(33) Starter Pinion Solenoid Actuator Relay Control	(33) II	(33) —
(34) 34	(34) 0.5	(34) WH / BU	(34) 2491	(34) Cylinder Shutoff Solenoid Enable Signal 1	(34) II	(34) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(35) 35	(35) 0.5	(35) WH / YE	(35) 2498	(35) Cylinder Shutoff Solenoid Enable Signal 8	(35) II	(35) —
(36) 36	(36) 0.5	(36) BK / BN	(36) 2752	(36) Throttle Position Sensor Low Reference	(36) II	(36) —
(37) 37	(37) 0.5	(37) BK / GN	(37) 469	(37) Manifold Absolute Pressure Sensor Low Reference	(37) II	(37) —
38 - 39	—	—	—	Not Occupied	—	—
(40) 40	(40) 0.5	(40) BN / BU	(40) 357	(40) Oil Temperature Sensor Signal	(40) II	(40) —
41 - 42	—	—	—	Not Occupied	—	—
(43) 43	(43) 0.5	(43) BK / GY	(43) 626	(43) Engine Control Vehicle Sensors Low Reference 1	(43) II	(43) —
(44) 44	(44) 0.75	(44) VT / BU	(44) 5292	(44) Powertrain Main Relay Fused Supply Voltage 3	(44) II	(44) —
(45) 45	(45) 0.75	(45) GN	(45) 4803	(45) Direct Fuel Injector High Voltage Control Cylinder 3	(45) II	(45) —
(46) 46	(46) 0.75	(46) GY / BU	(46) 4804	(46) Direct Fuel Injector High Voltage Control Cylinder 4	(46) II	(46) —
(47) 47	(47) 0.75	(47) WH / GN	(47) 4805	(47) Direct Fuel Injector High Voltage Control Cylinder 5	(47) II	(47) —
(48) 48	(48) 0.75	(48) VT / GN	(48) 4806	(48) Direct Fuel Injector High Voltage Control Cylinder 6	(48) II	(48) —
(49) 49	(49) 0.75	(49) BU	(49) 4802	(49) Direct Fuel Injector High Voltage Control Cylinder 2	(49) II	(49) —
(50) 50	(50) 0.75	(50) YE / GY	(50) 4807	(50) Direct Fuel Injector High Voltage Control Cylinder 7	(50) II	(50) —
(51) 51	(51) 0.75	(51) GY	(51) 4808	(51) Direct Fuel Injector High Voltage Control Cylinder 8	(51) II	(51) —
(52) 52	(52) 0.75	(52) BN	(52) 4801	(52) Direct Fuel Injector High Voltage Control Cylinder 1	(52) II	(52) —
(53) 53	(53) 0.5	(53) BU / VT	(53) 5491	(53) Cylinder Deactivation Solenoid Valve Control 1	(53) II	(53) —
(54) 54	(54) 0.5	(54) YE	(54) 5498	(54) Cylinder Deactivation Solenoid Valve Control 8	(54) II	(54) —
(55) 55	(55) 0.5	(55) BN / RD	(55) 2701	(55) Throttle Position Sensor 5V Reference	(55) II	(55) —
(56) 56	(56) 0.5	(56) BU / WH	(56) 3630	(56) Throttle Position Sensor SENT 1 Signal	(56) II	(56) —
(57) 57	(57) 0.5	(57) GY / RD	(57) 2704	(57) Manifold Absolute Pressure Sensor 5V Reference	(57) II	(57) —
(58) 58	(58) 0.5	(58) GN / WH	(58) 432	(58) Manifold Absolute Pressure Sensor Signal	(58) II	(58) —
59 - 60	—	—	—	Not Occupied	—	—
(61) 61	(61) 0.5	(61) BU	(61) 410	(61) Engine Coolant Temperature Sensor Signal	(61) II	(61) —
62	—	—	—	Not Occupied	—	—
(63) 63	(63) 0.5	(63) BU / WH	(63) 10786	(63) Fuel Rail Pressure Sensor SENT 1 Signal	(63) II	(63) —
(64) 64	(64) 0.5	(64) GY	(64) 23	(64) Generator Field Duty Cycle Signal	(64) II	(64) —
(65) 65	(65) 0.75	(65) GN / BK	(65) 4903	(65) Direct Fuel Injector High Voltage Supply Cylinder 3	(65) II	(65) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(66) 66	(66) 0.75	(66) BU / WH	(66) 4904	(66) Direct Fuel Injector High Voltage Supply Cylinder 4	(66) II	(66) —
(67) 67	(67) 0.75	(67) GN / WH	(67) 4905	(67) Direct Fuel Injector High Voltage Supply Cylinder 5	(67) II	(67) —
(68) 68	(68) 0.75	(68) VT / GY	(68) 4906	(68) Direct Fuel Injector High Voltage Supply Cylinder 6	(68) II	(68) —
(69) 69	(69) 0.75	(69) BU / BK	(69) 4902	(69) Direct Fuel Injector High Voltage Supply Cylinder 2	(69) II	(69) —
(70) 70	(70) 0.75	(70) WH / YE	(70) 4907	(70) Direct Fuel Injector High Voltage Supply Cylinder 7	(70) II	(70) —
(71) 71	(71) 0.75	(71) GY / WH	(71) 4908	(71) Direct Fuel Injector High Voltage Supply Cylinder 8	(71) II	(71) —
(72) 72	(72) 0.75	(72) BN / WH	(72) 4901	(72) Direct Fuel Injector High Voltage Supply Cylinder 1	(72) II	(72) —
(73) 73	(73) 2.5	(73) BK / WH	(73) 251	(73) Signal Ground	(73) I	(73) —

K29FV Front Seat Heater Vent Control Module X1 (KA1)



5035058

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 31372-1600
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 MX Series(BK)

Terminal Part Information

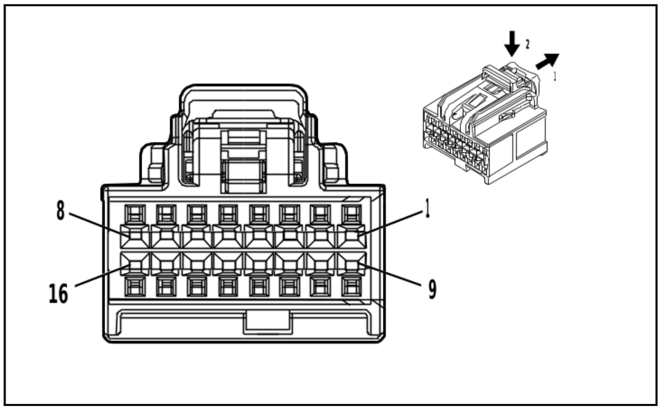
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-4A (PU)	No Tool Required

K29FV Front Seat Heater Vent Control Module X1 (KA1)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) WH / BN	(1) 2481	(1) Passenger Seat Back Heating Element Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) BN / BU	(2) 2479	(2) Passenger Seat Heating Element Control	(2) I	(2) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(3) 3	(3) 0.75	(3) GY / BK	(3) 2480	(3) Passenger Seat Heating Element Low Reference	(3) I	(3) —
(4) 4	(4) 0.75	(4) BN / BK	(4) 2078	(4) Driver Seat Heating Element Low Reference	(4) I	(4) —
(5) 5	(5) 0.75	(5) BN	(5) 2432	(5) Driver Seat Back Heating Element Control	(5) I	(5) —
(6) 6	(6) 0.75	(6) BN / VT	(6) 2077	(6) Driver Seat Heating Element Control	(6) I	(6) —
(7) 7	(7) 0.75	(7) RD / GN	(7) 6140	(7) Battery Positive Voltage	(7) II	(7) —
(8) 8	(8) 0.75	(8) BK	(8) 1350	(8) Ground	(8) II	(8) —
9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.75	(10) RD / BN	(10) 6640	(10) Battery Positive Voltage	(10) II	(10) —

K29FV Front Seat Heater Vent Control Module X2 (KA1)



4873243

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 35016343
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 0.64 OCS Series(BK)

Terminal Part Information

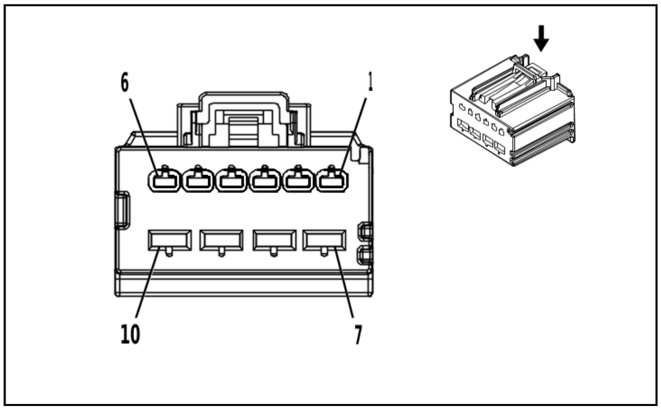
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

K29FV Front Seat Heater Vent Control Module X2 (KA1)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / YE	(1) 2080	(1) Driver Heated Seat Thermistor Low Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GY	(2) 2435	(2) Passenger Heated Seat Thermistor Low Reference	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU	(3) 2425	(3) Driver Seat Back Heating Temperature Sensor Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) WH / BU	(4) 2436	(4) Passenger Seat Back Heating Temperature Sensor Signal	(4) I	(4) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(5) 5	(5) 0.5	(5) WH / GY	(5) 2434	(5) Passenger Seat Heating Temperature Sensor Signal	(5) I	(5) —
(6) 6	(6) 0.5	(6) YE / GY	(6) 2079	(6) Driver Seat Heating Temperature Sensor Signal	(6) I	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.5	(8) GN / VT	(8) 2857	(8) Body Control Module LIN Bus 11	(8) I	(8) —
(9) 9	(9) 0.5	(9) GN / VT	(9) 5906	(9) Driver Seat Blower Motor Control 1	(9) I	(9) —
(10) 10	(10) 0.5	(10) VT / WH	(10) 5908	(10) Passenger Seat Blower Motor Control 1	(10) I	(10) —
11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0.5	(12) BK / GN	(12) 2482	(12) Passenger Heated Back Thermistor Low Reference	(12) I	(12) —
13 - 16	—	—	—	Not Occupied	—	—

K29R Rear Seat Heater Control Module X1 (KA6)



3791446

Connector Part Information

- Harness Type: Rear Seat Heater Control Wiring Harness
- OEM Connector: 31372-1000
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 MX Series(BK)

Terminal Part Information

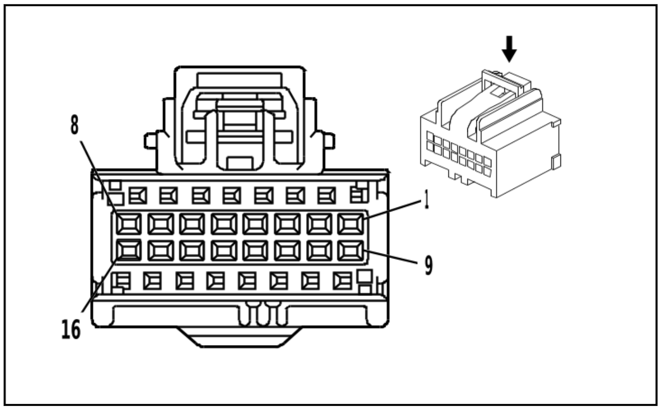
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-4A (PU)	No Tool Required

K29R Rear Seat Heater Control Module X1 (KA6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.75	(2) GN / BN	(2) 2296	(2) Right Rear Seat Cushion Heating Element Control	(2) I	(2) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(3) 3	(3) 0.75	(3) GN / BK	(3) 2297	(3) Right Rear Seat Cushion Heating Element Low Reference	(3) I	(3) —
(4) 4	(4) 0.75	(4) BN / BK	(4) 2295	(4) Left Rear Seat Cushion Heating Element Low Reference	(4) I	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.75	(6) GY	(6) 2294	(6) Left Rear Seat Cushion Heating Element Control	(6) I	(6) —
(7) 7	(7) 0.75	(7) RD / YE	(7) 5740	(7) Battery Positive Voltage	(7) II	(7) —
(8) 8	(8) 1	(8) BK	(8) 1550	(8) Ground	(8) II	(8) —
9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.75	(10) RD / VT	(10) 6740	(10) Battery Positive Voltage	(10) II	(10) —

K29R Rear Seat Heater Control Module X2 (KA6)



1653409

Connector Part Information

- Harness Type: Rear Seat Heater Control Wiring Harness
- OEM Connector: 7283-9076-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 0.64 Kaizen Series(BK)

Terminal Part Information

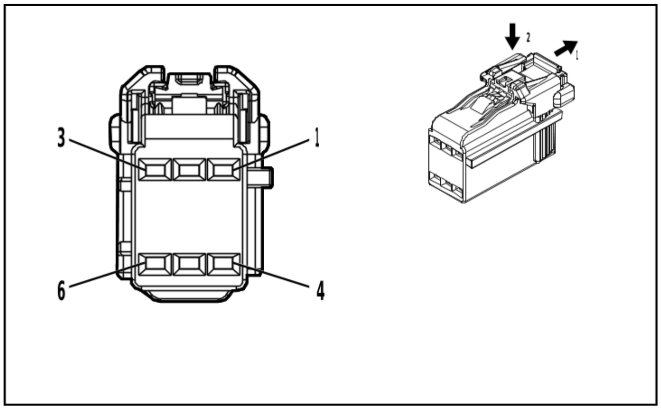
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

K29R Rear Seat Heater Control Module X2 (KA6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU / WH	(1) 7048	(1) Left Rear Cushion Thermistor Feedback Signal	(1) I	(1) —
(2) 2	(2) 0.75	(2) WH / BK	(2) 7054	(2) Right Rear Cushion Thermistor Feedback Signal	(2) I	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.75	(5) YE / WH	(5) 7053	(5) Right Rear Seat Cushion Temperature Sensor Signal	(5) I	(5) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(6) 6	(6) 0.75	(6) WH / BU	(6) 7047	(6) Left Rear Seat Cushion Temperature Sensor Signal	(6) I	(6) —
(7) 7	(7) 0.5	(7) BK	(7) 1550	(7) Ground	(7) I	(7) —
(8) 8	(8) 0.5	(8) GN / BU	(8) 2857	(8) Body Control Module LIN Bus 11	(8) I	(8) —
9 - 16	—	—	—	Not Occupied	—	—

K32 Heated Steering Wheel Module X1 (KI3 & (N57 - D07))



4862126

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 6098-8996
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.2 Series(BK)

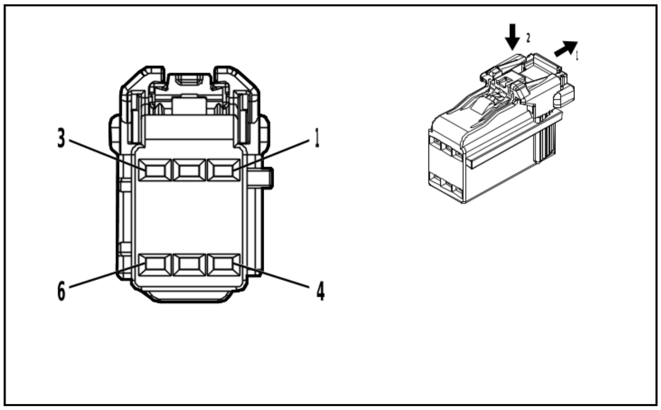
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

K32 Heated Steering Wheel Module X1 (KI3 & (N57 - D07))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GN	(1) 5883	(1) Steering Wheel Heating Switch Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) GY / OG	(2) 5884	(2) Steering Wheel Heating Switch LED Control	(2) I	(2) —
(3) 3	(3) 0.5	(3) OG	(3) 10040	(3) Battery Positive Voltage	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 6050	(4) Steering Wheel Ground	(4) I	(4) —
(5) 5	(5) 0.35	(5) BK	(5) 6051	(5) Steering Wheel Ground	(5) I	(5) —
(6) 6	(6) 0.35	(6) WH	(6) 2858	(6) Body Control Module LIN Bus 12	(6) I	(6) —

K32 Heated Steering Wheel Module X1 (KI3 & (N57 & D07))



4862126

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 6098-8996
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.2 Series(BK)

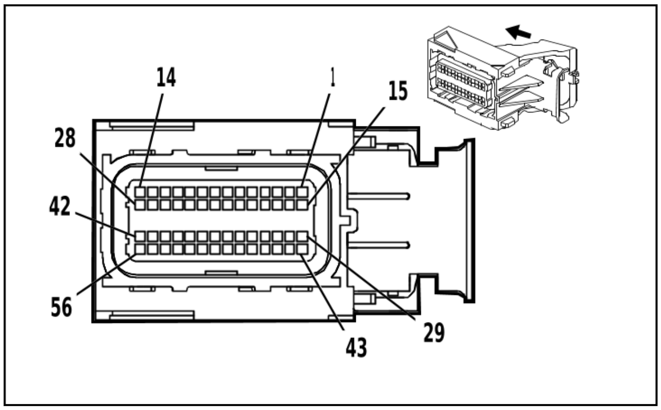
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

K32 Heated Steering Wheel Module X1 (KI3 & (N57 & D07))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) YE / GY	(1) 5883	(1) Steering Wheel Heating Switch Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) BN / WH	(2) 5884	(2) Steering Wheel Heating Switch LED Control	(2) I	(2) —
(3) 3	(3) 0.5	(3) RD / GN	(3) 10040	(3) Battery Positive Voltage	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 6050	(4) Steering Wheel Ground	(4) I	(4) —
(5) 5	(5) 0.35	(5) BK / WH	(5) 6051	(5) Steering Wheel Ground	(5) I	(5) —
(6) 6	(6) 0.35	(6) GN / BK	(6) 2858	(6) Body Control Module LIN Bus 12	(6) I	(6) —

K36 Restraints Control Module X1



1590948

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 12728284
- Service Connector: 85090371
- Description: 56-Way F 0.64 MX123 Series, Sealed(BK with BU Terminal Position Assurance)

Terminal Part Information

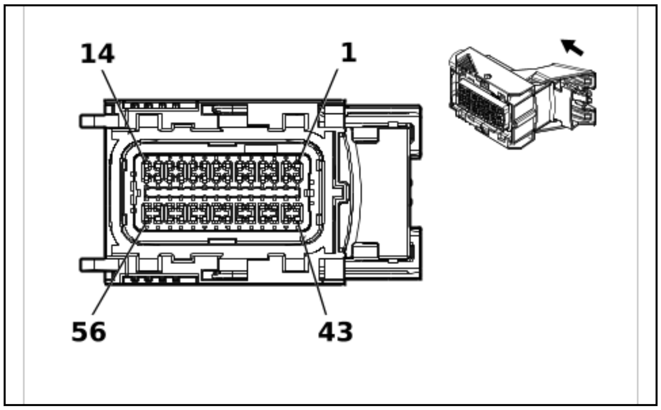
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19354746	J-35616-64B (L-BU)	J-38125-213

K36 Restraints Control Module X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) BK / OG	(7) 5045	(7) Left Front Impact Discriminating Sensor Low Reference	(7) I	(7) —
(8) 8	(8) 0.5	(8) OG / YE	(8) 354	(8) Left Front Impact Discriminating Sensor Signal	(8) I	(8) —
(9) 9	(9) 0.5	(9) OG / GN	(9) 1409	(9) Right Front Impact Discriminating Sensor Signal	(9) I	(9) —
(10) 10	(10) 0.5	(10) BK / OG	(10) 5600	(10) Right Front Impact Discriminating Sensor Low Reference	(10) I	(10) —
(11) 11	(11) 0.5	(11) WH / OG	(11) 3476	(11) Passenger Seat Belt Retractor Pretensioner Low Control	(11) I	(11) —
(12) 12	(12) 0.5	(12) OG / GN	(12) 3475	(12) Passenger Seat Belt Retractor Pretensioner High Control	(12) I	(12) —
(13) 13	(13) 0.35	(13) YE / OG	(13) 3025	(13) Passenger Instrument Panel Air Bag Stage 1 High Control	(13) I	(13) —
(14) 14	(14) 0.35	(14) OG / WH	(14) 3024	(14) Passenger Instrument Panel Air Bag Stage 1 Low Control	(14) I	(14) —
15 - 24	—	—	—	Not Occupied	—	—
(25) 25	(25) 0.5	(25) VT / OG	(25) 3478	(25) Driver Seat Belt Retractor Pretensioner Low Control	(25) I	(25) —
(26) 26	(26) 0.5	(26) OG / WH	(26) 3477	(26) Driver Seat Belt Retractor Pretensioner High Control	(26) I	(26) —
(27) 27	(27) 0.35	(27) OG / VT	(27) 3021	(27) Steering Wheel Air Bag Stage 1 High Control	(27) I	(27) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(28) 28	(28) 0.35	(28) BN / OG	(28) 3020	(28) Steering Wheel Air Bag Stage 1 Low Control	(28) I	(28) —
(29) 29	(29) 0.5	(29) BU	(29) 4987	(29) AUTOSAR CAN Bus [+] 1 Serial Data	(29) I	(29) —
(30) 30	(30) 0.5	(30) WH	(30) 4986	(30) AUTOSAR CAN Bus [-] 1 Serial Data	(30) I	(30) —
31	—	—	—	Not Occupied	—	—
(32) 32	(32) 0.5	(32) OG / BN	(32) 3479	(32) Passenger Seat Belt Anchor Pretensioner High Control	(32) I	(32) —
(33) 33	(33) 0.5	(33) GY / OG	(33) 3480	(33) Passenger Seat Belt Anchor Pretensioner Low Control	(33) I	(33) —
34 - 37	—	—	—	Not Occupied	—	—
(38) 38	(38) 0.35	(38) OG / VT	(38) 3026	(38) Passenger Instrument Panel Air Bag Stage 2 Low Control	(38) I	(38) —
(39) 39	(39) 0.35	(39) GY / OG	(39) 3027	(39) Passenger Instrument Panel Air Bag Stage 2 High Control	(39) I	(39) —
40 - 41	—	—	—	Not Occupied	—	—
(42) 42	(42) 0.5	(42) BK / WH	(42) 1251	(42) Signal Ground	(42) I	(42) —
(43) 43	(43) 0.5	(43) BU	(43) 4987	(43) AUTOSAR CAN Bus [+] 1 Serial Data	(43) I	(43) —
(44) 44	(44) 0.5	(44) WH	(44) 4986	(44) AUTOSAR CAN Bus [-] 1 Serial Data	(44) I	(44) —
45	—	—	—	Not Occupied	—	—
(46) 46	(46) 0.5	(46) VT / OG	(46) 3482	(46) Driver Seat Belt Anchor Pretensioner Low Control	(46) I	(46) —
(47) 47	(47) 0.5	(47) OG / YE	(47) 3481	(47) Driver Seat Belt Anchor Pretensioner High Control	(47) I	(47) —
48 - 49	—	—	—	Not Occupied	—	—
(50) 50	(50) 0.35	(50) BN / WH	(50) 3895	(50) Roof Rail Air Bag Disable Switch Low Reference	(50) I	(50) —
(51) 51	(51) 0.35	(51) BU / WH	(51) 3119	(51) Roof Rail Air Bag Disable Switch Signal	(51) I	(51) —
52	—	—	—	Not Occupied	—	—
(53) 53	(53) 0.35	(53) WH / OG	(53) 3022	(53) Steering Wheel Air Bag Stage 2 Low Control	(53) I	(53) —
(54) 54	(54) 0.35	(54) OG / GN	(54) 3023	(54) Steering Wheel Air Bag Stage 2 High Control	(54) I	(54) —
(55) 55	(55) 0.35	(55) VT / WH	(55) 239	(55) Run/Crank Ignition 1 Voltage	(55) I	(55) —
(56) 56	(56) 0.5	(56) RD / GN	(56) 4440	(56) Battery Positive Voltage	(56) I	(56) —

K36 Restraints Control Module X2



5377124

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 12728285
- Service Connector: 85004498
- Description: 56-Way F 0.64 MX123 Series, Sealed(BK)

Terminal Part Information

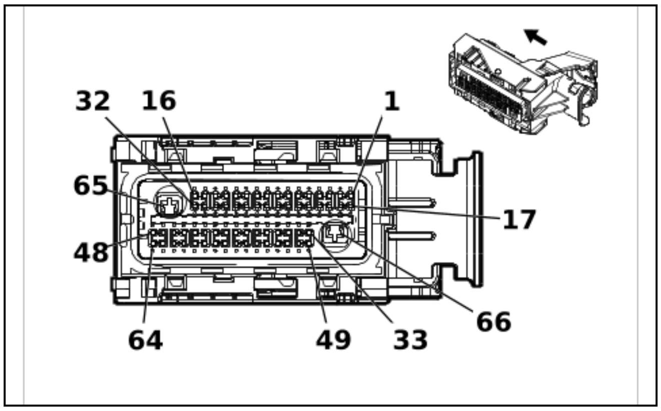
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19354746	J-35616-64B (L-BU)	J-38125-213

K36 Restraints Control Module X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.5	(10) BU / OG	(10) 5163	(10) Rear Center Seat Belt Switch Signal	(10) I	(10) —
(11) 11	(11) 0.5	(11) YE / OG	(11) 5161	(11) Left Rear Seat Belt Switch Signal	(11) I	(11) —
(12) 12	(12) 0.35	(12) OG / GY	(12) 2652	(12) Driver Seat Belt Sensor Signal	(12) I	(12) —
(13) 13	(13) 0.5	(13) BK / OG	(13) 6627	(13) Right Rear Side Impact Sensor Low Reference	(13) I	(13) —
(14) 14	(14) 0.5	(14) OG / WH	(14) 6626	(14) Right Rear Side Impact Sensor Signal	(14) I	(14) —
15 - 22	—	—	—	Not Occupied	—	—
(23) 23	(23) 0.5	(23) BK / OG	(23) 1363	(23) Driver Seat Belt Switch Low Reference	(23) I	(23) —
(24) 24	(24) 0.5	(24) BN / OG	(24) 5162	(24) Right Rear Seat Belt Switch Signal	(24) I	(24) —
(25) 25	(25) 0.35	(25) OG / VT	(25) 1362	(25) Passenger Seat Belt Switch Signal	(25) I	(25) —
26	—	—	—	Not Occupied	—	—
(27) 27	(27) 0.5	(27) BK / OG	(27) 6628	(27) Left Front Side Impact Sensor Low Reference	(27) I	(27) —
(28) 28	(28) 0.5	(28) OG / GN	(28) 2132	(28) Left Front Side Impact Sensor Signal	(28) I	(28) —
29 - 36	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(37) 37	(37) 0.5	(37) OG / GY	(37) 5021	(37) Right Front Roof Rail Air Bag High Control	(37) I	(37) —
(38) 38	(38) 0.5	(38) WH / OG	(38) 5022	(38) Right Front Roof Rail Air Bag Low Control	(38) I	(38) —
(39) 39	(39) 0.5	(39) BU / OG	(39) 4957	(39) Passenger Seat Back Air Bag Low Control	(39) I	(39) —
(40) 40	(40) 0.5	(40) OG / GY	(40) 4956	(40) Passenger Seat Back Air Bag High Control	(40) I	(40) —
(41) 41	(41) 0.5	(41) BK / OG	(41) 6629	(41) Right Front Side Impact Sensor Low Reference	(41) I	(41) —
(42) 42	(42) 0.5	(42) BN / OG	(42) 2134	(42) Right Front Side Impact Sensor Signal	(42) I	(42) —
43 - 50	—	—	—	Not Occupied	—	—
(51) 51	(51) 0.5	(51) OG / GN	(51) 5019	(51) Left Front Roof Rail Air Bag High Control	(51) I	(51) —
(52) 52	(52) 0.5	(52) VT / OG	(52) 5020	(52) Left Front Roof Rail Air Bag Low Control	(52) I	(52) —
(53) 53	(53) 0.5	(53) BK / OG	(53) 4963	(53) Driver Seat Back Air Bag Low Control	(53) I	(53) —
(54) 54	(54) 0.5	(54) OG / BU	(54) 4962	(54) Driver Seat Back Air Bag High Control	(54) I	(54) —
(55) 55	(55) 0.5	(55) BK / OG	(55) 6623	(55) Left Rear Side Impact Sensor Low Reference	(55) I	(55) —
(56) 56	(56) 0.5	(56) OG / BU	(56) 6622	(56) Left Rear Side Impact Sensor Signal	(56) I	(56) —

K38 Chassis Control Module (G93 / G94)



6758198

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 216741-0001
- Service Connector: 85761018
- Description: 66-Way F 0.64, 2.8 MX123 Series, Sealed(BK with BU Terminal Position Assurance)

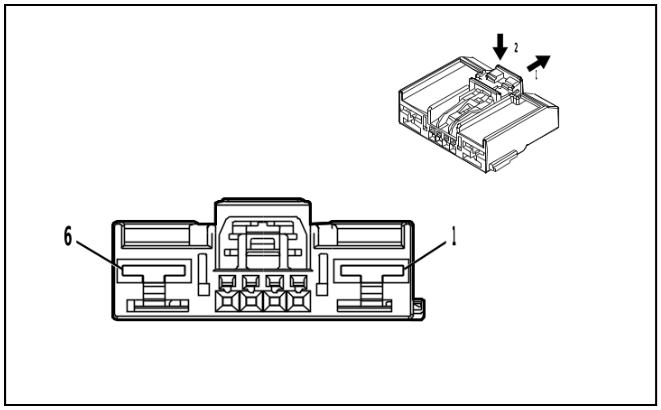
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13587518	J-35616-35 (VT)	J-38125-11A
II	19351723	J-35616-64B (L-BU)	J-38125-213

K38 Chassis Control Module (G93 / G94)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.5	(6) VT / WH	(6) 639	(6) Run/Crank Ignition 1 Voltage	(6) II	(6) —
7 - 12	—	—	—	Not Occupied	—	—
(13) 13	(13) 0.5	(13) YE / GN	(13) 7122	(13) Axle Differential Lock Switch Signal	(13) II	(13) —
14 - 31	—	—	—	Not Occupied	—	—
(32) 32	(32) 0.5	(32) VT / GY	(32) 7117	(32) Front Axle Differential Lock Indicator Control	(32) II	(32) —
(33) 33	(33) 0.75	(33) VT / WH	(33) 7256	(33) Front Differential Lock Actuator Control	(33) II	(33) —
(34) 34	(34) 0.5	(34) BU / YE	(34) 4979	(34) AUTOSAR CAN Bus [+] 2 Serial Data	(34) II	(34) —
(35) 35	(35) 0.5	(35) BU / YE	(35) 4979	(35) AUTOSAR CAN Bus [+] 2 Serial Data	(35) II	(35) —
(36) 36	(36) 0.5	(36) WH	(36) 4978	(36) AUTOSAR CAN Bus [-] 2 Serial Data	(36) II	(36) —
(37) 37	(37) 0.5	(37) WH	(37) 4978	(37) AUTOSAR CAN Bus [-] 2 Serial Data	(37) II	(37) —
(38) 38	(38) 0.5	(38) YE	(38) 7115	(38) Rear Axle Differential Lock Indicator Control	(38) II	(38) —
39 - 43	—	—	—	Not Occupied	—	—
(44) 44	(44) 0.75	(44) GY / BK	(44) 7253	(44) Rear Differential Lock Actuator Low Control	(44) II	(44) —
45 - 49	—	—	—	Not Occupied	—	—
(50) 50	(50) 0.75	(50) VT / BN	(50) 7258	(50) Rear Differential Lock Actuator Control	(50) II	(50) —
51 - 59	—	—	—	Not Occupied	—	—
(60) 60	(60) 0.75	(60) WH / BK	(60) 7254	(60) Front Differential Lock Actuator Low Control	(60) II	(60) —
61 - 64	—	—	—	Not Occupied	—	—
(65) 65	(65) 1.5	(65) BK	(65) 1850	(65) Ground	(65) I	(65) —
(66) 66	(66) 1.5	(66) RD / WH	(66) 5940	(66) Battery Positive Voltage	(66) I	(66) —

K40D Driver Seat Adjuster Memory Module X1 (A45)



4650258

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 7289-7139-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64, 6.3 Series(BK)

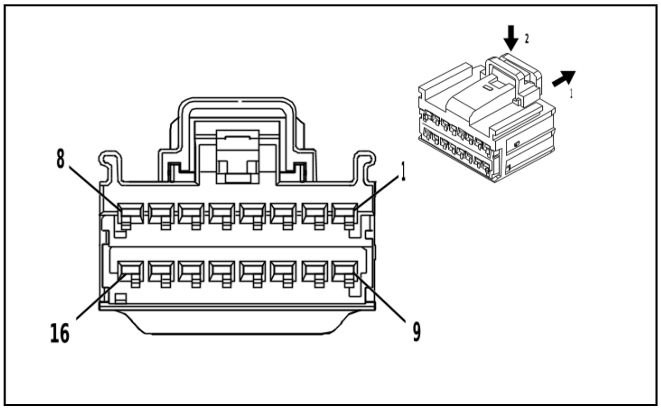
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-42 (RD)	No Tool Required
II	Not required	J-35616-64B (L-BU)	No Tool Required

K40D Driver Seat Adjuster Memory Module X1 (A45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) BK	(1) 1550	(1) Ground	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) RD / BN	(3) 2240	(3) Battery Positive Voltage	(3) II	(3) —
4 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 2.5	(6) RD / YE	(6) 5040	(6) Battery Positive Voltage	(6) I	(6) —

K40D Driver Seat Adjuster Memory Module X2 (A45)



4332214

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 15512506
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 1.5 OCS Series(BK)

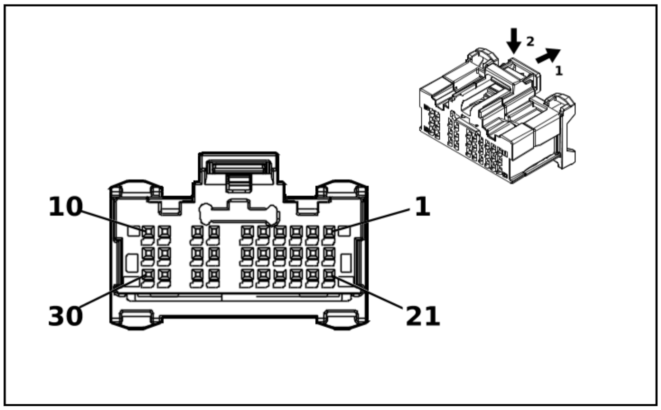
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

K40D Driver Seat Adjuster Memory Module X2 (A45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) YE / BU	(1) 285	(1) Driver Seat Horizontal Motor Forward Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 1.5	(3) GN / YE	(3) 276	(3) Driver Seat Recline Motor Forward Control	(3) I	(3) —
4 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 1.5	(6) BU / VT	(6) 287	(6) Driver Seat Front Vertical Motor Down Control	(6) I	(6) —
(7) 7	(7) 1.5	(7) YE	(7) 282	(7) Driver Seat Rear Vertical Motor Up Control	(7) I	(7) —
8	—	—	—	Not Occupied	—	—
(9) 9	(9) 1.5	(9) BU / YE	(9) 277	(9) Driver Seat Recline Motor Rearward Control	(9) I	(9) —
10	—	—	—	Not Occupied	—	—
(11) 11	(11) 1.5	(11) GY / GN	(11) 284	(11) Driver Seat Horizontal Motor Rearward Control	(11) I	(11) —
12	—	—	—	Not Occupied	—	—
(13) 13	(13) 1.5	(13) GY / BU	(13) 283	(13) Driver Seat Rear Vertical Motor Down Control	(13) I	(13) —
14 - 15	—	—	—	Not Occupied	—	—
(16) 16	(16) 1.5	(16) GN / BN	(16) 286	(16) Driver Seat Front Vertical Motor Up Control	(16) I	(16) —

K40D Driver Seat Adjuster Memory Module X3 (A45)



5202284

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2309644-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 30-Way F 0.5 MQS Series(BK)

Terminal Part Information

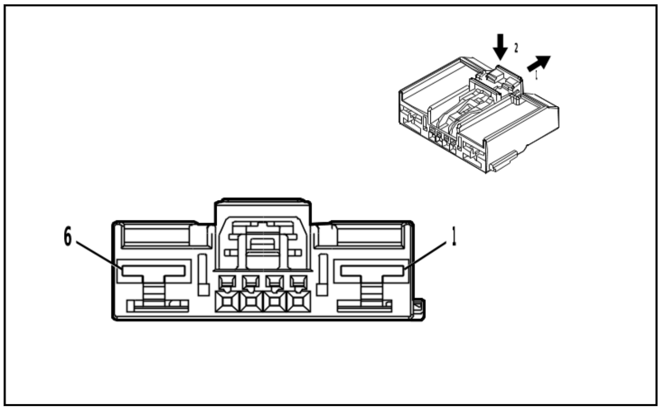
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

K40D Driver Seat Adjuster Memory Module X3 (A45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.35	(2) BU / GN	(2) 614	(2) Seat Memory Switch Set Signal	(2) I	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.35	(5) BN	(5) 3038	(5) Driver Seat Right Rear Haptic Movement Motor Control	(5) I	(5) —
(6) 6	(6) 0.35	(6) YE / BN	(6) 3037	(6) Driver Seat Left Rear Haptic Movement Motor Control	(6) I	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.35	(8) GN / WH	(8) 7530	(8) Driver Seat Adjuster Memory Module LIN Bus 1	(8) I	(8) —
(9) 9	(9) 0.35	(9) WH	(9) 4100	(9) AUTOSAR CAN Bus [-] 4 Serial Data	(9) I	(9) —
(10) 10	(10) 0.35	(10) BU / VT	(10) 4101	(10) AUTOSAR CAN Bus [+] 4 Serial Data	(10) I	(10) —
11 - 15	—	—	—	Not Occupied	—	—
(16) 16	(16) 0.35	(16) WH	(16) 615	(16) Seat Memory Switch Signal 1	(16) I	(16) —
17	—	—	—	Not Occupied	—	—
(18) 18	(18) 0.35	(18) GN / GY	(18) 3758	(18) Driver Seat Adjuster Memory Module LIN Bus 2	(18) I	(18) —
(19) 19	(19) 0.35	(19) WH	(19) 4100	(19) AUTOSAR CAN Bus [-] 4 Serial Data	(19) I	(19) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(20) 20	(20) 0.35	(20) BU / VT	(20) 4101	(20) AUTOSAR CAN Bus [+] 4 Serial Data	(20) I	(20) —
21 - 30	—	—	—	Not Occupied	—	—

K40P Passenger Seat Adjuster Memory Module X1 (AHH / AKE / AVU)



4650258

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 7289-7139-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64, 6.3 Series(BK)

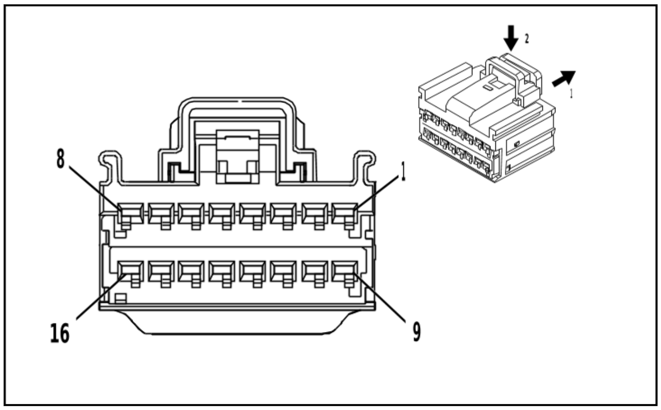
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-42 (RD)	No Tool Required
II	Not required	J-35616-64B (L-BU)	No Tool Required

K40P Passenger Seat Adjuster Memory Module X1 (AHH / AKE / AVU)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) BK	(1) 1350	(1) Ground	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) RD / BN	(3) 2240	(3) Battery Positive Voltage	(3) II	(3) —
4 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 2.5	(6) RD / YE	(6) 7440	(6) Battery Positive Voltage	(6) I	(6) —

K40P Passenger Seat Adjuster Memory Module X2 (AHH / AKE / AVU)



4332214

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 15512506
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 1.5 OCS Series(BK)

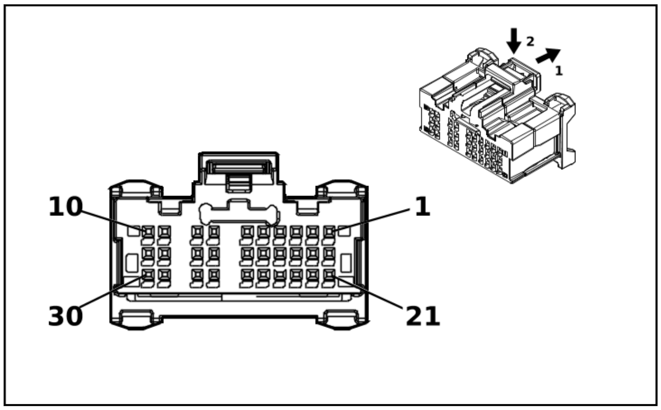
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

K40P Passenger Seat Adjuster Memory Module X2 (AHH / AKE / AVU)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) YE / WH	(1) 296	(1) Passenger Seat Horizontal Motor Forward Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 1.5	(3) GN	(3) 76	(3) Passenger Seat Recline Motor Forward Control	(3) I	(3) —
4 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 1.5	(6) GN / BU	(6) 298	(6) Passenger Seat Front Vertical Motor Down Control	(6) I	(6) —
(7) 7	(7) 1.5	(7) GN / WH	(7) 288	(7) Passenger Seat Rear Vertical Motor Up Control	(7) I	(7) —
8	—	—	—	Not Occupied	—	—
(9) 9	(9) 1.5	(9) BU / BN	(9) 77	(9) Passenger Seat Recline Motor Rearward Control	(9) I	(9) —
10	—	—	—	Not Occupied	—	—
(11) 11	(11) 1.5	(11) YE / BU	(11) 290	(11) Passenger Seat Horizontal Motor Rearward Control	(11) I	(11) —
12	—	—	—	Not Occupied	—	—
(13) 13	(13) 1.5	(13) BU / WH	(13) 289	(13) Passenger Seat Rear Vertical Motor Down Control	(13) I	(13) —
14 - 15	—	—	—	Not Occupied	—	—
(16) 16	(16) 1.5	(16) GN / VT	(16) 297	(16) Passenger Seat Front Vertical Motor Up Control	(16) I	(16) —

K40P Passenger Seat Adjuster Memory Module X3 (AHH / AKE / AVU)



5202284

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2309644-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 30-Way F 0.5 MQS Series(BK)

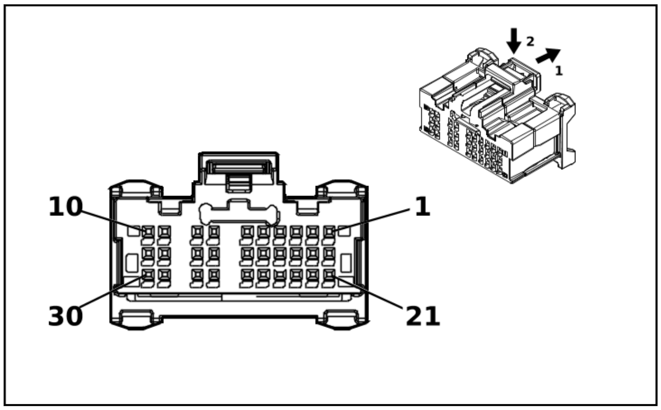
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

K40P Passenger Seat Adjuster Memory Module X3 (AHH / AKE / AVU)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.35	(9) WH	(9) 4100	(9) AUTOSAR CAN Bus [-] 4 Serial Data	(9) I	(9) —
(10) 10	(10) 0.35	(10) BU / VT	(10) 4101	(10) AUTOSAR CAN Bus [+] 4 Serial Data	(10) I	(10) —
11 - 17	—	—	—	Not Occupied	—	—
(18) 18	(18) 0.35	(18) GN / YE	(18) 4116	(18) Passenger Seat Adjuster Memory Module LIN Bus 2	(18) I	(18) —
(19) 19	(19) 0.35	(19) WH	(19) 4100	(19) AUTOSAR CAN Bus [-] 4 Serial Data	(19) I	(19) —
(20) 20	(20) 0.35	(20) BU / VT	(20) 4101	(20) AUTOSAR CAN Bus [+] 4 Serial Data	(20) I	(20) —
21	—	—	—	Not Occupied	—	—
(22) 22	(22) 0.35	(22) BN / VT	(22) 2452	(22) Seat Memory Module Configuration 2	(22) I	(22) —
(23) 23	(23) 0.35	(23) BN / VT	(23) 2452	(23) Seat Memory Module Configuration 2	(23) I	(23) —
24 - 30	—	—	—	Not Occupied	—	—

K56 Serial Data Gateway Module X1



5202284

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2309644-1
- Service Connector: 84766507
- Description: 30-Way F 0.5 MQS Series(BK)

Terminal Part Information

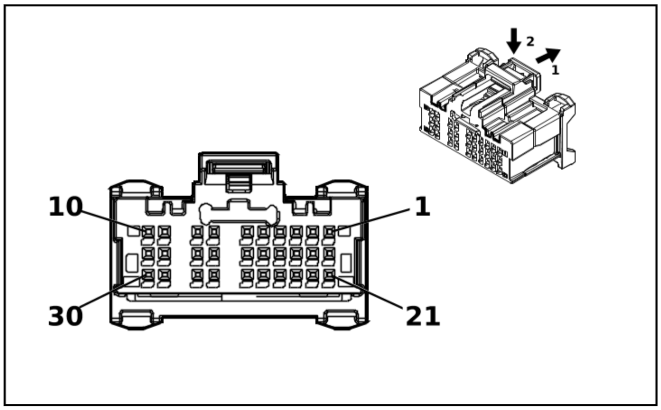
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	Not required	No Tool Required	No Tool Required

K56 Serial Data Gateway Module X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / BN	(1) 4940	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) BU / GN	(2) 4105	(2) AUTOSAR CAN Bus [+] 8 Serial Data	(2) I	(2) —
(3) 3	(3) 0.35	(3) WH / YE	(3) 4104	(3) AUTOSAR CAN Bus [-] 8 Serial Data	(3) I	(3) —
(4) 4	(4) 0.35	(4) BK / WH	(4) 851	(4) Signal Ground	(4) I	(4) —
(5) 5	(5) 0.35	(5) BU / BN	(5) 4987	(5) AUTOSAR CAN Bus [+] 1 Serial Data	(5) I	(5) —
(6) 6	(6) 0.35	(6) WH / RD	(6) 4986	(6) AUTOSAR CAN Bus [-] 1 Serial Data	(6) I	(6) —
(7) 7	(7) 0.35	(7) WH	(7) 4100	(7) AUTOSAR CAN Bus [-] 4 Serial Data	(7) I	(7) —
(8) 8	(8) 0.35	(8) BU / VT	(8) 4101	(8) AUTOSAR CAN Bus [+] 4 Serial Data	(8) I	(8) —
(9) 9	(9) 0.35	(9) WH	(9) 4976	(9) AUTOSAR CAN Bus [-] 3 Serial Data	(9) I	(9) —
(10) 10	(10) 0.35	(10) BU / BK	(10) 4977	(10) AUTOSAR CAN Bus [+] 3 Serial Data	(10) I	(10) —
11 - 12	—	—	—	Not Occupied	—	—
(13) 13	(13) 0.35	(13) WH / GY	(13) 4104	(13) AUTOSAR CAN Bus [-] 8 Serial Data	(13) I	(13) —
(14) 14	(14) 0.35	(14) BU / GY	(14) 4105	(14) AUTOSAR CAN Bus [+] 8 Serial Data	(14) I	(14) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(15) 15	(15) 0.35 (15) 0.35	(15) BU / BN (15) BU	(15) 4987 (15) 4987	(15) AUTOSAR CAN Bus [+] 1 Serial Data (15) AUTOSAR CAN Bus [+] 1 Serial Data	(15) I (15) II	(15) N06 (15) - N06
(16) 16	(16) 0.35 (16) 0.35	(16) WH / RD (16) WH	(16) 4986 (16) 4986	(16) AUTOSAR CAN Bus [-] 1 Serial Data (16) AUTOSAR CAN Bus [-] 1 Serial Data	(16) I (16) II	(16) N06 (16) - N06
(17) 17	(17) 0.35 (17) 0.35	(17) WH / BN (17) WH	(17) 4978 (17) 4978	(17) AUTOSAR CAN Bus [-] 2 Serial Data (17) AUTOSAR CAN Bus [-] 2 Serial Data	(17) I (17) I	(17) UGN (17) UHY
(18) 18	(18) 0.35 (18) 0.35	(18) BU / RD (18) BU / YE	(18) 4979 (18) 4979	(18) AUTOSAR CAN Bus [+] 2 Serial Data (18) AUTOSAR CAN Bus [+] 2 Serial Data	(18) I (18) I	(18) UGN (18) UHY
(19) 19	(19) 0.35	(19) BU / VT	(19) 4984	(19) AUTOSAR CAN Bus [-] 5 Serial Data	(19) I	(19) —
(20) 20	(20) 0.35	(20) BU / WH	(20) 4985	(20) AUTOSAR CAN Bus [+] 5 Serial Data	(20) I	(20) —
(21) 21	(21) 0.35	(21) GN	(21) 7209	(21) Ethernet Bus 3 [+]	(21) I	(21) —
(22) 22	(22) 0.35	(22) BU	(22) 7208	(22) Ethernet Bus 3 [-]	(22) I	(22) —
23 - 24	—	—	—	Not Occupied	—	—
(25) 25	(25) 0.35	(25) BU / BK	(25) 4987	(25) AUTOSAR CAN Bus [+] 1 Serial Data	(25) I	(25) —
(26) 26	(26) 0.35	(26) WH / YE	(26) 4986	(26) AUTOSAR CAN Bus [-] 1 Serial Data	(26) I	(26) —
(27) 27	(27) 0.35 (27) 0.35	(27) WH (27) WH / BN	(27) 4978 (27) 4978	(27) AUTOSAR CAN Bus [-] 2 Serial Data (27) AUTOSAR CAN Bus [-] 2 Serial Data	(27) I (27) I	(27) UGN (27) UHY
(28) 28	(28) 0.35 (28) 0.35	(28) BU / GN (28) BU / YE	(28) 4979 (28) 4979	(28) AUTOSAR CAN Bus [+] 2 Serial Data (28) AUTOSAR CAN Bus [+] 2 Serial Data	(28) I (28) I	(28) UGN (28) UHY
(29) 29	(29) 0.35	(29) BU / OG	(29) 4984	(29) AUTOSAR CAN Bus [-] 5 Serial Data	(29) I	(29) —
(30) 30	(30) 0.35	(30) BU / WH	(30) 4985	(30) AUTOSAR CAN Bus [+] 5 Serial Data	(30) I	(30) —

K56 Serial Data Gateway Module X2



5203942

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2309644-2
- Service Connector: 84766509
- Description: 30-Way F 0.5 MQS Series(BK with L-GY Front Housing)

Terminal Part Information

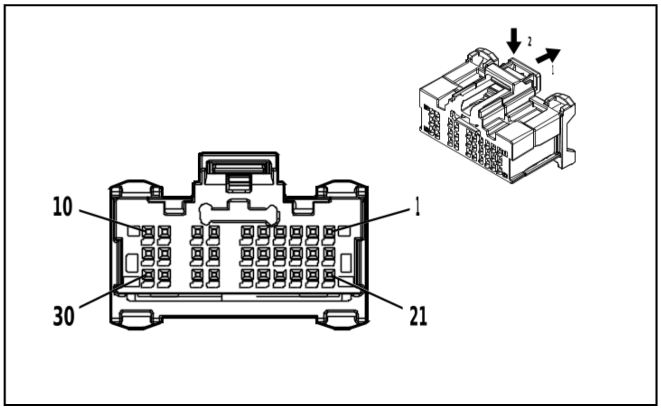
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	Service by Cable	EL-35616-58 (BK)	EL-38125-58

K56 Serial Data Gateway Module X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.35	(5) BK / GY	(5) 3559	(5) Passive Start Switch 2 Low Reference	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.35	(7) GN / VT	(7) 5199	(7) Run/Crank Relay Coil Control	(7) I	(7) —
8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.35	(9) BU	(9) 4973	(9) Ethernet Bus 1R [+]	(9) II	(9) —
(10) 10	(10) 0.35	(10) YE	(10) 4972	(10) Ethernet Bus 1R [-]	(10) II	(10) —
11 - 12	—	—	—	Not Occupied	—	—
(13) 13	(13) 0.35	(13) BU / BN	(13) 4983	(13) AUTOSAR CAN Bus [+] 7 Serial Data	(13) I	(13) —
(14) 14	(14) 0.35	(14) WH	(14) 4982	(14) AUTOSAR CAN Bus [-] 7 Serial Data	(14) I	(14) —
(15) 15	(15) 0.35	(15) GN / BK	(15) 3558	(15) Passive Start Switch Signal 2	(15) I	(15) —
(16) 16	(16) 0.35	(16) WH	(16) 4980	(16) AUTOSAR CAN Bus [-] 6 Serial Data	(16) I	(16) —
(17) 17	(17) 0.35	(17) GN	(17) 2578	(17) Private Serial Data Presentation CAN Bus [+] 1 Serial Data	(17) I	(17) —
(18) 18	(18) 0.35	(18) BN	(18) 2577	(18) Private Serial Data Presentation CAN Bus [-] 1 Serial Data	(18) I	(18) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(19) 19	(19) 0.35	(19) WH	(19) 7207	(19) Ethernet Bus 1 Enable Signal	(19) I	(19) —
20 - 22	—	—	—	Not Occupied	—	—
(23) 23	(23) 0.35	(23) BU / WH	(23) 4985	(23) AUTOSAR CAN Bus [+] 5 Serial Data	(23) I	(23) —
(24) 24	(24) 0.35	(24) BU / YE	(24) 4984	(24) AUTOSAR CAN Bus [-] 5 Serial Data	(24) I	(24) —
25	—	—	—	Not Occupied	—	—
(26) 26	(26) 0.35	(26) YE	(26) 4981	(26) AUTOSAR CAN Bus [+] 6 Serial Data	(26) I	(26) —
(27) 27	(27) 0.35	(27) VT	(27) 2580	(27) Private Serial Data Presentation CAN Bus [+] 2 Serial Data	(27) I	(27) —
(28) 28	(28) 0.35	(28) GY	(28) 2579	(28) Private Serial Data Presentation CAN Bus [-] 2 Serial Data	(28) I	(28) —
(29) 29	(29) 0.35	(29) WH	(29) 4975	(29) Ethernet Bus 1T [+]	(29) II	(29) —
(30) 30	(30) 0.35	(30) GN	(30) 4974	(30) Ethernet Bus 1T [-]	(30) II	(30) —

K56 Serial Data Gateway Module X3



4900333

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2309644-3
- Service Connector: 13519319
- Description: 30-Way F 0.5 MQS Series(BK with D-GY Front Housing)

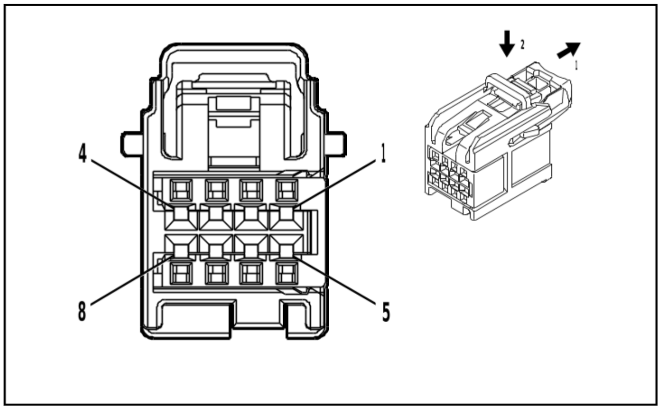
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Service by Cable	EL-35616-58 (BK)	EL-38125-58

K56 Serial Data Gateway Module X3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.35 (7) 0.35	(7) YE (7) BN	(7) 4758 (7) 7211	(7) Ethernet Bus 2 [+] (7) Ethernet Bus 4 [+]	(7) I (7) I	(7) IOK (7) IOR
(8) 8	(8) 0.35 (8) 0.35	(8) BU (8) GY	(8) 4757 (8) 7210	(8) Ethernet Bus 2 [-] (8) Ethernet Bus 4 [-]	(8) I (8) I	(8) IOK (8) IOR
(9) 9	(9) 0.35	(9) YE	(9) 4758	(9) Ethernet Bus 2 [+]	(9) I	(9) —
(10) 10	(10) 0.35	(10) BU	(10) 4757	(10) Ethernet Bus 2 [-]	(10) I	(10) —
11 - 26	—	—	—	Not Occupied	—	—
(27) 27	(27) 0.35	(27) GN	(27) 7217	(27) Ethernet Bus 7 [+]	(27) I	(27) —
(28) 28	(28) 0.35	(28) WH	(28) 7216	(28) Ethernet Bus 7 [-]	(28) I	(28) —
29 - 30	—	—	—	Not Occupied	—	—

K56U Special Purpose Vehicle Control Module



4935776

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 15526972
- Service Connector: 19370429
- Description: 8-Way F 0.64 OCS Series(BK)

Terminal Part Information

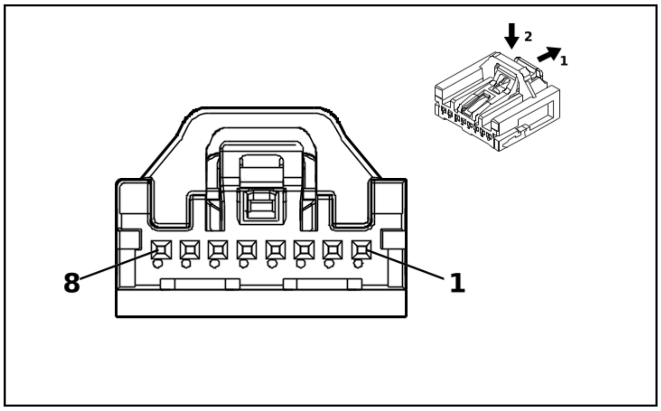
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

K56U Special Purpose Vehicle Control Module

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) RD / VT	(1) 4640	(1) Battery Positive Voltage	(1) I	(1) KGU
(2) 2	(2) 0.5	(2) BU	(2) 4987	(2) AUTOSAR CAN Bus [+] 1 Serial Data	(2) I	(2) KGU
(3) 3	(3) 0.5	(3) WH	(3) 4986	(3) AUTOSAR CAN Bus [-] 1 Serial Data	(3) I	(3) KGU

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(4) 4	(4) 0.75	(4) BK	(4) 1050	(4) Ground	(4) I	(4) KGU
5 - 8	—	—	—	Not Occupied	—	—

K60 Column Lock Module (N06)



5200269

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35068228
- Service Connector: 84769201
- Description: 8-Way F Mini 50 Series(BK)

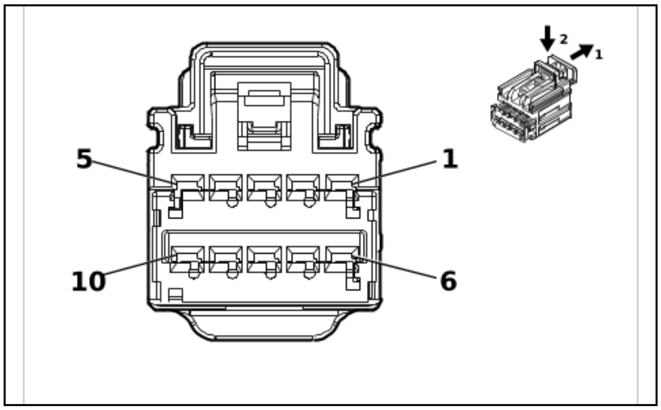
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

K60 Column Lock Module (N06)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / BN	(1) 4940	(1) Battery Positive Voltage	(1) I	(1) N06
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) BK / WH	(3) 851	(3) Signal Ground	(3) I	(3) N06
(4) 4	(4) 0.35	(4) BU	(4) 4987	(4) AUTOSAR CAN Bus [+] 1 Serial Data	(4) I	(4) N06
(5) 5	(5) 0.35	(5) BU / BN	(5) 4987	(5) AUTOSAR CAN Bus [+] 1 Serial Data	(5) I	(5) N06
(6) 6	(6) 0.35	(6) WH	(6) 4986	(6) AUTOSAR CAN Bus [-] 1 Serial Data	(6) I	(6) N06
(7) 7	(7) 0.35	(7) WH / RD	(7) 4986	(7) AUTOSAR CAN Bus [-] 1 Serial Data	(7) I	(7) N06
(8) 8	(8) 0.35	(8) BU / VT	(8) 807	(8) Ignition Off/Accessory Ignition Voltage	(8) I	(8) N06

K61 Sunroof Control Module (CF5)



6153939

Connector Part Information

- Harness Type: Sunroof Wiring Harness
- OEM Connector: 15512475
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5 OCS Series(BK)

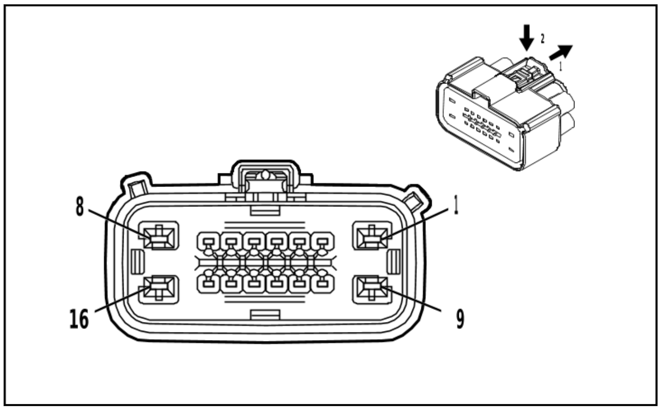
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

K61 Sunroof Control Module (CF5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.35	(6) GY / BN	(6) 2854	(6) Body Control Module LIN Bus 8	(6) I	(6) CF5
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 1.5	(8) RD / GY	(8) 4540	(8) Battery Positive Voltage	(8) I	(8) CF5
9	—	—	—	Not Occupied	—	—
(10) 10	(10) 1.5	(10) BK	(10) 1050	(10) Ground	(10) I	(10) CF5

K67 Trailer Brake Control Module (JL1)



4624589

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 34985-4016
- Service Connector: 13599889
- Description: 16-Way F 1.5, 2.8 MX Series, Sealed(GY)

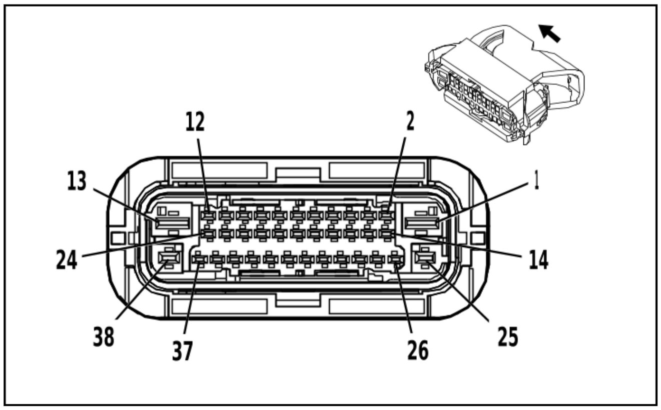
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13576377	J-35616-35 (VT)	J-38125-12A
II	85528055	J-35616-2A (GY)	J-38125-217

K67 Trailer Brake Control Module (JL1)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) RD / BN	(1) 3640	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH / BK	(2) 2223	(2) Trailer Brake Apply Signal	(2) II	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) YE / BK	(5) 2224	(5) Trailer Brake Enable Signal	(5) II	(5) —
6 - 7	—	—	—	Not Occupied	—	—
(8) 8	(8) 2.5	(8) BU	(8) 47	(8) Trailer Auxiliary Control	(8) I	(8) —
(9) 9	(9) 2.5	(9) BK	(9) 1850	(9) Ground	(9) I	(9) —
10 - 11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0.5	(12) GN / BU	(12) 2733	(12) Brake System Control Module LIN Bus 2	(12) II	(12) —
13 - 16	—	—	—	Not Occupied	—	—

K68 Trailer Lamp Control Module (UET)



5141918

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 35497871
- Service Connector: 86825459
- Description: 38-Way F 1.5, 2.8, 4.8 MCP Series, Sealed(BK with BN Inner Connector)

Terminal Part Information

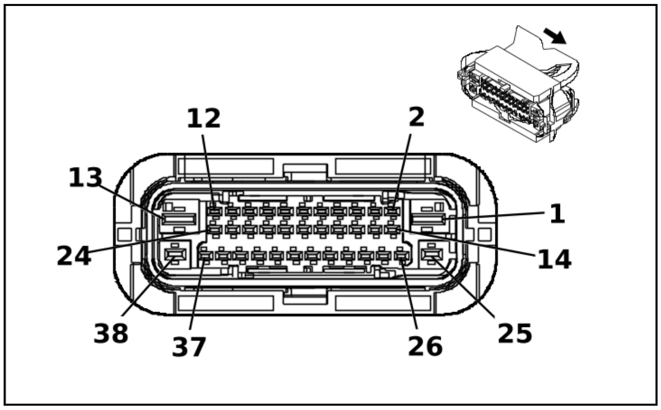
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19368624	J-35616-35 (VT)	J-38125-556
II	19369235	J-35616-14 (GN)	EL-38125-560A
III	85158596	J-35616-40 (BU)	J-38125-556

K68 Trailer Lamp Control Module (UET)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) RD / VT	(1) 5640	(1) Battery Positive Voltage	(1) III	(1) —
(2) 2	(2) 1	(2) YE	(2) 1618	(2) Left Rear Trailer Stop/Turn Lamp Control	(2) II	(2) —
(3) 3	(3) 1	(3) GN	(3) 1619	(3) Right Rear Trailer Stop/Turn Lamp Control	(3) II	(3) —
4 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 1	(7) GY	(7) 5189	(7) Trailer Backup Lamp Control	(7) II	(7) —
8 - 9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.35	(10) VT / WH	(10) 639	(10) Run/Crank Ignition 1 Voltage	(10) II	(10) —
(11) 11	(11) 0.5	(11) BN / YE	(11) 820	(11) Center High Mounted Stop Lamp Supply Voltage	(11) II	(11) —
12	—	—	—	Not Occupied	—	—
(13) 13	(13) 2.5	(13) BK	(13) 1750	(13) Ground	(13) III	(13) —
14 - 24	—	—	—	Not Occupied	—	—
(25) 25	(25) 1	(25) BN	(25) 2109	(25) Trailer Park Lamp Control	(25) I	(25) —
26	—	—	—	Not Occupied	—	—
(27) 27	(27) 0.5	(27) BU / VT	(27) 4101	(27) AUTOSAR CAN Bus [+] 4 Serial Data	(27) II	(27) —
(28) 28	(28) 0.5	(28) WH	(28) 4100	(28) AUTOSAR CAN Bus [-] 4 Serial Data	(28) II	(28) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(29) 29	(29) 0.5	(29) BU / VT	(29) 4101	(29) AUTOSAR CAN Bus [+] 4 Serial Data	(29) II	(29) —
(30) 30	(30) 0.5	(30) WH	(30) 4100	(30) AUTOSAR CAN Bus [-] 4 Serial Data	(30) II	(30) —
31 - 37	—	—	—	Not Occupied	—	—
(38) 38	(38) 2.5	(38) RD / YE	(38) 5840	(38) Battery Positive Voltage	(38) I	(38) —

K69 Transfer Case Control Module (NP0 / NQH)



5199340

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 35497867
- Service Connector: 86825458
- Description: 38-Way F 1.5, 2.8, 4.8 MCP Series, Sealed(BK with BN Inner Connector)

Terminal Part Information

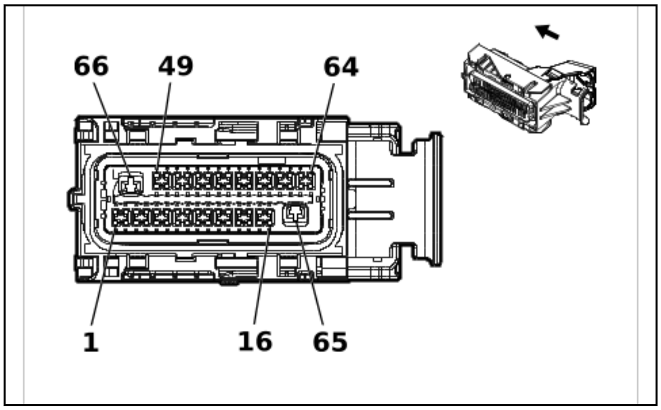
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19368624	J-35616-35 (VT)	J-38125-556
II	19369235	J-35616-14 (GN)	EL-38125-560A
III	85158596	J-35616-40 (BU)	J-38125-556

K69 Transfer Case Control Module (NP0 / NQH)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 3	(1) GN / RD	(1) 6042	(1) Battery Positive Voltage	(1) III	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) BU / YE	(3) 4979	(3) AUTOSAR CAN Bus [+] 2 Serial Data	(3) II	(3) —
(4) 4	(4) 0.5	(4) WH	(4) 4978	(4) AUTOSAR CAN Bus [-] 2 Serial Data	(4) II	(4) —
(5) 5	(5) 0.5	(5) WH / GN	(5) 7479	(5) Rotary Position Sensor Signal	(5) II	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) YE	(7) 7474	(7) Incremental Encoder Direction Signal	(7) II	(7) —
8	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(9) 9	(9) 0.5	(9) YE / WH	(9) 1695	(9) 4WD Locked Range Indicator Control	(9) II	(9) —
10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.5	(11) VT / GY	(11) 8017	(11) Secondary Axle Motor Relay Control	(11) II	(11) —
(12) 12	(12) 0.5	(12) GY / BK	(12) 1570	(12) Front Axle Actuator Control	(12) II	(12) —
(13) 13	(13) 4	(13) YE / VT	(13) 1553	(13) Transfer Case Motor Counter Clockwise Control	(13) III	(13) —
14	—	—	—	Not Occupied	—	—
(15) 15	(15) 0.5	(15) BU / YE	(15) 4979	(15) AUTOSAR CAN Bus [+] 2 Serial Data	(15) II	(15) —
(16) 16	(16) 0.5	(16) WH	(16) 4978	(16) AUTOSAR CAN Bus [-] 2 Serial Data	(16) II	(16) —
17	—	—	—	Not Occupied	—	—
(18) 18	(18) 0.5	(18) VT / GN	(18) 439	(18) Run/Crank Ignition 1 Voltage	(18) II	(18) —
(19) 19	(19) 0.5	(19) BU / GY	(19) 7473	(19) Incremental Encoder Impulse Signal	(19) II	(19) —
(20) 20	(20) 0.5	(20) WH / RD	(20) 7477	(20) Gear Position Sensor 5V Reference	(20) II	(20) —
21 - 23	—	—	—	Not Occupied	—	—
(24) 24	(24) 0.5	(24) GN	(24) 8015	(24) Transfer Case Motor Low Reference	(24) II	(24) —
(25) 25	(25) 2.5	(25) BK	(25) 450	(25) Ground	(25) I	(25) —
26	—	—	—	Not Occupied	—	—
(27) 27	(27) 0.5	(27) GN	(27) 8014	(27) Transfer Case Lock Solenoid Low Reference	(27) II	(27) —
28 - 29	—	—	—	Not Occupied	—	—
(30) 30	(30) 0.5	(30) YE / BK	(30) 7478	(30) Gear Position Sensor Low Reference	(30) II	(30) —
(31) 31	(31) 0.5	(31) WH / GN	(31) 7475	(31) Incremental Encoder Sensor Voltage Reference	(31) II	(31) —
32	—	—	—	Not Occupied	—	—
(33) 33	(33) 0.75	(33) BU	(33) 8013	(33) Transfer Case Lock Solenoid Control 2	(33) II	(33) —
(34) 34	(34) 0.75	(34) YE / BN	(34) 1569	(34) Transfer Case Lock Solenoid Valve Control	(34) II	(34) —
35	—	—	—	Not Occupied	—	—
(36) 36	(36) 0.5	(36) VT	(36) 7476	(36) Incremental Encoder Sensor Low Reference	(36) II	(36) —
37	—	—	—	Not Occupied	—	—
(38) 38	(38) 2.5	(38) YE / GY	(38) 1552	(38) Transfer Case Motor Clockwise Control	(38) I	(38) —

K71 Transmission Control Module (L3B)



6608989

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 216741-0002
- Service Connector: 85786014
- Description: 66-Way F 0.64, 2.8 MX123 Series, Sealed(BK with BK Terminal Position Assurance)

Terminal Part Information

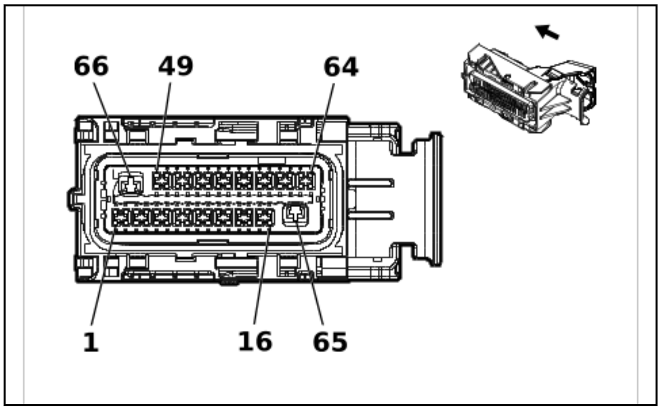
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13587518	J-35616-35 (VT)	J-38125-11A
II	19351723	J-35616-64B (L-BU)	J-38125-213

K71 Transmission Control Module (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / BU	(1) 4507	(1) Transmission Clutch H Control	(1) II	(1) —
(2) 2	(2) 0.5	(2) BU	(2) 6401	(2) Clutch Solenoid Valve B Control	(2) II	(2) —
(3) 3	(3) 0.5	(3) GN / WH	(3) 1530	(3) Transmission Line Pressure Control Solenoid Valve Control	(3) II	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) GY / RD	(5) 10817	(5) Lubricant Circuit Pressure Sensor 5 Volt Reference	(5) II	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) YE / GN	(7) 4170	(7) Transmission Output Shaft Speed Sensor Circuit 9V Reference	(7) II	(7) —
(8) 8	(8) 0.5	(8) YE / BU	(8) 4171	(8) Transmission Input Shaft Speed Sensor Circuit 9V Reference	(8) II	(8) —
9 - 10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.5	(11) BU / BK	(11) 10819	(11) Lubricant Circuit Pressure Sensor Low Reference	(11) II	(11) —
12	—	—	—	Not Occupied	—	—
(13) 13	(13) 0.5	(13) GN / VT	(13) 4510	(13) Transmission Intermediate Speed Signal	(13) II	(13) —
(14) 14	(14) 0.5	(14) GY / BU	(14) 6358	(14) Output Speed Signal	(14) II	(14) —
(15) 15	(15) 0.5	(15) GN / YE	(15) 6353	(15) Input Speed Signal	(15) II	(15) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
16	—	—	—	Not Occupied	—	—
(17) 17	(17) 0.5	(17) WH	(17) 4508	(17) Transmission Clutch G Control	(17) II	(17) —
(18) 18	(18) 0.5	(18) BN	(18) 6400	(18) Clutch Solenoid Valve A Control	(18) II	(18) —
(19) 19	(19) 0.5	(19) GY	(19) 6402	(19) Clutch Solenoid Valve C Control	(19) II	(19) —
(20) 20	(20) 0.5	(20) VT / WH	(20) 422	(20) Torque Converter Clutch Solenoid Valve Control	(20) II	(20) —
(21) 21	(21) 0.5	(21) GN / WH	(21) 6380	(21) Torque Converter Clutch Enable Solenoid Valve A Control	(21) II	(21) —
(22) 22	(22) 0.5	(22) YE / BN	(22) 6210	(22) Torque Converter Clutch Enable Solenoid Valve B Control	(22) II	(22) —
23	—	—	—	Not Occupied	—	—
(24) 24	(24) 0.5	(24) GN / WH	(24) 2968	(24) Transmission Auxiliary Fluid Pump Control	(24) II	(24) —
25 - 27	—	—	—	Not Occupied	—	—
(28) 28	(28) 0.5	(28) BK / BN	(28) 586	(28) Transmission Fluid Temperature Sensor Low Reference	(28) II	(28) —
29 - 32	—	—	—	Not Occupied	—	—
(33) 33	(33) 0.5	(33) GN / GY	(33) 6387	(33) Transmission High Side Driver 1 Control	(33) II	(33) —
34	—	—	—	Not Occupied	—	—
(35) 35	(35) 0.5	(35) VT / GN	(35) 439	(35) Run/Crank Ignition 1 Voltage	(35) II	(35) —
36	—	—	—	Not Occupied	—	—
(37) 37	(37) 0.5	(37) BU / YE	(37) 4979	(37) AUTOSAR CAN Bus [+] 2 Serial Data	(37) II	(37) —
(38) 38	(38) 0.5	(38) WH	(38) 4978	(38) AUTOSAR CAN Bus [-] 2 Serial Data	(38) II	(38) —
39 - 44	—	—	—	Not Occupied	—	—
(45) 45	(45) 0.5	(45) GN / YE	(45) 10816	(45) Lubricant Circuit Pressure Sensor Signal	(45) II	(45) —
46 - 48	—	—	—	Not Occupied	—	—
(49) 49	(49) 0.5	(49) GY / BN	(49) 6388	(49) Transmission High Side Driver 2 Control	(49) II	(49) —
50 - 52	—	—	—	Not Occupied	—	—
(53) 53	(53) 0.5	(53) BU / YE	(53) 4979	(53) AUTOSAR CAN Bus [+] 2 Serial Data	(53) II	(53) —
(54) 54	(54) 0.5	(54) WH	(54) 4978	(54) AUTOSAR CAN Bus [-] 2 Serial Data	(54) II	(54) —
55 - 62	—	—	—	Not Occupied	—	—
(63) 63	(63) 0.5	(63) BN / WH	(63) 585	(63) Transmission Fluid Temperature Sensor Signal	(63) II	(63) —
(64) 64	(64) 0.5	(64) BU / WH	(64) 3338	(64) Transmission Internal Mode Switch Mode Control X	(64) II	(64) —
(65) 65	(65) 1.5	(65) BK / WH	(65) 251	(65) Signal Ground	(65) I	(65) —
(66) 66	(66) 1.5	(66) RD / GN	(66) 1840	(66) Battery Positive Voltage	(66) I	(66) —

K71 Transmission Control Module (L84 / L87)



6608989

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 216741-0002
- Service Connector: 85786014
- Description: 66-Way F 0.64, 2.8 MX123 Series, Sealed(BK with BK Terminal Position Assurance)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13587518	J-35616-35 (VT)	J-38125-11A
II	19351723	J-35616-64B (L-BU)	J-38125-213

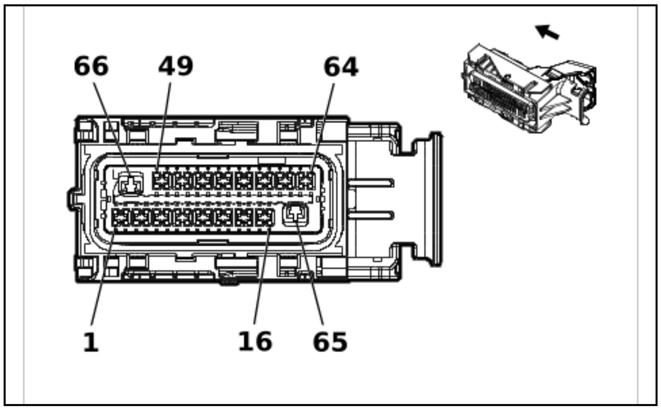
K71 Transmission Control Module (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / WH	(1) 422	(1) Torque Converter Clutch Solenoid Valve Control	(1) II	(1) —
(2) 2	(2) 0.5	(2) GY / GN	(2) 6403	(2) Clutch Solenoid Valve D Control	(2) II	(2) —
(3) 3	(3) 0.5	(3) WH / BU	(3) 4507	(3) Transmission Clutch H Control	(3) II	(3) —
(4) 4	(4) 0.5	(4) WH	(4) 4508	(4) Transmission Clutch G Control	(4) II	(4) —
5 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) YE / GN	(7) 4170	(7) Transmission Output Shaft Speed Sensor Circuit 9V Reference	(7) II	(7) —
(8) 8	(8) 0.5	(8) YE / BU	(8) 4171	(8) Transmission Input Shaft Speed Sensor Circuit 9V Reference	(8) II	(8) —
9 - 11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0.5	(12) GN / YE	(12) 6353	(12) Input Speed Signal	(12) II	(12) —
(13) 13	(13) 0.5	(13) GN / VT	(13) 4510	(13) Transmission Intermediate Speed Signal	(13) II	(13) —
(14) 14	(14) 0.5	(14) GY / BU	(14) 6358	(14) Output Speed Signal	(14) II	(14) —
(15) 15	(15) 0.5	(15) BN / WH	(15) 6254	(15) Transmission Input Speed Sensor Signal	(15) II	(15) —
16	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(17) 17	(17) 0.5	(17) GN / WH	(17) 1530	(17) Transmission Line Pressure Control Solenoid Valve Control	(17) II	(17) —
(18) 18	(18) 0.5	(18) YE / BN	(18) 6404	(18) Clutch Solenoid Valve E Control	(18) II	(18) —
(19) 19	(19) 0.5	(19) GY	(19) 6402	(19) Clutch Solenoid Valve C Control	(19) II	(19) —
(20) 20	(20) 0.5	(20) VT	(20) 4509	(20) Transmission Clutch F Control	(20) II	(20) —
(21) 21	(21) 0.5	(21) WH / YE	(21) 2159	(21) Park Inhibit Solenoid Assembly Control	(21) II	(21) —
(22) 22	(22) 0.5	(22) GN / BK	(22) 7819	(22) Default Disable Solenoid Control	(22) II	(22) —
23	—	—	—	Not Occupied	—	—
(24) 24	(24) 0.5	(24) GN / WH	(24) 2968	(24) Transmission Auxiliary Fluid Pump Control	(24) II	(24) —
25 - 27	—	—	—	Not Occupied	—	—
(28) 28	(28) 0.5	(28) BK / BN	(28) 586	(28) Transmission Fluid Temperature Sensor Low Reference	(28) II	(28) —
29 - 30	—	—	—	Not Occupied	—	—
(31) 31	(31) 0.5	(31) GN / VT	(31) 4621	(31) Engine Control Module LIN Bus 1	(31) II	(31) —
32	—	—	—	Not Occupied	—	—
(33) 33	(33) 0.5	(33) GN / GY	(33) 6387	(33) Transmission High Side Driver 1 Control	(33) II	(33) —
34	—	—	—	Not Occupied	—	—
(35) 35	(35) 0.5	(35) VT / GN	(35) 439	(35) Run/Crank Ignition 1 Voltage	(35) II	(35) —
36	—	—	—	Not Occupied	—	—
(37) 37	(37) 0.5	(37) BU / YE	(37) 4979	(37) AUTOSAR CAN Bus [+] 2 Serial Data	(37) II	(37) —
(38) 38	(38) 0.5	(38) WH	(38) 4978	(38) AUTOSAR CAN Bus [-] 2 Serial Data	(38) II	(38) —
39 - 48	—	—	—	Not Occupied	—	—
(49) 49	(49) 0.5	(49) GY / BN	(49) 6388	(49) Transmission High Side Driver 2 Control	(49) II	(49) —
50 - 52	—	—	—	Not Occupied	—	—
(53) 53	(53) 0.5	(53) BU / YE	(53) 4979	(53) AUTOSAR CAN Bus [+] 2 Serial Data	(53) II	(53) —
(54) 54	(54) 0.5	(54) WH	(54) 4978	(54) AUTOSAR CAN Bus [-] 2 Serial Data	(54) II	(54) —
55 - 58	—	—	—	Not Occupied	—	—
(59) 59	(59) 0.5	(59) VT / WH	(59) 6319	(59) Electronic Transmission Range Select Out of Park Switch 2 Signal	(59) II	(59) —
60	—	—	—	Not Occupied	—	—
(61) 61	(61) 0.5	(61) WH / YE	(61) 6317	(61) Electronic Transmission Range Select Out of Park Switch Signal	(61) II	(61) —
(62) 62	(62) 0.5	(62) BN	(62) 3706	(62) Electronic Transmission Range Select Switch Analog Signal 1	(62) II	(62) —
(63) 63	(63) 0.5	(63) BN / WH	(63) 585	(63) Transmission Fluid Temperature Sensor Signal	(63) II	(63) —
(64) 64	(64) 0.5	(64) BU / WH	(64) 3338	(64) Transmission Internal Mode Switch Mode Control X	(64) II	(64) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(65) 65	(65) 1.5	(65) BK / WH	(65) 251	(65) Signal Ground	(65) I	(65) —
(66) 66	(66) 1.5	(66) RD / GN	(66) 1840	(66) Battery Positive Voltage	(66) I	(66) —

K71 Transmission Control Module (LZ0 & (MQB / MQC))



6608989

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 216741-0002
- Service Connector: 85786014
- Description: 66-Way F 0.64, 2.8 MX123 Series, Sealed(BK with BK Terminal Position Assurance)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13587518	J-35616-35 (VT)	J-38125-11A
II	19351723	J-35616-64B (L-BU)	J-38125-213

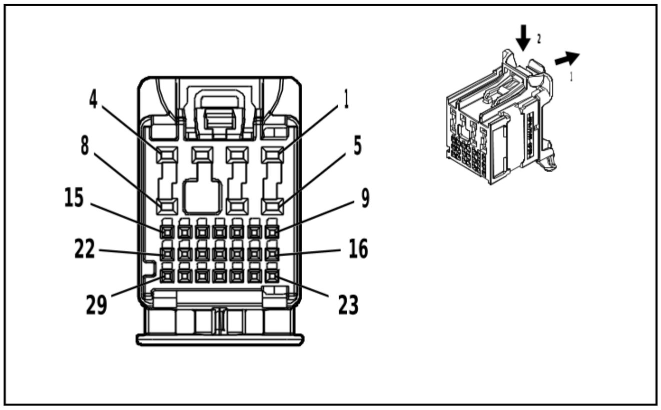
K71 Transmission Control Module (LZ0 & (MQB / MQC))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / WH	(1) 422	(1) Torque Converter Clutch Solenoid Valve Control	(1) II	(1) —
(2) 2	(2) 0.5	(2) GY / GN	(2) 6403	(2) Clutch Solenoid Valve D Control	(2) II	(2) —
(3) 3	(3) 0.5	(3) WH / BU	(3) 4507	(3) Transmission Clutch H Control	(3) II	(3) —
(4) 4	(4) 0.5	(4) WH	(4) 4508	(4) Transmission Clutch G Control	(4) II	(4) —
5 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) YE / GN	(7) 4170	(7) Transmission Output Shaft Speed Sensor Circuit 9V Reference	(7) II	(7) —
(8) 8	(8) 0.5	(8) YE / BU	(8) 4171	(8) Transmission Input Shaft Speed Sensor Circuit 9V Reference	(8) II	(8) —
9 - 11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0.5	(12) GN / YE	(12) 6353	(12) Input Speed Signal	(12) II	(12) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(13) 13	(13) 0.5	(13) GN / VT	(13) 4510	(13) Transmission Intermediate Speed Signal	(13) II	(13) —
(14) 14	(14) 0.5	(14) GY / BU	(14) 6358	(14) Output Speed Signal	(14) II	(14) —
(15) 15	(15) 0.5	(15) BN / WH	(15) 6254	(15) Transmission Input Speed Sensor Signal	(15) II	(15) —
16	—	—	—	Not Occupied	—	—
(17) 17	(17) 0.5	(17) GN / WH	(17) 1530	(17) Transmission Line Pressure Control Solenoid Valve Control	(17) II	(17) —
(18) 18	(18) 0.5	(18) YE / BN	(18) 6404	(18) Clutch Solenoid Valve E Control	(18) II	(18) —
(19) 19	(19) 0.5	(19) GY	(19) 6402	(19) Clutch Solenoid Valve C Control	(19) II	(19) —
(20) 20	(20) 0.5	(20) VT	(20) 4509	(20) Transmission Clutch F Control	(20) II	(20) —
(21) 21	(21) 0.5	(21) WH / YE	(21) 2159	(21) Park Inhibit Solenoid Assembly Control	(21) II	(21) —
(22) 22	(22) 0.5	(22) GN / BK	(22) 7819	(22) Default Disable Solenoid Control	(22) II	(22) —
23	—	—	—	Not Occupied	—	—
(24) 24	(24) 0.5	(24) GN / WH	(24) 2968	(24) Transmission Auxiliary Fluid Pump Control	(24) II	(24) —
25 - 27	—	—	—	Not Occupied	—	—
(28) 28	(28) 0.5	(28) BK / BN	(28) 586	(28) Transmission Fluid Temperature Sensor Low Reference	(28) II	(28) —
29 - 30	—	—	—	Not Occupied	—	—
(31) 31	(31) 0.5	(31) GN / VT	(31) 4621	(31) Engine Control Module LIN Bus 1	(31) II	(31) —
32	—	—	—	Not Occupied	—	—
(33) 33	(33) 0.5	(33) GN / GY	(33) 6387	(33) Transmission High Side Driver 1 Control	(33) II	(33) —
34	—	—	—	Not Occupied	—	—
(35) 35	(35) 0.5	(35) VT / GN	(35) 439	(35) Run/Crank Ignition 1 Voltage	(35) II	(35) —
36	—	—	—	Not Occupied	—	—
(37) 37	(37) 0.5	(37) BU / YE	(37) 4979	(37) AUTOSAR CAN Bus [+] 2 Serial Data	(37) II	(37) —
(38) 38	(38) 0.5	(38) WH	(38) 4978	(38) AUTOSAR CAN Bus [-] 2 Serial Data	(38) II	(38) —
39 - 48	—	—	—	Not Occupied	—	—
(49) 49	(49) 0.5	(49) GY / BN	(49) 6388	(49) Transmission High Side Driver 2 Control	(49) II	(49) —
50 - 52	—	—	—	Not Occupied	—	—
(53) 53	(53) 0.5	(53) BU / YE	(53) 4979	(53) AUTOSAR CAN Bus [+] 2 Serial Data	(53) II	(53) —
(54) 54	(54) 0.5	(54) WH	(54) 4978	(54) AUTOSAR CAN Bus [-] 2 Serial Data	(54) II	(54) —
55 - 58	—	—	—	Not Occupied	—	—
(59) 59	(59) 0.5	(59) VT / WH	(59) 6319	(59) Electronic Transmission Range Select Out of Park Switch 2 Signal	(59) II	(59) —
60	—	—	—	Not Occupied	—	—
(61) 61	(61) 0.5	(61) WH / YE	(61) 6317	(61) Electronic Transmission Range Select Out of Park Switch Signal	(61) II	(61) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(62) 62	(62) 0.5	(62) BN	(62) 3706	(62) Electronic Transmission Range Select Switch Analog Signal 1	(62) II	(62) —
(63) 63	(63) 0.5	(63) BN / WH	(63) 585	(63) Transmission Fluid Temperature Sensor Signal	(63) II	(63) —
(64) 64	(64) 0.5	(64) BU / WH	(64) 3338	(64) Transmission Internal Mode Switch Mode Control X	(64) II	(64) —
(65) 65	(65) 1.5	(65) BK / WH	(65) 251	(65) Signal Ground	(65) I	(65) —
(66) 66	(66) 1.5	(66) RD / GN	(66) 1840	(66) Battery Positive Voltage	(66) I	(66) —

K73 Telematic Control Module X1



4496253

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160014-0014
- Service Connector: 13534974
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series(BK with GY Inner Connector)

Terminal Part Information

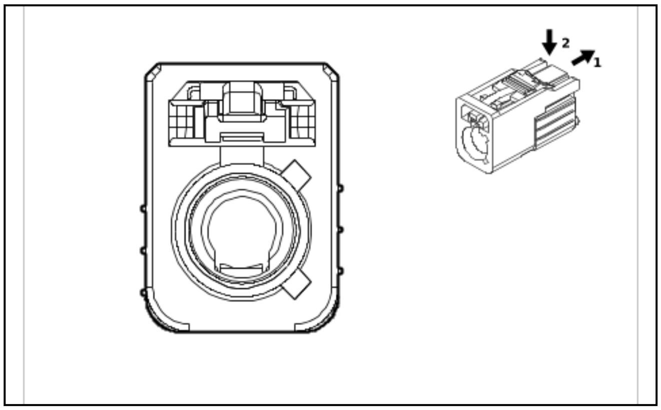
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	84729890	J-35616-12 (BU)	J-38125-215A
III	Service by Cable	EL-35616-58 (BK)	EL-38125-58

K73 Telematic Control Module X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / YE	(1) 3040	(1) Battery Positive Voltage	(1) II	(1) —
2 - 3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.75	(4) BK / WH	(4) 1051	(4) Signal Ground	(4) II	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.35	(6) GN / BK	(6) 2515	(6) Telematics Switch Supply Voltage	(6) II	(6) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
7 - 8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.35	(9) BU / YE	(9) 4984	(9) AUTOSAR CAN Bus [-] 5 Serial Data	(9) I	(9) —
(10) 10	(10) 0.35	(10) BU / WH	(10) 4985	(10) AUTOSAR CAN Bus [+] 5 Serial Data	(10) I	(10) —
(11) 11	(11) 0.35	(11) GN / WH	(11) 2514	(11) Telematics Switch Signal	(11) I	(11) —
12	—	—	—	Not Occupied	—	—
(13) 13	(13) 0.35	(13) BARE	(13) 1792	(13) Low Reference	(13) I	(13) —
(14) 14	(14) 0.35	(14) BK / GY	(14) 5152	(14) Voice Recognition Audio [-] Control	(14) I	(14) —
(15) 15	(15) 0.35	(15) GY / YE	(15) 5149	(15) Voice Recognition Audio Signal	(15) I	(15) —
(16) 16	(16) 0.35	(16) BU / YE	(16) 4984	(16) AUTOSAR CAN Bus [-] 5 Serial Data	(16) I	(16) —
(17) 17	(17) 0.35	(17) BU / WH	(17) 4985	(17) AUTOSAR CAN Bus [+] 5 Serial Data	(17) I	(17) —
18	—	—	—	Not Occupied	—	—
(19) 19	(19) 0.35	(19) YE / VT	(19) 2516	(19) Telematics Switch Green LED Indicator Control	(19) I	(19) —
20	—	—	—	Not Occupied	—	—
(21) 21	(21) 0.35	(21) BK / BN	(21) 654	(21) Cellular Telephone Microphone Low Reference	(21) I	(21) —
(22) 22	(22) 0.35	(22) BU	(22) 655	(22) Cellular Telephone Microphone Signal	(22) I	(22) —
23 - 25	—	—	—	Not Occupied	—	—
(26) 26	(26) 0.35	(26) BN / WH	(26) 2517	(26) Telematics Switch Red LED Indicator Control	(26) I	(26) —
27	—	—	—	Not Occupied	—	—
(28) 28	(28) 0.35	(28) BN	(28) 7211	(28) Ethernet Bus 4 [+]	(28) III	(28) —
(29) 29	(29) 0.35	(29) GY	(29) 7210	(29) Ethernet Bus 4 [-]	(29) III	(29) —

K73 Telematic Control Module X2



5630760

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33340312
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(VT)

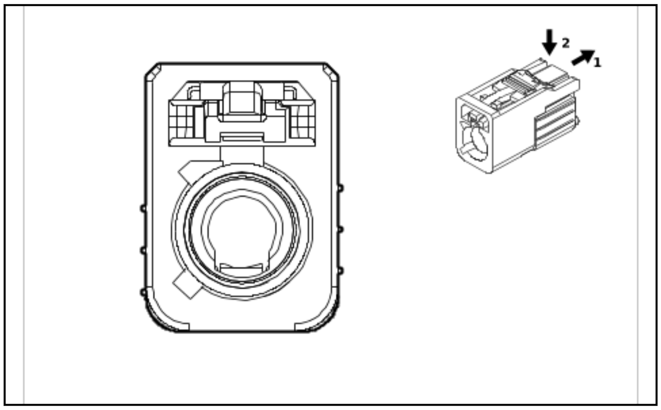
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K73 Telematic Control Module X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	(Cell only) Coaxial Antenna Cell Phone Signal	I	—

K73 Telematic Control Module X3



5630785

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33340314
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BN)

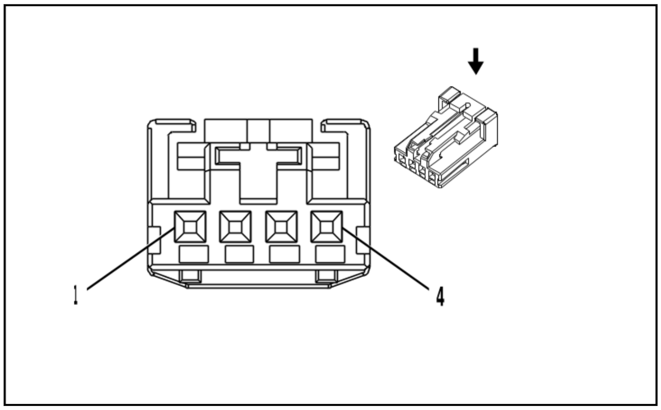
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K73 Telematic Control Module X3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	(GPS/Cell) Coaxial Antenna Cell/GPS combined Signal	I	—

K77 Remote Function Actuator Module (AVJ / AQQ)



2717162

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: 19367524
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

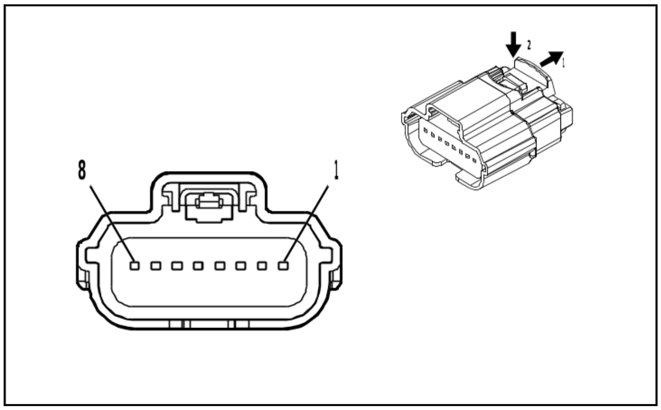
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

K77 Remote Function Actuator Module (AVJ / AQQ)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / VT	(1) 2640	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN / YE	(2) 2862	(2) Body Control Module LIN Bus 16	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.75	(4) BK / WH	(4) 1451	(4) Signal Ground	(4) I	(4) —

K85P Restraints Occupant Classification System Module - Passenger (AL0)



4708234

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 31404-9110
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed(BK)

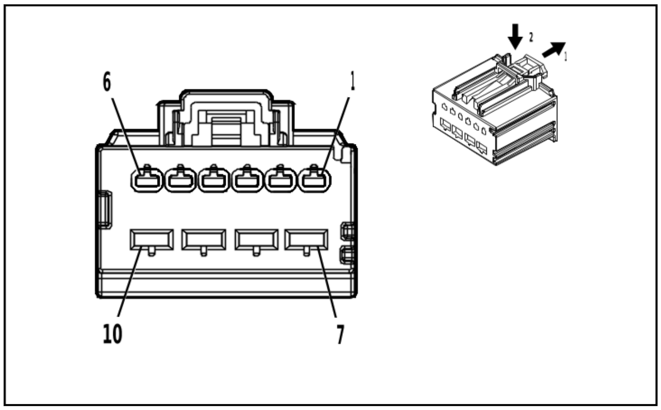
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

K85P Restraints Occupant Classification System Module - Passenger (AL0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / GN	(1) 4440	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU	(2) 4987	(2) AUTOSAR CAN Bus [+] 1 Serial Data	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU	(3) 4987	(3) AUTOSAR CAN Bus [+] 1 Serial Data	(3) I	(3) —
(4) 4	(4) 0.5	(4) WH	(4) 4986	(4) AUTOSAR CAN Bus [-] 1 Serial Data	(4) I	(4) —
(5) 5	(5) 0.5	(5) WH	(5) 4986	(5) AUTOSAR CAN Bus [-] 1 Serial Data	(5) I	(5) —
(6) 6	(6) 0.5	(6) BK / WH	(6) 1251	(6) Signal Ground	(6) I	(6) —
(7) 7	(7) 0.5	(7) OG / BN	(7) 3947	(7) Passenger Automatic Locking Retractor Switch Signal	(7) I	(7) AL0
(8) 8	(8) 0.5	(8) GY / OG	(8) 3946	(8) Passenger Automatic Locking Retractor Switch Low Reference	(8) I	(8) AL0

K99 Steering Column Control Module X1 (N38)



5035058

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 31372-1600
- Service Connector: 13525907
- Description: 10-Way F 1.5, 2.8 MX Series(BK)

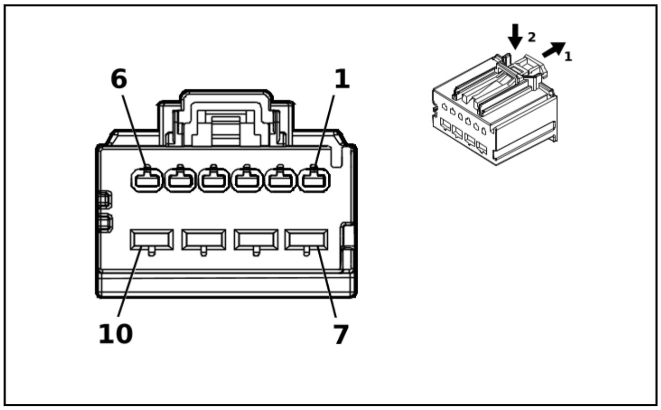
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19300432	J-35616-2A (GY)	J-38125-557
II	85544080	J-35616-4A (PU)	J-38125-11A

K99 Steering Column Control Module X1 (N38)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BK	(1) 2020	(1) Steering Column Tilt and Telescope Switch Feedback Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / WH	(2) 7530	(2) Driver Seat Adjuster Memory Module LIN Bus 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) GN / BN	(3) 2095	(3) Steering Column Tilt and Telescope Switch Rearward Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) BN / GY	(4) 2096	(4) Steering Column Tilt and Telescope Switch Up Signal	(4) I	(4) —
(5) 5	(5) 0.5	(5) YE / BN	(5) 2097	(5) Steering Column Tilt and Telescope Switch Down Signal	(5) I	(5) —
(6) 6	(6) 0.5	(6) BU / YE	(6) 2094	(6) Steering Column Tilt and Telescope Switch Forward Signal	(6) I	(6) —
(7) 7	(7) 0.75	(7) RD / VT	(7) 4640	(7) Battery Positive Voltage	(7) II	(7) —
(8) 8	(8) 1.5	(8) BK	(8) 1050	(8) Ground	(8) II	(8) —
9 - 10	—	—	—	Not Occupied	—	—

K99 Steering Column Control Module X2 (N38)



5190551

Connector Part Information

- Harness Type: Steering Column Tilt and Telescope Wheel Actuator Motor Harness
- OEM Connector: 31372-1700
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 MX Series(GY)

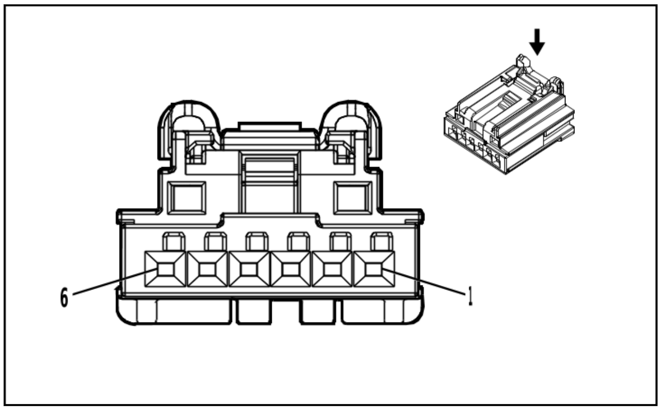
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K99 Steering Column Control Module X2 (N38)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) YE	(1) 2153	(1) Steering Column Telescope Motor Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) WH	(2) 2152	(2) Steering Column Telescope Motor Low Reference	(2) I	(2) —
(3) 3	(3) 0.35	(3) BN	(3) 2154	(3) Steering Column Tilt Motor Signal	(3) I	(3) —
(4) 4	(4) 0.35	(4) BU	(4) 2157	(4) Steering Column Tilt Motor Low Reference	(4) I	(4) —
5 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 1	(7) GN	(7) 2098	(7) Steering Column Telescope Motor Forward Control	(7) I	(7) —
(8) 8	(8) 1	(8) RD	(8) 2110	(8) Steering Column Telescope Motor Rearward Control	(8) I	(8) —
(9) 9	(9) 1	(9) OG	(9) 2112	(9) Steering Column Tilt Motor Down Control	(9) I	(9) —
(10) 10	(10) 1	(10) VT	(10) 2111	(10) Steering Column Tilt Motor Up Control	(10) I	(10) —

K104D Front Seat Bladder Control Module - Driver (((AVK / A45) - AF6) / (AVK - A45))



5020940

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2035363-6
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

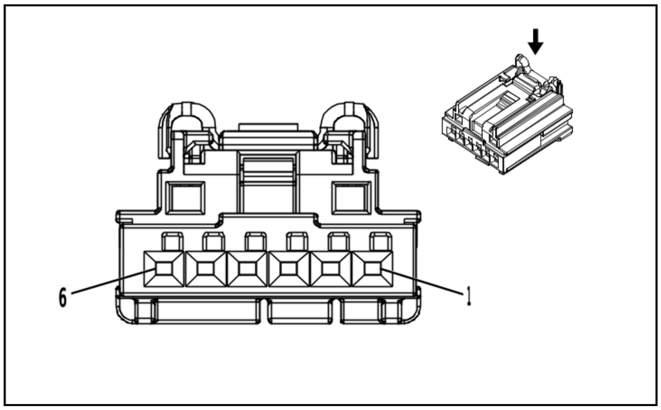
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

K104D Front Seat Bladder Control Module - Driver (((AVK / A45) - AF6) / (AVK - A45))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / BN	(1) 2240	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / GY	(2) 3758	(2) Driver Seat Adjuster Memory Module LIN Bus 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) WH / BU	(3) 4891	(3) Driver Seat Lumbar/Bolster Pump Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 1550	(4) Ground	(4) I	(4) —
(5) 5	(5) 0.5	(5) BN / BK	(5) 2305	(5) Driver Seat Bolster Pump Low Reference	(5) I	(5) —
6	—	—	—	Not Occupied	—	—

K104DP Front Seat Bladder Control Module - Driver Primary (A45 & AF6)



3960313

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

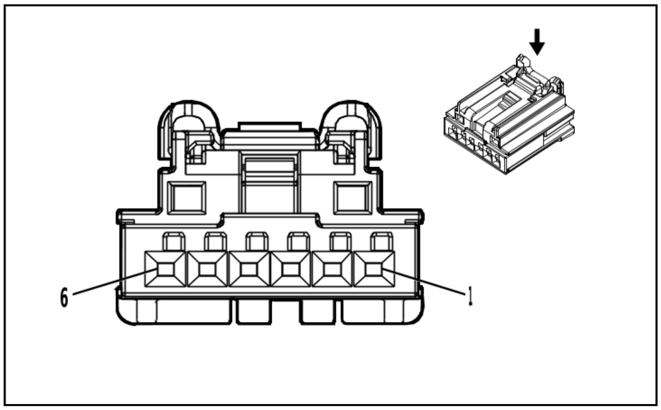
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

K104DP Front Seat Bladder Control Module - Driver Primary (A45 & AF6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / BN	(1) 2240	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / GY	(2) 3758	(2) Driver Seat Adjuster Memory Module LIN Bus 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) WH / BU	(3) 4891	(3) Driver Seat Lumbar/Bolster Pump Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 1550	(4) Ground	(4) I	(4) —
(5) 5	(5) 0.5	(5) BN / BK	(5) 2305	(5) Driver Seat Bolster Pump Low Reference	(5) I	(5) —
(6) 6	(6) 0.5	(6) GN / BK	(6) 2637	(6) Front Seat Bolster Memory Module - Driver LIN Bus 1	(6) I	(6) —

K104DS Front Seat Bladder Control Module - Driver Secondary (A45 & AF6)



5020940

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2035363-6
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

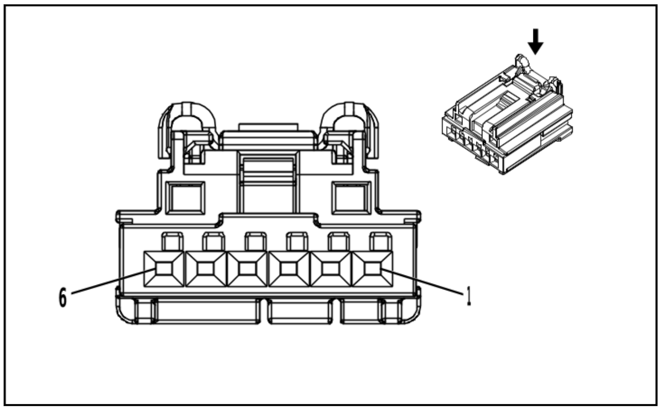
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

K104DS Front Seat Bladder Control Module - Driver Secondary (A45 & AF6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / BN	(1) 2240	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / BK	(2) 2637	(2) Front Seat Bolster Memory Module - Driver LIN Bus 1	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.5	(4) BK	(4) 1550	(4) Ground	(4) I	(4) —
5 - 6	—	—	—	Not Occupied	—	—

K104P Front Seat Bladder Control Module - Passenger (AVU - (AHH / AKE))



3960313

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

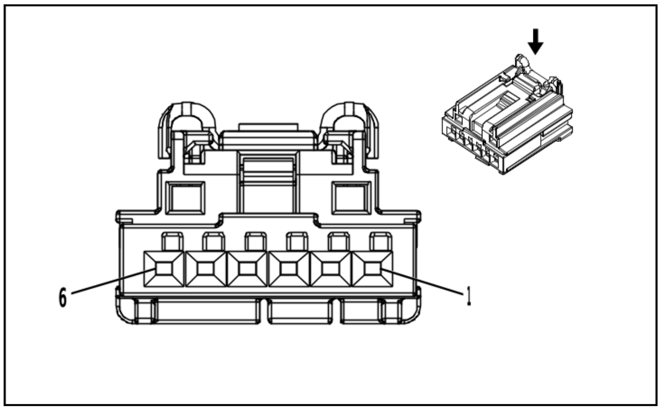
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

K104P Front Seat Bladder Control Module - Passenger (AVU - (AHH / AKE))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / BN	(1) 2240	(1) Battery Positive Voltage	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) GY / WH	(3) 4890	(3) Passenger Seat Lumbar/Bolster Pump Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 1350	(4) Ground	(4) I	(4) —
(5) 5	(5) 0.5	(5) BK / BU	(5) 2194	(5) Passenger Seat Position Switch Low Reference	(5) I	(5) —
(6) 6	(6) 0.5	(6) YE / GN	(6) 1068	(6) Passenger Seat Lumbar Support Switch Analog Signal	(6) I	(6) —

K104PP Front Seat Bladder Control Module - Passenger Primary (AVU & (AHH / AKE))



3960313

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

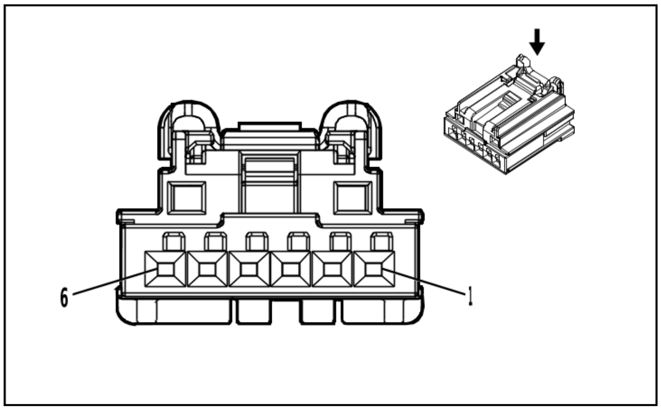
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

K104PP Front Seat Bladder Control Module - Passenger Primary (AVU & (AHH / AKE))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / BN	(1) 2240	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / YE	(2) 4116	(2) Passenger Seat Adjuster Memory Module LIN Bus 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) GY / WH	(3) 4890	(3) Passenger Seat Lumbar/Bolster Pump Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 1350	(4) Ground	(4) I	(4) —
(5) 5	(5) 0.5	(5) GY / BK	(5) 2306	(5) Passenger Seat Bolster Pump Low Reference	(5) I	(5) —
(6) 6	(6) 0.5	(6) GN / BU	(6) 2638	(6) Front Seat Bolster Memory Module - Passenger LIN Bus 1	(6) I	(6) —

K104PS Front Seat Bladder Control Module - Passenger Secondary (AVU & (AHH / AKE))



5020940

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2035363-6
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

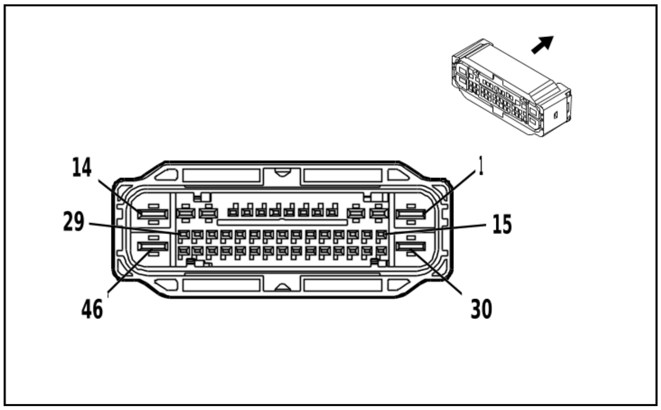
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

K104PS Front Seat Bladder Control Module - Passenger Secondary (AVU & (AHH / AKE))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / BN	(1) 2240	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / BU	(2) 2638	(2) Front Seat Bolster Memory Module - Passenger LIN Bus 1	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.5	(4) BK	(4) 1350	(4) Ground	(4) I	(4) —
5 - 6	—	—	—	Not Occupied	—	—

K111 Fuel Pump Power Control Module (FHS)



4162046

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 35492372
- Service Connector: 85090369
- Description: 46-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(GY)

Terminal Part Information

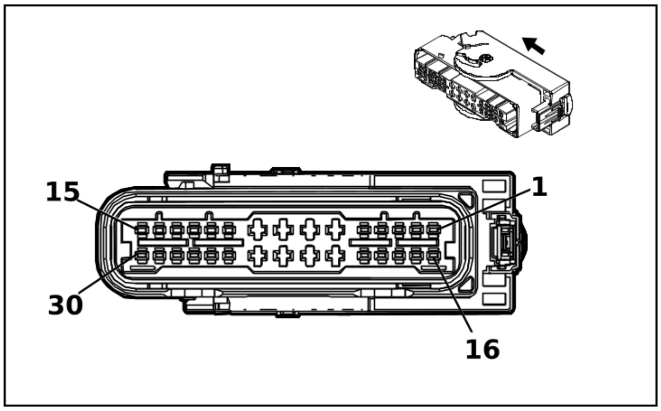
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13575368	J-35616-35 (VT)	J-38125-556
II	19370818	J-35616-12 (BU)	J-38125-553
III	84634921	J-35616-42 (RD)	J-38125-212

K111 Fuel Pump Power Control Module (FHS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) WH / BN	(1) 4138	(1) Fuel Pump Supply Voltage Phase 3	(1) III	(1) —
(2) 2	(2) 2.5	(2) GY	(2) 120	(2) Fuel Pump Control	(2) I	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) BK / GY	(5) 3802	(5) Fuel Composition Sensor Low Reference	(5) II	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) WH	(7) 4055	(7) Private Serial Data Powertrain CAN Bus [+] Serial Data	(7) II	(7) —
(8) 8	(8) 0.5	(8) BU / GY	(8) 4054	(8) Private Serial Data Powertrain CAN Bus [-] Serial Data	(8) II	(8) —
9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.5	(10) VT / GN	(10) 4320	(10) Powertrain Sensor Bus Enable	(10) II	(10) —
(11) 11	(11) 0.5	(11) GN / GY	(11) 465	(11) Fuel Pump Primary Relay Control	(11) II	(11) —
12 - 13	—	—	—	Not Occupied	—	—
(14) 14	(14) 2.5	(14) BK	(14) 1650	(14) Ground	(14) III	(14) —
(15) 15	(15) 0.5	(15) WH	(15) 7444	(15) Fuel Pump Assembly Shield Ground	(15) II	(15) —
(16) 16	(16) 0.5	(16) VT / BN	(16) 3803	(16) Fuel Composition Sensor Signal	(16) II	(16) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
17 - 18	—	—	—	Not Occupied	—	—
(19) 19	(19) 0.5	(19) BN / RD	(19) 7445	(19) Fuel Line Pressure Sensor 5V Reference	(19) II	(19) —
(20) 20	(20) 0.5	(20) BU / WH	(20) 7446	(20) Fuel Pressure Sensor Signal	(20) II	(20) —
(21) 21	(21) 0.5	(21) BK / GN	(21) 6281	(21) Fuel Level Sensor Low Reference	(21) II	(21) —
22	—	—	—	Not Occupied	—	—
(23) 23	(23) 0.5	(23) BK / BN	(23) 6284	(23) Fuel Tank Pressure Sensor Low Reference	(23) II	(23) —
24 - 29	—	—	—	Not Occupied	—	—
(30) 30	(30) 2.5	(30) YE / GY	(30) 4137	(30) Fuel Pump Supply Voltage Phase 2	(30) III	(30) —
31 - 34	—	—	—	Not Occupied	—	—
(35) 35	(35) 0.5	(35) BK / YE	(35) 7447	(35) Fuel Pressure Sensor Low Reference	(35) II	(35) —
36	—	—	—	Not Occupied	—	—
(37) 37	(37) 0.5	(37) BU / GN	(37) 1936	(37) Primary Fuel Level Sensor Signal	(37) II	(37) —
38	—	—	—	Not Occupied	—	—
(39) 39	(39) 0.5	(39) YE / RD	(39) 2709	(39) Fuel Tank Pressure Sensor 5V Reference	(39) II	(39) —
(40) 40	(40) 0.5	(40) BU / GN	(40) 890	(40) Fuel Tank Pressure Sensor Signal	(40) II	(40) FHS
41 - 42	—	—	—	Not Occupied	—	—
(43) 43	(43) 0.5	(43) WH	(43) 1310	(43) EVAP Vent Solenoid Valve Control	(43) II	(43) —
44 - 45	—	—	—	Not Occupied	—	—
(46) 46	(46) 2.5	(46) RD / VT	(46) 1940	(46) Battery Positive Voltage	(46) III	(46) —

K111 Fuel Pump Power Control Module (FHX / FJW)



3240109

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 5-2109446-2
- Service Connector: 86545828
- Description: 30-Way F 1.5, 2.8 MCP Series, Sealed(BK)

Terminal Part Information

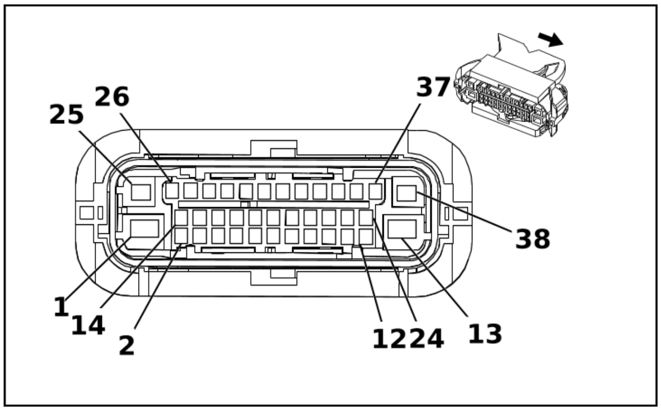
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19329958	J-35616-2A (GY)	J-38125-217
II	19371214	J-35616-35 (VT)	J-38125-556

K111 Fuel Pump Power Control Module (FHX / FJW)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.5	(2) BU / YE	(2) 6861	(2) Water In Fuel Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / BU	(3) 6863	(3) Water In Fuel Sensor Low Reference	(3) I	(3) —
(4) 4	(4) 0.5	(4) BN / GY	(4) 7072	(4) Fuel Temperature Sensor 1 Signal	(4) I	(4) —
5 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 2.5	(7) RD / VT	(7) 1940	(7) Battery Positive Voltage	(7) II	(7) —
(8) 8	(8) 2.5	(8) GY	(8) 120	(8) Fuel Pump Control	(8) II	(8) —
(9) 9	(9) 2.5	(9) YE / GY	(9) 4137	(9) Fuel Pump Supply Voltage Phase 2	(9) II	(9) —
(10) 10	(10) 0.5	(10) YE / RD	(10) 2709	(10) Fuel Tank Pressure Sensor 5V Reference	(10) I	(10) —
(11) 11	(11) 0.5	(11) BU / WH	(11) 890	(11) Fuel Tank Pressure Sensor Signal	(11) I	(11) FJW
(12) 12	(12) 0.5	(12) BN / RD	(12) 7445	(12) Fuel Line Pressure Sensor 5V Reference	(12) I	(12) —
(13) 13	(13) 0.5	(13) BU / GN	(13) 1936	(13) Primary Fuel Level Sensor Signal	(13) I	(13) —
14	—	—	—	Not Occupied	—	—
(15) 15	(15) 0.5	(15) BU / GY	(15) 4054	(15) Private Serial Data Powertrain CAN Bus [-] Serial Data	(15) I	(15) —
(16) 16	(16) 0.5	(16) VT / GN	(16) 4320	(16) Powertrain Sensor Bus Enable	(16) I	(16) —
17	—	—	—	Not Occupied	—	—
(18) 18	(18) 0.5	(18) GN / GY	(18) 465	(18) Fuel Pump Primary Relay Control	(18) I	(18) —
(19) 19	(19) 0.5	(19) BN / WH	(19) 7073	(19) Fuel Temperature Sensor 1 Low Reference	(19) I	(19) —
20	—	—	—	Not Occupied	—	—
(21) 21	(21) 0.5	(21) WH	(21) 1310	(21) EVAP Vent Solenoid Valve Control	(21) II	(21) —
(22) 22	(22) 2.5	(22) BK	(22) 1650	(22) Ground	(22) II	(22) —
(23) 23	(23) 0.5	(23) WH	(23) 7444	(23) Fuel Pump Assembly Shield Ground	(23) II	(23) —
(24) 24	(24) 2.5	(24) WH / BN	(24) 4138	(24) Fuel Pump Supply Voltage Phase 3	(24) II	(24) —
(25) 25	(25) 0.5	(25) BK / BN	(25) 6284	(25) Fuel Tank Pressure Sensor Low Reference	(25) I	(25) —
(26) 26	(26) 0.5	(26) BU / WH	(26) 7446	(26) Fuel Pressure Sensor Signal	(26) I	(26) —
(27) 27	(27) 0.5	(27) BK / YE	(27) 7447	(27) Fuel Pressure Sensor Low Reference	(27) I	(27) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(28) 28	(28) 0.5	(28) BK / GN	(28) 6281	(28) Fuel Level Sensor Low Reference	(28) I	(28) —
29	—	—	—	Not Occupied	—	—
(30) 30	(30) 0.5	(30) WH	(30) 4055	(30) Private Serial Data Powertrain CAN Bus [+] Serial Data	(30) I	(30) —

K115 Reductant Control Module (LZ0 & FHX)



3240110

Connector Part Information

- Harness Type: Emission Reduction Fluid Tank Reservoir Wire Harness
- OEM Connector: 15498534
- Service Connector: Service by Harness - See Part Catalog
- Description: 38-Way F 1.5 CTS, 2.8 MCP, 4.8 MCP Series, Sealed(BK with BK Inner Connector)

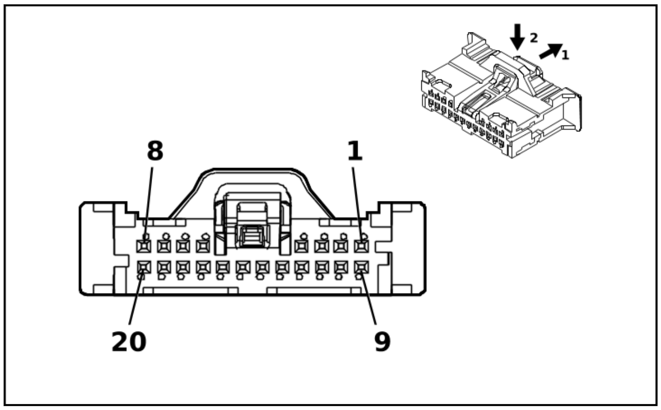
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

K115 Reductant Control Module (LZ0 & FHX)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 24	—	—	—	Not Occupied	—	—
(25) 25	(25) 3	(25) BK	(25) 1650	(25) Ground	(25) I	(25) —
26 - 38	—	—	—	Not Occupied	—	—

K124 Image Processing Module X1 (UGN - UKL)



5200955

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 35068196
- Service Connector: Service by Harness - See Part Catalog
- Description: 20-Way F Mini 50 Series(BK)

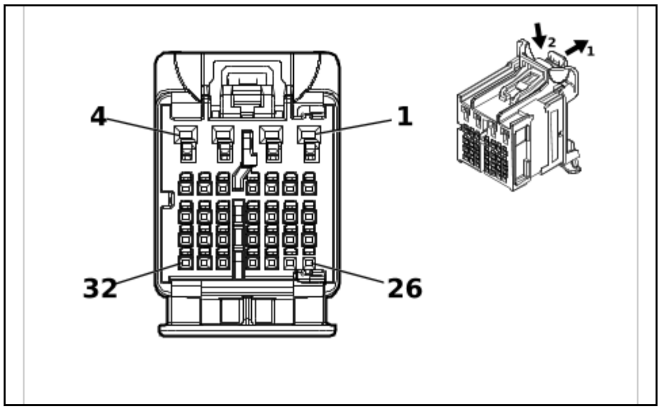
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

K124 Image Processing Module X1 (UGN - UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK / WH	(1) 1451	(1) Signal Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) RD / WH	(2) 4740	(2) Battery Positive Voltage	(2) I	(2) —
3 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.35	(6) WH	(6) 4986	(6) AUTOSAR CAN Bus [-] 1 Serial Data	(6) I	(6) —
(7) 7	(7) 0.35	(7) BU	(7) 4987	(7) AUTOSAR CAN Bus [+] 1 Serial Data	(7) I	(7) —
8 - 17	—	—	—	Not Occupied	—	—
(18) 18	(18) 0.35	(18) WH	(18) 4986	(18) AUTOSAR CAN Bus [-] 1 Serial Data	(18) I	(18) —
(19) 19	(19) 0.35	(19) BU	(19) 4987	(19) AUTOSAR CAN Bus [+] 1 Serial Data	(19) I	(19) —
20	—	—	—	Not Occupied	—	—

K124 Image Processing Module X1 (UGN & UKL)



5493608

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 160028-0011
- Service Connector: Service by Harness - See Part Catalog
- Description: 32-Way F 0.5 NANO, 1.2 MCON, stAK50h Series(BK with GY Inner Connector)

Terminal Part Information

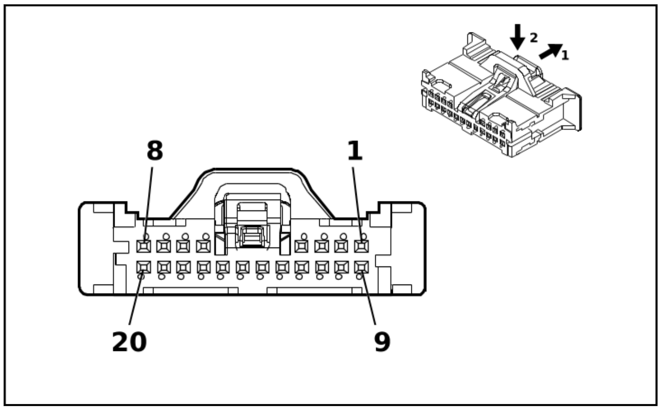
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

K124 Image Processing Module X1 (UGN & UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.35	(5) RD / WH	(5) 4740	(5) Battery Positive Voltage	(5) I	(5) —
6 - 8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.35	(9) WH	(9) 4986	(9) AUTOSAR CAN Bus [-] 1 Serial Data	(9) I	(9) —
(10) 10	(10) 0.35	(10) BU	(10) 4987	(10) AUTOSAR CAN Bus [+] 1 Serial Data	(10) I	(10) —
11 - 15	—	—	—	Not Occupied	—	—
(16) 16	(16) 0.35	(16) WH	(16) 4986	(16) AUTOSAR CAN Bus [-] 1 Serial Data	(16) I	(16) —
(17) 17	(17) 0.35	(17) BU	(17) 4987	(17) AUTOSAR CAN Bus [+] 1 Serial Data	(17) I	(17) —
18	—	—	—	Not Occupied	—	—
(19) 19	(19) 0.35	(19) BK / WH	(19) 1451	(19) Signal Ground	(19) I	(19) —
20 - 22	—	—	—	Not Occupied	—	—
(23) 23	(23) 0.35	(23) GN / GY	(23) 4627	(23) Image Processing Module LIN Bus 1	(23) I	(23) —
24 - 26	—	—	—	Not Occupied	—	—
(27) 27	(27) 0.35	(27) VT / GY	(27) 8978	(27) Inertial Sensor Supply Voltage	(27) I	(27) —
28 - 30	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(31) 31	(31) 0.35	(31) WH	(31) 7225	(31) Ethernet Bus 11 [+]	(31) I	(31) —
(32) 32	(32) 0.35	(32) BU	(32) 7224	(32) Ethernet Bus 11 [-]	(32) I	(32) —

K124 Image Processing Module X2 (UGN - UKL)



5360760

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 35068197
- Service Connector: Service by Harness - See Part Catalog
- Description: 20-Way F 050 CTS Series(GY)

Terminal Part Information

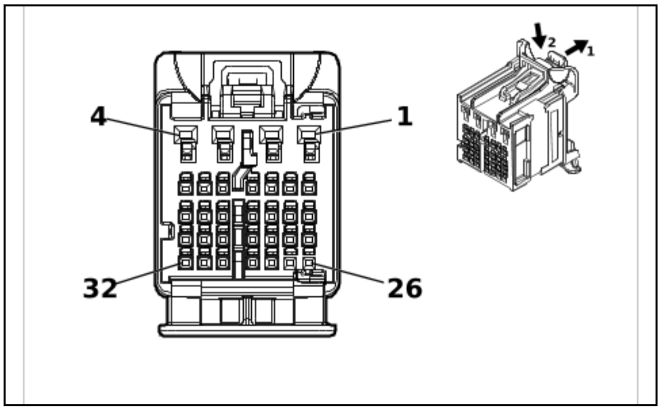
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

K124 Image Processing Module X2 (UGN - UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) WH	(1) 4978	(1) AUTOSAR CAN Bus [-] 2 Serial Data	(1) I	(1) UGN- UKL
(2) 2	(2) 0.35	(2) WH	(2) 4978	(2) AUTOSAR CAN Bus [-] 2 Serial Data	(2) I	(2) UGN- UKL
(3) 3	(3) 0.35	(3) BU / YE	(3) 4979	(3) AUTOSAR CAN Bus [+] 2 Serial Data	(3) I	(3) —
(4) 4	(4) 0.35	(4) BU / YE	(4) 4979	(4) AUTOSAR CAN Bus [+] 2 Serial Data	(4) I	(4) —
(5) 5	(5) 0.35	(5) WH / GY	(5) 4104	(5) AUTOSAR CAN Bus [-] 8 Serial Data	(5) I	(5) —
6 - 9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.35	(10) WH	(10) 4978	(10) AUTOSAR CAN Bus [-] 2 Serial Data	(10) I	(10) UGN- UKL
(11) 11	(11) 0.35	(11) BU / YE	(11) 4979	(11) AUTOSAR CAN Bus [+] 2 Serial Data	(11) I	(11) —
12 - 16	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(17) 17	(17) 0.35	(17) BU / GY	(17) 4105	(17) AUTOSAR CAN Bus [+] 8 Serial Data	(17) I	(17) —
18 - 20	—	—	—	Not Occupied	—	—

K124 Image Processing Module X2 (UGN & UKL)



5493614

Connector Part Information

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 160028-0013
- Service Connector: Service by Harness - See Part Catalog
- Description: 32-Way F 0.5 NANO, 1.2 MCON, stAK50h Series(GY with GY Inner Connector)

Terminal Part Information

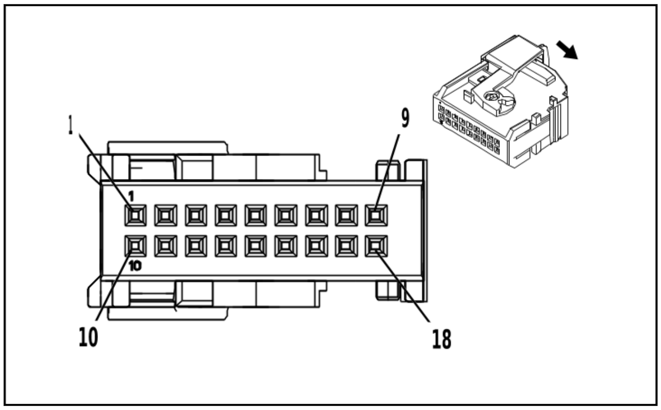
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

K124 Image Processing Module X2 (UGN & UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.35	(5) YE	(5) 4978	(5) AUTOSAR CAN Bus [-] 2 Serial Data	(5) I	(5) UKL
(6) 6	(6) 0.35	(6) YE	(6) 4978	(6) AUTOSAR CAN Bus [-] 2 Serial Data	(6) I	(6) UKL
(7) 7	(7) 0.35	(7) BU / YE	(7) 4979	(7) AUTOSAR CAN Bus [+] 2 Serial Data	(7) I	(7) UKL
(8) 8	(8) 0.35	(8) BU / YE	(8) 4979	(8) AUTOSAR CAN Bus [+] 2 Serial Data	(8) I	(8) —
(9) 9	(9) 0.35	(9) WH / GY	(9) 4104	(9) AUTOSAR CAN Bus [-] 8 Serial Data	(9) I	(9) —
(10) 10	(10) 0.35	(10) BU / GY	(10) 4105	(10) AUTOSAR CAN Bus [+] 8 Serial Data	(10) I	(10) —
11 - 12	—	—	—	Not Occupied	—	—
(13) 13	(13) 0.35	(13) YE	(13) 4978	(13) AUTOSAR CAN Bus [-] 2 Serial Data	(13) I	(13) UKL
(14) 14	(14) 0.35	(14) BU / YE	(14) 4979	(14) AUTOSAR CAN Bus [+] 2 Serial Data	(14) I	(14) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(15) 15	(15) 0.35	(15) WH / GY	(15) 4104	(15) AUTOSAR CAN Bus [-] 8 Serial Data	(15) I	(15) —
(16) 16	(16) 0.35	(16) WH / GY	(16) 4104	(16) AUTOSAR CAN Bus [-] 8 Serial Data	(16) I	(16) —
(17) 17	(17) 0.35	(17) BU / GY	(17) 4105	(17) AUTOSAR CAN Bus [+] 8 Serial Data	(17) I	(17) —
(18) 18	(18) 0.35	(18) BU / GY	(18) 4105	(18) AUTOSAR CAN Bus [+] 8 Serial Data	(18) I	(18) —
19 - 20	—	—	—	Not Occupied	—	—
(21) 21	(21) 0.35	(21) BU / YE	(21) 8977	(21) Private Serial Data Active Safety CAN Bus [+] Serial Data	(21) I	(21) —
(22) 22	(22) 0.35	(22) WH / YE	(22) 8976	(22) Private Serial Data Active Safety CAN Bus [-] Serial Data	(22) I	(22) —
23 - 32	—	—	—	Not Occupied	—	—

K157 Video Processing Module X1 (UV2)



4329088

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 3-2282182-1
- Service Connector: 84976200
- Description: 18-Way F 0.64 Micro-Quadlock Series(BK)

Terminal Part Information

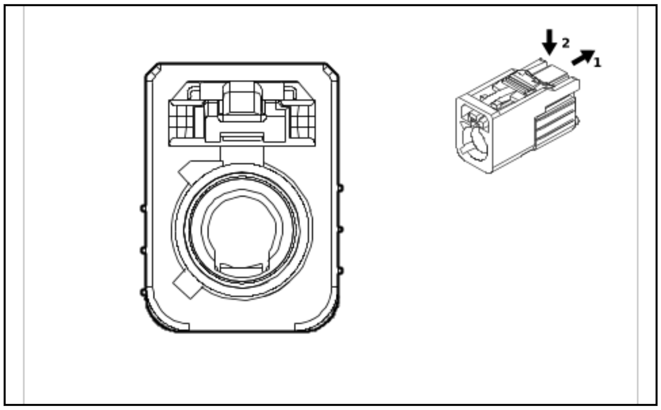
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19300632	J-35616-64B (L-BU)	J-38125-215A

K157 Video Processing Module X1 (UV2)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.75	(3) BK / WH	(3) 1451	(3) Signal Ground	(3) I	(3) —
4 - 9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.5	(10) RD / VT	(10) 1640	(10) Battery Positive Voltage	(10) I	(10) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
11 - 12	—	—	—	Not Occupied	—	—
(13) 13	(13) 0.5	(13) WH	(13) 4986	(13) AUTOSAR CAN Bus [-] 1 Serial Data	(13) I	(13) —
(14) 14	(14) 0.5	(14) WH	(14) 4986	(14) AUTOSAR CAN Bus [-] 1 Serial Data	(14) I	(14) —
(15) 15	(15) 0.5	(15) BU	(15) 4987	(15) AUTOSAR CAN Bus [+] 1 Serial Data	(15) I	(15) —
(16) 16	(16) 0.5	(16) BU	(16) 4987	(16) AUTOSAR CAN Bus [+] 1 Serial Data	(16) I	(16) —
17 - 18	—	—	—	Not Occupied	—	—

K157 Video Processing Module X3 (UV2)



5630785

Connector Part Information

- Harness Type: Body Wiring Harness COAX
- OEM Connector: 33340314
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BN)

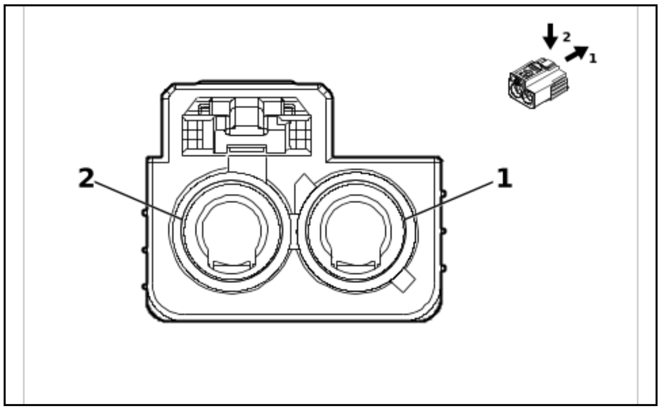
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K157 Video Processing Module X3 (UV2)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	Video Processing Module Coaxial Video Signal	I	—

K157 Video Processing Module X4 (UV2)



5810836

Connector Part Information
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 33340386
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type(BG)

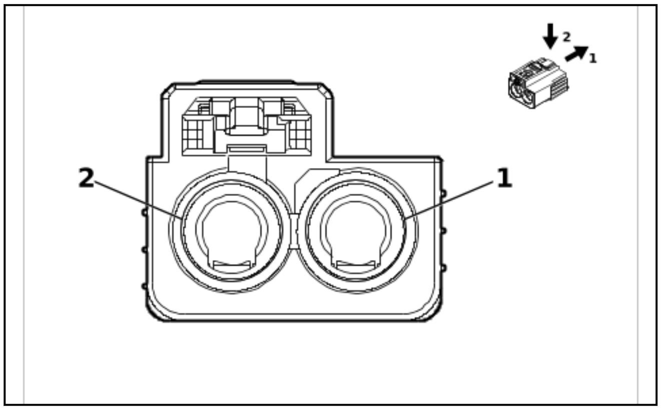
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K157 Video Processing Module X4 (UV2)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	Cargo Bed Rear Vision Camera Coaxial Video Signal	I	—

K157 Video Processing Module X5 (UV2)



5810827

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 33340382
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type(GN)

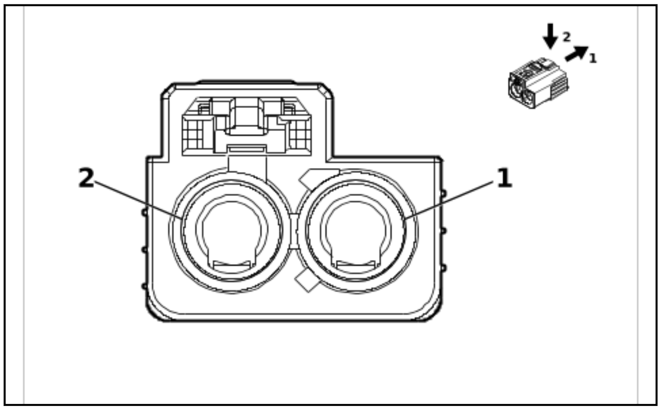
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K157 Video Processing Module X5 (UV2)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.01	(1) BARE	(1) 7886	(1) Trailer 2 Rear Vision Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal	(1) I	(1) —
(2) 2	(2) 0.8	(2) BK	(2) 2421	(2) Trailer Rear Vision Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal	(2) I	(2) —

K157 Video Processing Module X6 (UV2)



5810832

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 33340383
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type(BN)

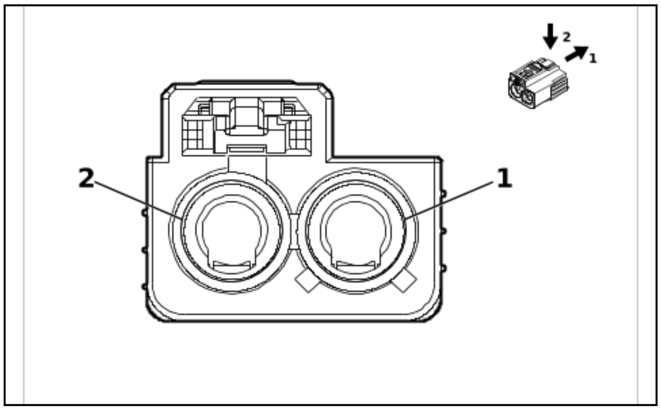
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K157 Video Processing Module X6 (UV2)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.16	(1) BK	(1) 4724	(1) Right Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal	(1) I	(1) —
(2) 2	(2) 0.16	(2) BK	(2) 4725	(2) Left Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal	(2) I	(2) —

K157 Video Processing Module X7 (UV2)



5810835

Connector Part Information
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 33340387
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type(CU)

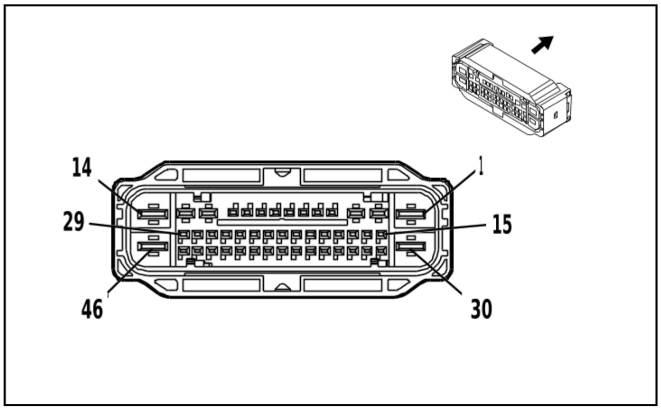
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K157 Video Processing Module X7 (UV2)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(1) 1	(1) 0	(1) Coax Cable	(1) 4722	(1) Frontview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal	(1) I	(1) —
(2) 2	(2) 0	(2) Coax Cable	(2) 4721	(2) Rearview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal	(2) I	(2) —

K160 Brake System Control Module



4162046

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 35670690
- Service Connector: 85090369
- Description: 46-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(GY)

Terminal Part Information

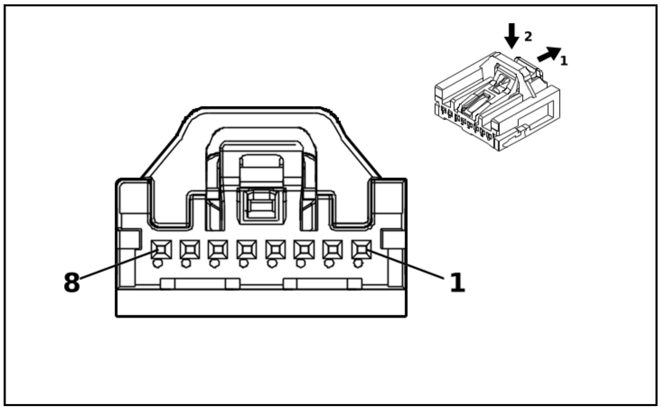
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13575368	J-35616-35 (VT)	J-38125-556
II	19370818	J-35616-12 (BU)	J-38125-553
III	84634921	J-35616-42 (RD)	J-38125-212

K160 Brake System Control Module

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 6	(1) BK	(1) 150	(1) Ground	(1) III	(1) —
(2) 2	(2) 2.5	(2) WH	(2) 2001	(2) Left Park Brake Motor Apply Control	(2) I	(2) —
(3) 3	(3) 2.5	(3) GY / BK	(3) 4369	(3) Left Park Brake Motor Low Reference	(3) I	(3) —
(4) 4	(4) 0.5	(4) GY / WH	(4) 7064	(4) Left Front Wheel Speed Sensor Control	(4) II	(4) —
(5) 5	(5) 0.5	(5) GY	(5) 830	(5) Left Front Wheel Speed Sensor Signal	(5) II	(5) —
6 - 8	—	—	—	Not Occupied	—	—
(9) 9	(9) 0.5	(9) VT / WH	(9) 239	(9) Run/Crank Ignition 1 Voltage	(9) II	(9) —
(10) 10	(10) 0.5	(10) GY / BN	(10) 7065	(10) Right Front Wheel Speed Sensor Control	(10) II	(10) —
(11) 11	(11) 0.5	(11) YE	(11) 872	(11) Right Front Wheel Speed Sensor Signal	(11) II	(11) —
(12) 12	(12) 2.5	(12) GN / VT	(12) 1988	(12) Right Park Brake Motor Apply Control	(12) I	(12) —
(13) 13	(13) 2.5	(13) GY	(13) 4368	(13) Right Park Brake Motor Low Reference	(13) I	(13) —
(14) 14	(14) 6	(14) RD / WH	(14) 1642	(14) Battery Positive Voltage	(14) III	(14) —
(15) 15	(15) 0.5	(15) GY / BK	(15) 7127	(15) Left Rear Wheel Speed Sensor Control	(15) II	(15) —
(16) 16	(16) 0.5	(16) BU	(16) 884	(16) Left Rear Wheel Speed Sensor Signal	(16) II	(16) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(17) 17	(17) 0.35	(17) BU / YE	(17) 4979	(17) AUTOSAR CAN Bus [+] 2 Serial Data	(17) II	(17) —
(18) 18	(18) 0.5	(18) BU / YE	(18) 4979	(18) AUTOSAR CAN Bus [+] 2 Serial Data	(18) II	(18) —
(19) 19	(19) 0.35	(19) GN / GY	(19) 817	(19) Vehicle Speed Signal	(19) II	(19) —
20 - 22	—	—	—	Not Occupied	—	—
(23) 23	(23) 0.5	(23) GN / YE	(23) 2731	(23) Brake System Control Module LIN Bus 1	(23) II	(23) —
24	—	—	—	Not Occupied	—	—
(25) 25	(25) 0.5	(25) WH	(25) 4986	(25) AUTOSAR CAN Bus [-] 1 Serial Data	(25) II	(25) —
(26) 26	(26) 0.5	(26) WH	(26) 4986	(26) AUTOSAR CAN Bus [-] 1 Serial Data	(26) II	(26) —
27	—	—	—	Not Occupied	—	—
(28) 28	(28) 0.5	(28) GY / YE	(28) 7128	(28) Right Rear Wheel Speed Sensor Control	(28) II	(28) —
(29) 29	(29) 0.5	(29) VT	(29) 882	(29) Right Rear Wheel Speed Sensor Signal	(29) II	(29) —
(30) 30	(30) 6	(30) BK	(30) 250	(30) Ground	(30) III	(30) —
31 - 32	—	—	—	Not Occupied	—	—
(33) 33	(33) 0.35	(33) WH	(33) 4978	(33) AUTOSAR CAN Bus [-] 2 Serial Data	(33) II	(33) —
(34) 34	(34) 0.5	(34) WH	(34) 4978	(34) AUTOSAR CAN Bus [-] 2 Serial Data	(34) II	(34) —
(35) 35	(35) 0.5	(35) GN / BU	(35) 2733	(35) Brake System Control Module LIN Bus 2	(35) II	(35) —
(36) 36	(36) 0.5	(36) WH / BK	(36) 2223	(36) Trailer Brake Apply Signal	(36) II	(36) —
(37) 37	(37) 0.5	(37) YE / BK	(37) 2224	(37) Trailer Brake Enable Signal	(37) II	(37) —
(38) 38	(38) 0.5	(38) GN / GY	(38) 333	(38) Brake Fluid Level Signal	(38) II	(38) —
(39) 39	(39) 0.5	(39) BN / BU	(39) 1602	(39) Front Brake Pad Wear Sensor Signal	(39) II	(39) —
40	—	—	—	Not Occupied	—	—
(41) 41	(41) 0.5	(41) BU	(41) 4987	(41) AUTOSAR CAN Bus [+] 1 Serial Data	(41) II	(41) —
(42) 42	(42) 0.5	(42) BU	(42) 4987	(42) AUTOSAR CAN Bus [+] 1 Serial Data	(42) II	(42) —
43	—	—	—	Not Occupied	—	—
(44) 44	(44) 0.5	(44) GN / YE	(44) 1616	(44) Rear Brake Pad Wear Sensor Signal	(44) II	(44) —
45	—	—	—	Not Occupied	—	—
(46) 46	(46) 6	(46) RD / WH	(46) 1040	(46) Battery Positive Voltage	(46) III	(46) —

K179 Automated Driving Mapping Module X1 (UKL)



5200269

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35068228
- Service Connector: 84769201
- Description: 8-Way F Mini 50 Series(BK)

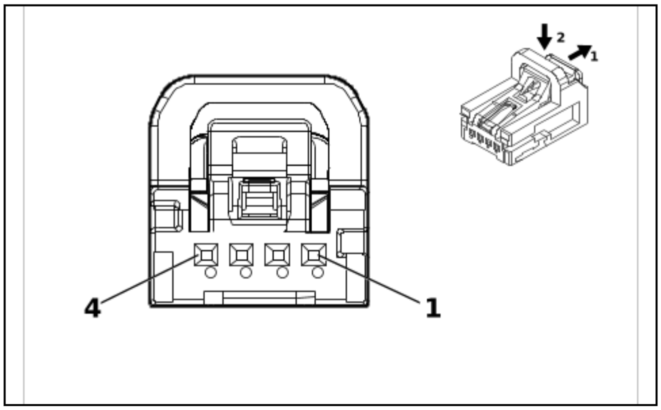
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

K179 Automated Driving Mapping Module X1 (UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / WH	(1) 1340	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) BU / GY	(2) 4105	(2) AUTOSAR CAN Bus [+] 8 Serial Data	(2) I	(2) —
(3) 3	(3) 0.35	(3) WH / GY	(3) 4104	(3) AUTOSAR CAN Bus [-] 8 Serial Data	(3) I	(3) —
(4) 4	(4) 0.35	(4) BU / GY	(4) 4105	(4) AUTOSAR CAN Bus [+] 8 Serial Data	(4) I	(4) —
(5) 5	(5) 0.35	(5) WH / GY	(5) 4104	(5) AUTOSAR CAN Bus [-] 8 Serial Data	(5) I	(5) —
6 - 7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.35	(8) BK / WH	(8) 851	(8) Signal Ground	(8) I	(8) —

K179 Automated Driving Mapping Module X2 (UKL)



5921812

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35068221
- Service Connector: 86825465
- Description: 4-Way F Mini 50 Series(GN)

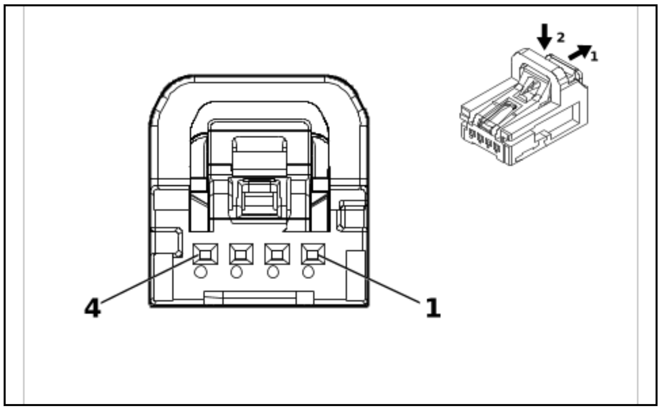
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Service by Cable	EL-35616-58 (BK)	EL-38125-58

K179 Automated Driving Mapping Module X2 (UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.35	(2) BU	(2) 7208	(2) Ethernet Bus 3 [-]	(2) I	(2) —
(3) 3	(3) 0.35	(3) GN	(3) 7209	(3) Ethernet Bus 3 [+]	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

K179 Automated Driving Mapping Module X3 (UKL)



5921811

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35068220
- Service Connector: 86825464
- Description: 4-Way F Mini 50 Series(BN)

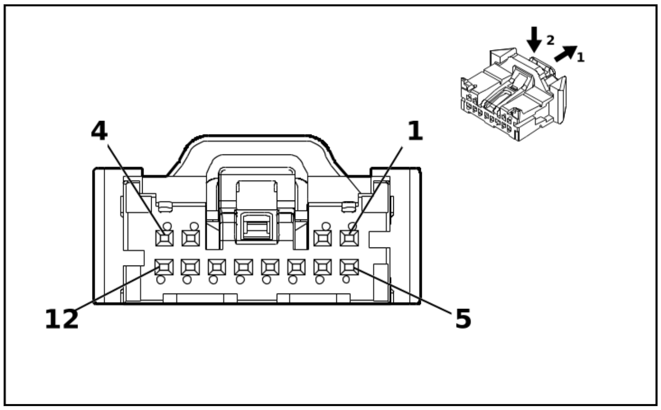
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

K179 Automated Driving Mapping Module X3 (UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.35	(2) BU	(2) 7224	(2) Ethernet Bus 11 [-]	(2) I	(2) —
(3) 3	(3) 0.35	(3) WH	(3) 7225	(3) Ethernet Bus 11 [+]	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

K180 Driver Monitoring System Module X1 (UKL)



5360826

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35068239
- Service Connector: 13529935
- Description: 12-Way F 050 CTS Series(BK)

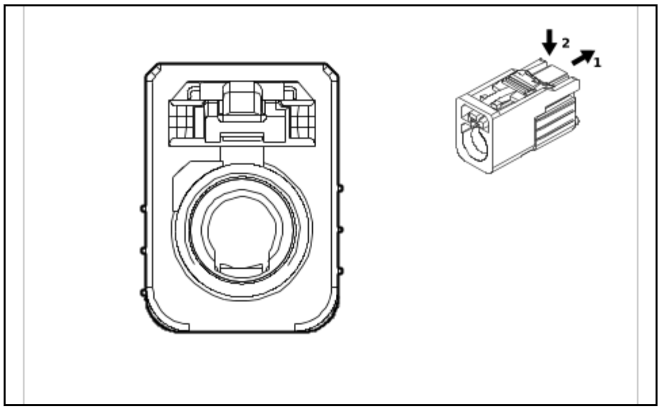
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84944580	EL-35616-58 (BK)	EL-38125-58

K180 Driver Monitoring System Module X1 (UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / YE	(1) 3040	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) BK / WH	(2) 851	(2) Signal Ground	(2) I	(2) —
(3) 3	(3) 0.35	(3) BU / YE	(3) 4979	(3) AUTOSAR CAN Bus [+] 2 Serial Data	(3) I	(3) —
(4) 4	(4) 0.35	(4) WH	(4) 4978	(4) AUTOSAR CAN Bus [-] 2 Serial Data	(4) I	(4) —
5 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.35	(7) BU / BN	(7) 7744	(7) Driver Illumination Lamp Ground	(7) I	(7) —
(8) 8	(8) 0.35	(8) YE / BU	(8) 2245	(8) Driver Illumination Lamp 2 Control	(8) I	(8) —
(9) 9	(9) 0.35	(9) WH / VT	(9) 2246	(9) Driver Illumination Lamp 1 Control	(9) I	(9) —
10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.35	(11) BU / GN	(11) 4979	(11) AUTOSAR CAN Bus [+] 2 Serial Data	(11) I	(11) —
(12) 12	(12) 0.35	(12) WH / BN	(12) 4978	(12) AUTOSAR CAN Bus [-] 2 Serial Data	(12) I	(12) —

K180 Driver Monitoring System Module X2 (UKL)



5519144

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33340313
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(GN)

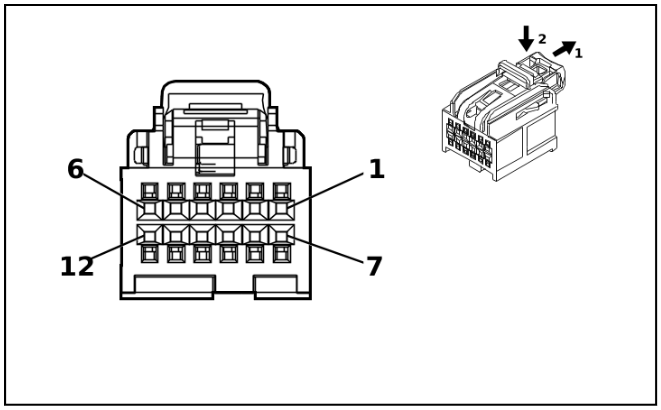
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

K180 Driver Monitoring System Module X2 (UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	Driver Monitoring System Camera Coaxial Signal	I	—

K182 Parking Assist Control Module X1 (UD5)



4975223

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 35016616
- Service Connector: 13519750
- Description: 12-Way F 0.64 OCS Series(BK)

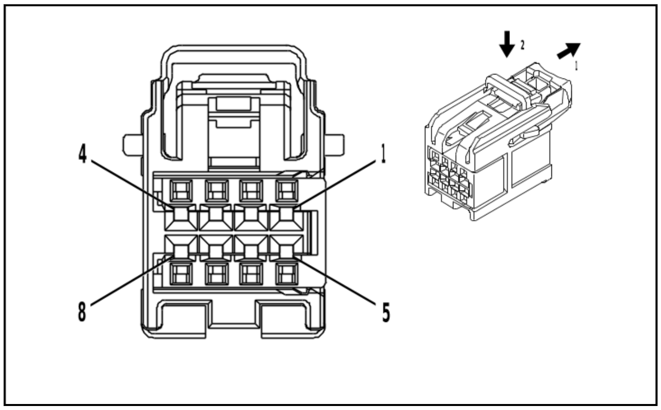
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19354230	J-35616-64B (L-BU)	J-38125-215A

K182 Parking Assist Control Module X1 (UD5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / WH	(1) 4740	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH	(2) 4986	(2) AUTOSAR CAN Bus [-] 1 Serial Data	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU	(3) 4987	(3) AUTOSAR CAN Bus [+] 1 Serial Data	(3) I	(3) —
4 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.5 (6) 0.75	(6) BK / WH (6) BK / WH	(6) 1551 (6) 1551	(6) Signal Ground (6) Signal Ground	(6) I (6) I	(6) DOUBLE CAB/ CREW CAB (6) REGULAR CAB
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.5	(8) WH	(8) 4986	(8) AUTOSAR CAN Bus [-] 1 Serial Data	(8) I	(8) —
(9) 9	(9) 0.5	(9) BU	(9) 4987	(9) AUTOSAR CAN Bus [+] 1 Serial Data	(9) I	(9) —
10 - 12	—	—	—	Not Occupied	—	—

K182 Parking Assist Control Module X2 (UD5)



4232228

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 15526973
- Service Connector: 19353873
- Description: 8-Way F 0.64 OCS Series(GY)

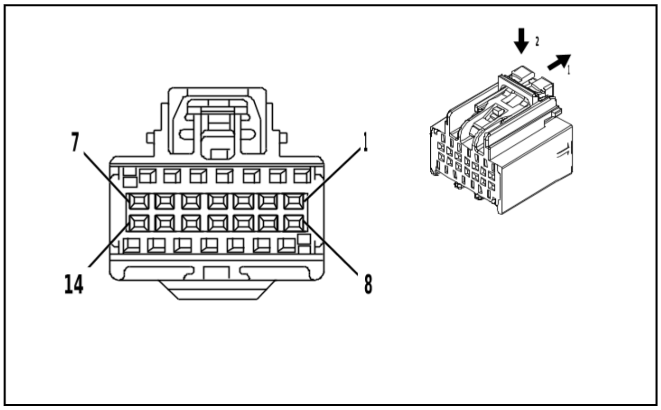
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

K182 Parking Assist Control Module X2 (UD5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.5	(2) YE / WH	(2) 2377	(2) Right Rear Middle Parking Assist Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE	(3) 2375	(3) Left Rear Outer Parking Assist Sensor Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) BN / WH	(4) 2374	(4) Object Sensor Voltage Reference	(4) I	(4) —
(5) 5	(5) 0.5	(5) YE / VT	(5) 2378	(5) Right Rear Outer Parking Assist Sensor Signal	(5) I	(5) —
(6) 6	(6) 0.5	(6) YE / BU	(6) 2376	(6) Left Rear Middle Parking Assist Sensor Signal	(6) I	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.5	(8) BK / GY	(8) 2379	(8) Object Sensor Low Reference	(8) I	(8) —

K182 Parking Assist Control Module X3 (UD5)



4547098

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 7289-2897-90
- Service Connector: 19354933
- Description: 14-Way F 0.64 Kaizen Series(BU)

Terminal Part Information

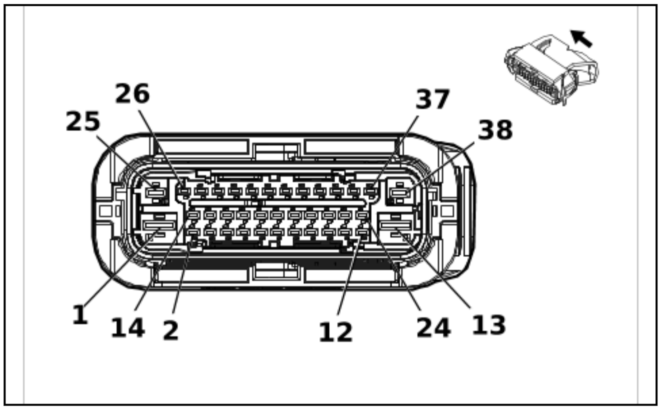
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19303553	J-35616-64B (L-BU)	J-38125-215A

K182 Parking Assist Control Module X3 (UD5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) YE / GY	(5) 5216	(5) Left Front Middle Parking Assist Sensor	(5) I	(5) —
(6) 6	(6) 0.5	(6) WH / GY	(6) 5217	(6) Right Front Outer Parking Assist Sensor	(6) I	(6) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(7) 7	(7) 0.5	(7) BN	(7) 6581	(7) Front Parking Assist Display Control	(7) I	(7) —
8 - 10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.5	(11) VT / WH	(11) 5215	(11) Left Front Outer Parking Assist Sensor	(11) I	(11) —
(12) 12	(12) 0.5	(12) VT / GY	(12) 5218	(12) Right Front Middle Parking Assist Sensor	(12) I	(12) —
13	—	—	—	Not Occupied	—	—
(14) 14	(14) 0.5	(14) BK / BU	(14) 5214	(14) Front Parking Assist Sensor Low Reference	(14) I	(14) —

K194 Rear Gate Module (QK1 & QT6)



3240112

Connector Part Information

- Harness Type: Endgate Wiring Harness
- OEM Connector: 35503407
- Service Connector: Service by Harness - See Part Catalog
- Description: 38-Way F 1.5 CTS, 2.8 MCP, 4.8 MCP Series, Sealed(BK with BU Inner Connector)

Terminal Part Information

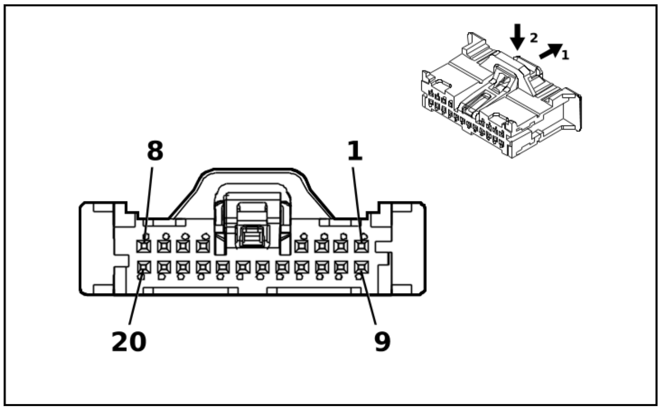
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-35 (VT)	No Tool Required
III	Not required	J-35616-40 (BU)	No Tool Required

K194 Rear Gate Module (QK1 & QT6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) BK	(1) 1850	(1) Ground	(1) III	(1) —
(2) 2	(2) 0.5	(2) WH	(2) 4100	(2) AUTOSAR CAN Bus [-] 4 Serial Data	(2) I	(2) —
(3) 3	(3) 0.5	(3) WH	(3) 4100	(3) AUTOSAR CAN Bus [-] 4 Serial Data	(3) I	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) YE / BK	(5) 8085	(5) Rear Closure Latch Primary Status	(5) I	(5) —
(6) 6	(6) 0.5	(6) BN / GY	(6) 10281	(6) Rear Closure Latch Secondary Status Signal	(6) I	(6) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(7) 7	(7) 0.5	(7) WH / GN	(7) 8084	(7) Rear Closure Latch Neutral Status	(7) I	(7) —
(8) 8	(8) 0.5	(8) GY / VT	(8) 4678	(8) Rear Closure Latch Unlatch Status	(8) I	(8) —
9 - 12	—	—	—	Not Occupied	—	—
(13) 13	(13) 2.5	(13) RD / VT	(13) 4442	(13) Primary Fused Battery Positive Voltage	(13) III	(13) —
(14) 14	(14) 0.5	(14) BU / VT	(14) 4101	(14) AUTOSAR CAN Bus [+] 4 Serial Data	(14) I	(14) —
(15) 15	(15) 0.5	(15) BU / VT	(15) 4101	(15) AUTOSAR CAN Bus [+] 4 Serial Data	(15) I	(15) —
(16) 16	(16) 0.5	(16) BN	(16) 7736	(16) Rear Closure Latch 2 Unlatch Status Signal	(16) I	(16) —
17	—	—	—	Not Occupied	—	—
(18) 18	(18) 0.5	(18) BN / RD	(18) 4683	(18) Rear Closure Position Sensor Voltage Reference	(18) I	(18) —
(19) 19	(19) 0.5	(19) BK / GN	(19) 4687	(19) Rear Closure Position Sensor Low Reference	(19) I	(19) —
20	—	—	—	Not Occupied	—	—
(21) 21	(21) 0.5	(21) BN / YE	(21) 4686	(21) Rear Closure Position Sensor Signal 2	(21) I	(21) —
(22) 22	(22) 0.5	(22) BU / WH	(22) 4685	(22) Rear Closure Position Sensor Signal 1	(22) I	(22) —
(23) 23	(23) 0.5	(23) GN / BU	(23) 10283	(23) Rear Closure Latch 2 Primary Status Signal	(23) I	(23) —
(24) 24	(24) 0.5	(24) VT / WH	(24) 10284	(24) Rear Closure Latch 2 Secondary Status Signal	(24) I	(24) —
(25) 25	(25) 1	(25) BN / WH	(25) 4690	(25) Rear Closure Open/Close Motor Close Control	(25) II	(25) —
(26) 26	(26) 0.5	(26) BU / BN	(26) 10282	(26) Rear Closure Latch 2 Neutral Status Signal	(26) I	(26) —
(27) 27	(27) 0.5	(27) GY / BK	(27) 1575	(27) Rear Closure Sensor Low Reference 2	(27) I	(27) —
(28) 28	(28) 0.5	(28) BK / VT	(28) 4656	(28) Rear Closure Object Sensor Low Reference	(28) I	(28) —
29	—	—	—	Not Occupied	—	—
(30) 30	(30) 1	(30) BU	(30) 1509	(30) Rear Closure Cinch Latch Motor 2 Release Control	(30) I	(30) —
(31) 31	(31) 1	(31) GN	(31) 1499	(31) Rear Closure Cinch Latch Motor 2 Cinch Control	(31) I	(31) —
32	—	—	—	Not Occupied	—	—
(33) 33	(33) 1	(33) BU / GY	(33) 4682	(33) Rear Closure Cinch Latch Motor Release Control	(33) I	(33) —
(34) 34	(34) 1	(34) BN	(34) 4681	(34) Rear Closure Cinch Latch Motor Cinch Control	(34) I	(34) —
(35) 35	(35) 0.5	(35) GN	(35) 1577	(35) Rear Closure Clutch Control	(35) I	(35) —
(36) 36	(36) 0.5	(36) BU / BK	(36) 1590	(36) Rear Closure Clutch Low Return	(36) I	(36) —
37	—	—	—	Not Occupied	—	—
(38) 38	(38) 1	(38) WH	(38) 4689	(38) Rear Closure Open/Close Motor Open Control	(38) II	(38) —

K212 Gear Shift Control Module



5200955

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 35068196
- Service Connector: Service by Harness - See Part Catalog
- Description: 20-Way F Mini 50 Series(BK)

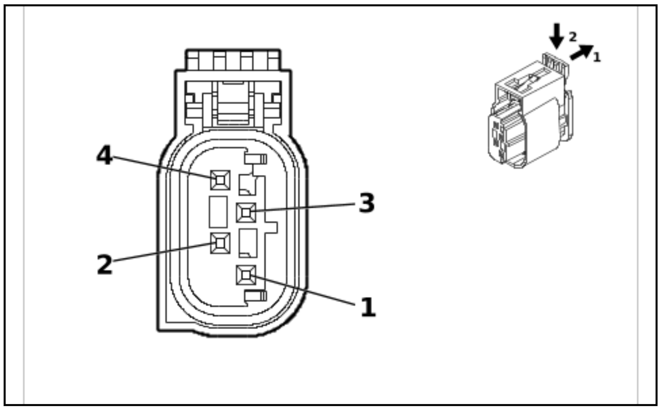
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

K212 Gear Shift Control Module

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BU / BK	(1) 4977	(1) AUTOSAR CAN Bus [+] 3 Serial Data	(1) I	(1) —
(2) 2	(2) 0.35	(2) BU / BK	(2) 4977	(2) AUTOSAR CAN Bus [+] 3 Serial Data	(2) I	(2) —
(3) 3	(3) 0.35	(3) YE	(3) 4976	(3) AUTOSAR CAN Bus [-] 3 Serial Data	(3) I	(3) —
(4) 4	(4) 0.35	(4) YE	(4) 4976	(4) AUTOSAR CAN Bus [-] 3 Serial Data	(4) I	(4) —
(5) 5	(5) 0.35	(5) WH	(5) 4055	(5) Private Serial Data Powertrain CAN Bus [+] Serial Data	(5) I	(5) —
(6) 6	(6) 0.35	(6) WH	(6) 4055	(6) Private Serial Data Powertrain CAN Bus [+] Serial Data	(6) I	(6) —
(7) 7	(7) 0.35	(7) BU / GY	(7) 4054	(7) Private Serial Data Powertrain CAN Bus [-] Serial Data	(7) I	(7) —
(8) 8	(8) 0.35	(8) BU / GY	(8) 4054	(8) Private Serial Data Powertrain CAN Bus [-] Serial Data	(8) I	(8) —
(9) 9	(9) 0.35	(9) RD / WH	(9) 5440	(9) Battery Positive Voltage	(9) I	(9) —
10 - 15	—	—	—	Not Occupied	—	—
(16) 16	(16) 0.35	(16) VT / GN	(16) 4320	(16) Powertrain Sensor Bus Enable	(16) I	(16) —
(17) 17	(17) 0.35	(17) VT / WH	(17) 239	(17) Run/Crank Ignition 1 Voltage	(17) I	(17) —
18 - 19	—	—	—	Not Occupied	—	—
(20) 20	(20) 0.35	(20) BK	(20) 1350	(20) Ground	(20) I	(20) —

K214 Trailer Tire Pressure Indicator Module (UET)



5215490

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 13655424
- Service Connector: 86825461
- Description: 4-Way F 0.64 MTS Series, Sealed(BK)

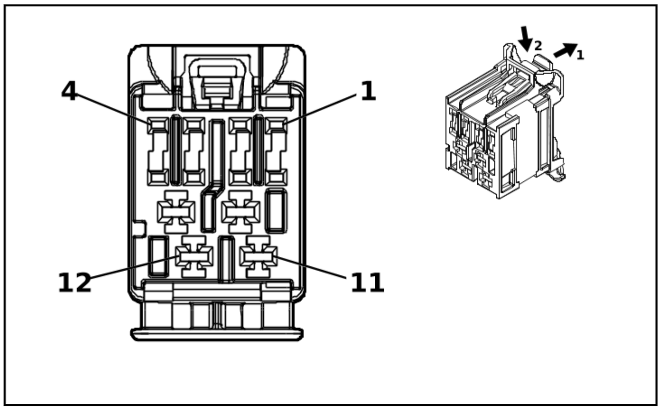
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

K214 Trailer Tire Pressure Indicator Module (UET)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / GN	(1) 6940	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / WH	(2) 1951	(2) Signal Ground	(2) I	(2) —
(3) 3	(3) 0.5	(3) GN / YE	(3) 2862	(3) Body Control Module LIN Bus 16	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

K219 Lighting Control Module X1



5203784

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 160026-0003
- Service Connector: 13509990
- Description: 12-Way F 1.2, 2.8 stAK50h Series(L-PU)

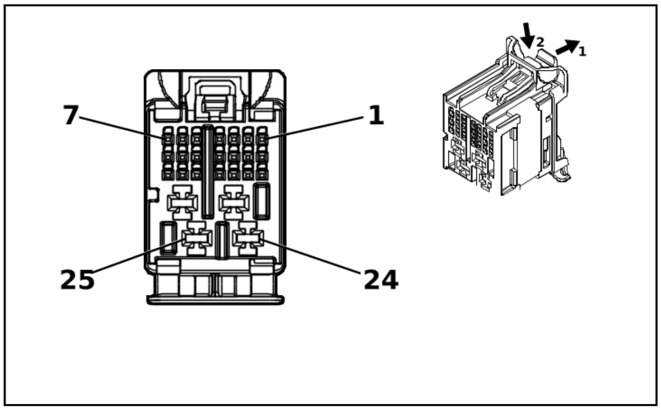
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84729890	J-35616-12 (BU)	J-38125-215A
II	87814662	J-35616-35 (VT)	J-38125-557

K219 Lighting Control Module X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / YE	(1) 1254	(1) Left Front Park Lamp Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) GN / WH	(3) 24	(3) Backup Lamp Control	(3) I	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) BU / WH	(5) 1314	(5) Left Front Turn Signal Lamp Control	(5) I	(5) —
(6) 6	(6) 0.5	(6) BN / GY	(6) 5061	(6) Left Front Fog Lamp Control	(6) I	(6) —
(7) 7	(7) 0.5	(7) GN / YE	(7) 6846	(7) Rear License Plate Lamp Control	(7) I	(7) —
(8) 8	(8) 0.35	(8) GY / BU	(8) 7538	(8) Left Front DRL Control	(8) I	(8) —
(9) 9	(9) 0.5	(9) RD / VT	(9) 7140	(9) Battery Positive Voltage	(9) II	(9) —
(10) 10	(10) 0.75	(10) YE	(10) 712	(10) Left Headlamp Low Beam Control	(10) II	(10) —
11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0.75	(12) WH	(12) 711	(12) Left Headlamp High Beam Control	(12) II	(12) —

K219 Lighting Control Module X2



5203807

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 160027-0012
- Service Connector: 13534966
- Description: 25-Way F 0.5 MQS, 2.8 MCP Series(GY with GY Inner Connector)

Terminal Part Information

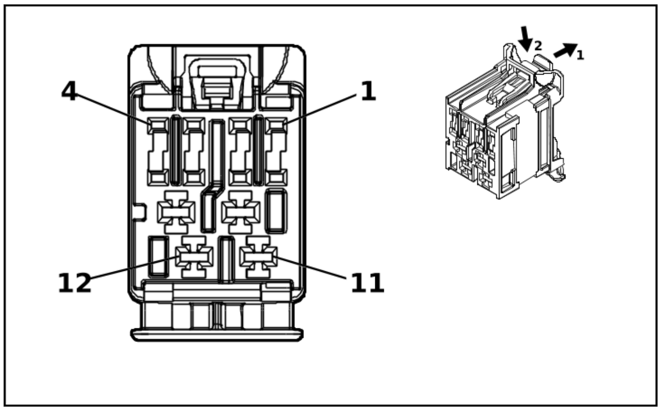
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	87814662	J-35616-35 (VT)	J-38125-557

K219 Lighting Control Module X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) BN / GY	(3) 2268	(3) Windshield Washer Relay Control	(3) I	(3) —
(4) 4	(4) 0.35	(4) BU / BN	(4) 38	(4) Backup Lamp Relay Control	(4) I	(4) —
5 - 9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.35	(10) BN / GN	(10) 196	(10) Windshield Wiper Motor Park Switch Signal	(10) I	(10) —
(11) 11	(11) 0.35	(11) VT / BK	(11) 6568	(11) Front Turn Signal Lamp Feedback Signal	(11) I	(11) —
(12) 12	(12) 0.35	(12) GY	(12) 91	(12) Windshield Wiper Motor Relay Coil Control	(12) I	(12) —
13	—	—	—	Not Occupied	—	—
(14) 14	(14) 0.35	(14) VT	(14) 185	(14) Low Washer Fluid Indicator Control	(14) I	(14) —
15 - 18	—	—	—	Not Occupied	—	—
(19) 19	(19) 0.35	(19) WH / BN	(19) 7055	(19) Auxiliary Park Lamp Relay Control	(19) I	(19) —
(20) 20	(20) 0.35	(20) WH / YE	(20) 7545	(20) Right Front Turn Signal Lamp Feedback Signal	(20) I	(20) —
(21) 21	(21) 0.35	(21) WH / VT	(21) 860	(21) Windshield Wiper Switch High Signal	(21) I	(21) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(22) 22	(22) 0.5	(22) RD / GN	(22) 7740	(22) Battery Positive Voltage	(22) II	(22) —
(23) 23	(23) 0.5	(23) RD / BU	(23) 840	(23) Battery Positive Voltage	(23) II	(23) —
24 - 25	—	—	—	Not Occupied	—	—

K219 Lighting Control Module X3



5203797

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 160026-0002
- Service Connector: 13509989
- Description: 12-Way F 1.2, 2.8 stAK50h Series(GN)

Terminal Part Information

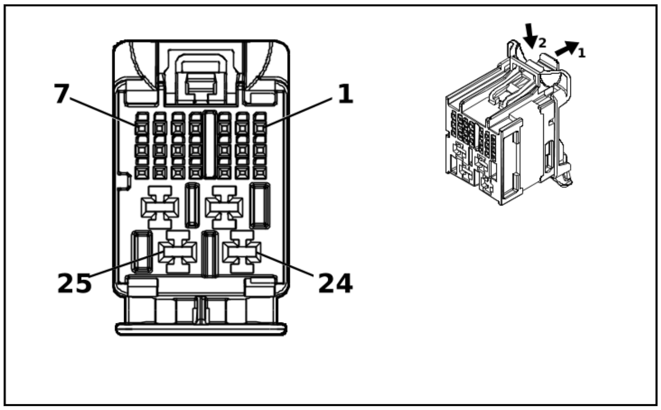
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84729890	J-35616-12 (BU)	J-38125-215A
II	87814662	J-35616-35 (VT)	J-38125-557

K219 Lighting Control Module X3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BU / BN	(1) 7539	(1) Right Front DRL Control	(1) I	(1) —
2 - 3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.5	(4) BU / GN	(4) 1253	(4) Right Front Park Lamp Control	(4) I	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.75	(6) BU / VT	(6) 1335	(6) Right Rear Turn Signal Lamp Control 2	(6) I	(6) —
(7) 7	(7) 0.35	(7) BU / YE	(7) 7761	(7) Backup Illumination Lamp Control	(7) I	(7) —
8	—	—	—	Not Occupied	—	—
(9) 9	(9) 1.5	(9) RD / BU	(9) 540	(9) Battery Positive Voltage	(9) II	(9) —
(10) 10	(10) 1.5	(10) RD / BN	(10) 1440	(10) Battery Positive Voltage	(10) II	(10) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(11) 11	(11) 0.75	(11) WH	(11) 311	(11) Right Headlamp High Beam Control	(11) II	(11) —
(12) 12	(12) 1	(12) YE	(12) 312	(12) Right Headlamp Low Beam Control	(12) II	(12) —

K219 Lighting Control Module X4



5203416

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 160027-0015
- Service Connector: 13534969
- Description: 25-Way F 0.5 MQS, 2.8 MCP Series(PU with GY Inner Connector)

Terminal Part Information

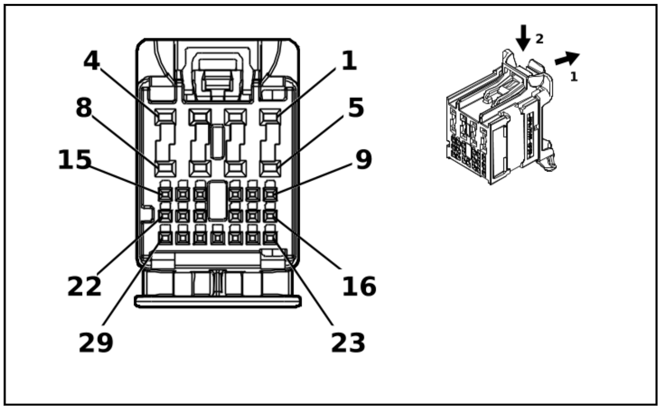
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	87814662	J-35616-35 (VT)	J-38125-557

K219 Lighting Control Module X4

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) BU / YE	(3) 4979	(3) AUTOSAR CAN Bus [+] 2 Serial Data	(3) I	(3) —
(4) 4	(4) 0.35	(4) WH	(4) 4978	(4) AUTOSAR CAN Bus [-] 2 Serial Data	(4) I	(4) —
(5) 5	(5) 0.35	(5) BU / YE	(5) 4979	(5) AUTOSAR CAN Bus [+] 2 Serial Data	(5) I	(5) —
(6) 6	(6) 0.35	(6) WH	(6) 4978	(6) AUTOSAR CAN Bus [-] 2 Serial Data	(6) I	(6) —
(7) 7	(7) 0.35	(7) WH / BU	(7) 6311	(7) Cruise/ETC/TCC Brake Signal	(7) I	(7) —
8 - 9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.35	(10) WH	(10) 4978	(10) AUTOSAR CAN Bus [-] 2 Serial Data	(10) I	(10) —
(11) 11	(11) 0.35	(11) BU / YE	(11) 4979	(11) AUTOSAR CAN Bus [+] 2 Serial Data	(11) I	(11) —
12 - 21	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(22) 22	(22) 1	(22) RD / BN	(22) 1140	(22) Battery Positive Voltage	(22) II	(22) —
(23) 23	(23) 1	(23) BK / WH	(23) 1551	(23) Signal Ground	(23) II	(23) —
(24) 24	(24) 0.5	(24) RD / GN	(24) 1540	(24) Battery Positive Voltage	(24) II	(24) —
(25) 25	(25) 1	(25) BK / WH	(25) 1451	(25) Signal Ground	(25) II	(25) —

K219 Lighting Control Module X5



5203373

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 160029-0013
- Service Connector: 13534975
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series(BU with GY Inner Connector)

Terminal Part Information

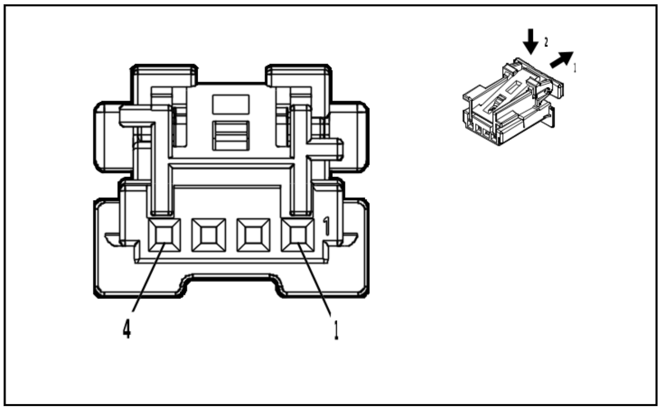
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370262	EL-35616-58 (BK)	EL-38125-58
II	84729890	J-35616-12 (BU)	J-38125-215A

K219 Lighting Control Module X5

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / GN	(1) 5966	(1) Approach Lamp Control	(1) II	(1) —
(2) 2	(2) 0.75	(2) BN / GY	(2) 6995	(2) Right Rear Park Lamp Control	(2) II	(2) —
(3) 3	(3) 0.5	(3) GY / BU	(3) 7762	(3) Cargo Lamp Control	(3) II	(3) —
(4) 4	(4) 0.5	(4) WH / VT	(4) 1430	(4) Exterior Courtesy Lamp Control	(4) II	(4) —
(5) 5	(5) 0.5	(5) YE / GN	(5) 2024	(5) Animation Lighting Control	(5) II	(5) —
(6) 6	(6) 0.75	(6) BN / BU	(6) 6993	(6) Left Rear Park Lamp Control	(6) II	(6) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(7) 7	(7) 0.5	(7) GN / VT	(7) 1315	(7) Right Front Turn Signal Lamp Control	(7) II	(7) —
(8) 8	(8) 0.75	(8) BU / WH	(8) 1334	(8) Left Rear Turn Signal Lamp Control 2	(8) II	(8) —
(9) 9	(9) 0.35	(9) GN / GY	(9) 2115	(9) Right Turn Signal Lamp Control 2	(9) I	(9) —
(10) 10	(10) 0.35	(10) WH / GY	(10) 2114	(10) Left Turn Signal Lamp Control 2	(10) I	(10) —
(11) 11	(11) 0.35	(11) GY	(11) 1715	(11) Windshield Wiper Switch High Signal	(11) I	(11) —
(13) 13	(13) 0.35	(13) GN / BN	(13) 319	(13) Right Rear Trailer Stop/Turn Lamp Control	(13) I	(13) —
14	—	—	—	Not Occupied	—	—
(15) 15	(15) 0.35	(15) WH / GY	(15) 2935	(15) Task Lamp Switch Signal	(15) I	(15) —
(16) 16	(16) 0.35	(16) YE / WH	(16) 2934	(16) Task Lamp Control Right	(16) I	(16) —
17	—	—	—	Not Occupied	—	—
(18) 18	(18) 0.35	(18) VT / WH	(18) 239	(18) Run/Crank Ignition 1 Voltage	(18) I	(18) —
20 - 22	—	—	—	Not Occupied	—	—
(23) 23	(23) 0.35	(23) WH / VT	(23) 6567	(23) Rear Turn Signal Lamp Feedback Signal	(23) I	(23) —
(24) 24	(24) 0.35	(24) WH / BK	(24) 7544	(24) Right Rear Turn Signal Lamp Feedback Signal	(24) I	(24) —
(25) 25	(25) 0.35	(25) BN / YE	(25) 820	(25) Center High Mounted Stop Lamp Supply Voltage	(25) I	(25) —
26 - 27	—	—	—	Not Occupied	—	—
(28) 28	(28) 0.35	(28) YE / GY	(28) 2933	(28) Task Lamp Control Left	(28) I	(28) —
(29) 29	(29) 0.35	(29) YE / BU	(29) 318	(29) Left Rear Trailer Stop/Turn Lamp Control	(29) I	(29) —

M4 Air Inlet Valve Actuator



4997407

Connector Part Information

- Harness Type: Heater Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

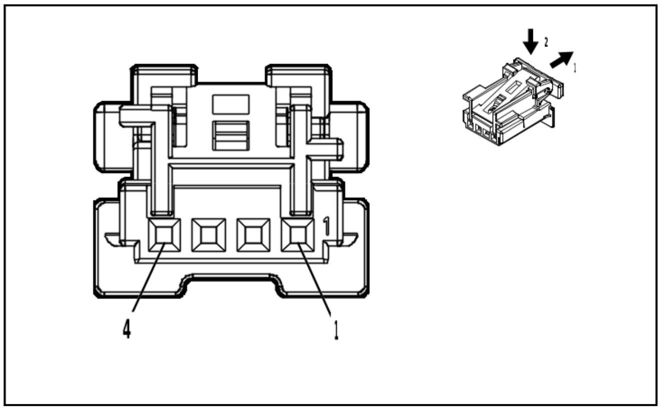
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

M4 Air Inlet Valve Actuator

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK	(1) 1050	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) BU	(2) 2852	(2) Body Control Module LIN Bus 6	(2) I	(2) —
(3) 3	(3) 0.35	(3) BK	(3) 1050	(3) Ground	(3) I	(3) CJ2
(4) 4	(4) 0.35	(4) RD	(4) 4634	(4) HVAC Remote Enable Signal	(4) I	(4) —

M6L Temperature Valve Actuator - Left



4997407

Connector Part Information

- Harness Type: Heater Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

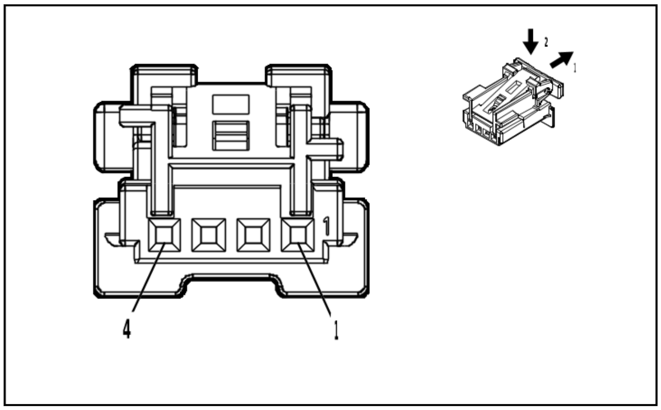
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

M6L Temperature Valve Actuator - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK	(1) 1050	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) BU	(2) 2852	(2) Body Control Module LIN Bus 6	(2) I	(2) —
(3) 3	(3) 0.35	(3) BK	(3) 1050	(3) Ground	(3) I	(3) CJ2
(4) 4	(4) 0.35	(4) RD	(4) 4634	(4) HVAC Remote Enable Signal	(4) I	(4) —

M6R Temperature Valve Actuator - Right



4997407

Connector Part Information

- Harness Type: Heater Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

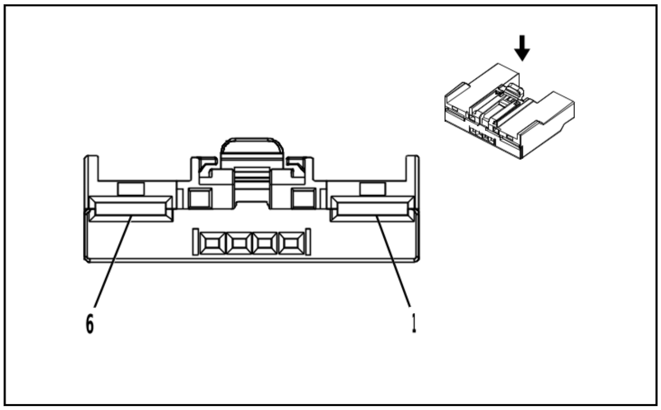
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

M6R Temperature Valve Actuator - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK	(1) 1050	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) BU	(2) 2852	(2) Body Control Module LIN Bus 6	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.35	(4) RD	(4) 4634	(4) HVAC Remote Enable Signal	(4) I	(4) —

M8 Blower Motor



2904463

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 7287-9355-30
- Service Connector: 19356432
- Description: 6-Way F 0.64 GET, 6.3 Series(BK)

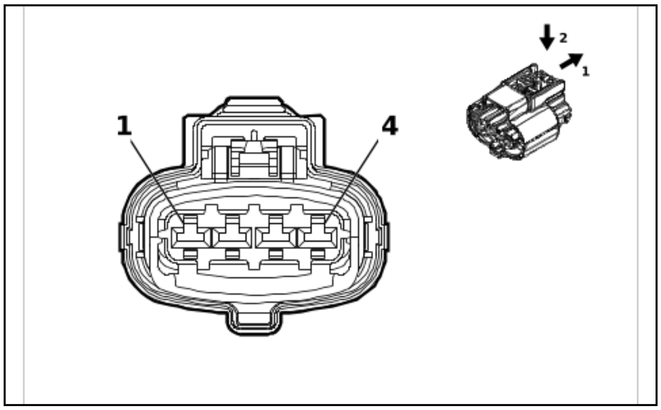
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-42 (RD)	No Tool Required
II	Not required	J-35616-64B (L-BU)	No Tool Required

M8 Blower Motor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 4	(1) RD / GY	(1) 1740	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) BU / GY	(2) 754	(2) Blower Motor Speed Control	(2) II	(2) —
(3) 3	(3) 0.35	(3) GN / BU	(3) 761	(3) Blower Speed Feedback Signal	(3) II	(3) —
4 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 4	(6) BK	(6) 1050	(6) Ground	(6) I	(6) —

M10 Charge Air Cooler Coolant Pump (LZ0)



5869064

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 35810340
- Service Connector: 19371209
- Description: 4-Way F 2.8 CTS Series, Sealed(BK)

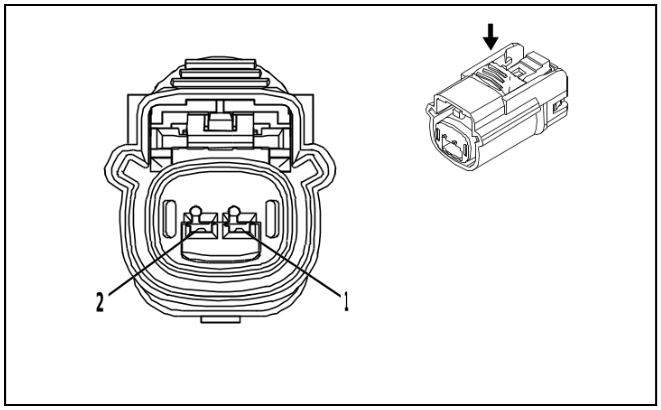
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

M10 Charge Air Cooler Coolant Pump (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) VT / BU	(1) 5294	(1) Powertrain Main Relay Fused Supply Voltage 5	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / VT	(2) 4621	(2) Engine Control Module LIN Bus 1	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 1	(4) BK	(4) 6150	(4) Engine Odd Bank Ground	(4) I	(4) —

M14A Pickup Box Endgate Lock Actuator



4332222

Connector Part Information

- Harness Type: Endgate Wiring Harness
- OEM Connector: 15514573
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 OCS Series, Sealed(BK)

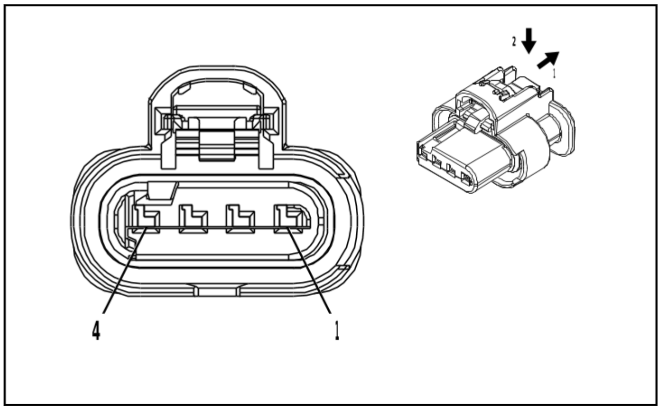
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

M14A Pickup Box Endgate Lock Actuator

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) GN	(1) 1299	(1) Major Endgate Motor Control	(1) I	(1) —
(2) 2	(2) 1	(2) YE / BK	(2) 7730	(2) Major Endgate Motor Low Reference	(2) I	(2) —

M26 Front Drive Axle Actuator (NP0 / NQH)



4210809

Connector Part Information

- Harness Type: Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness
- OEM Connector: 1-2296696-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 MCON-CB Series, Sealed(BK)

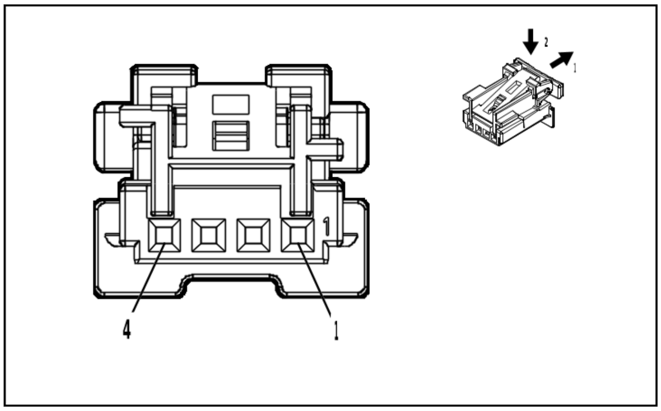
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M26 Front Drive Axle Actuator (NP0 / NQH)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN	(1) 8016	(1) Secondary Axle Motor Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY / BK	(2) 1570	(2) Front Axle Actuator Control	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / WH	(3) 1695	(3) 4WD Locked Range Indicator Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 450	(4) Ground	(4) I	(4) —

M37 Mode Valve Actuator



4997407

Connector Part Information

- Harness Type: Heater Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

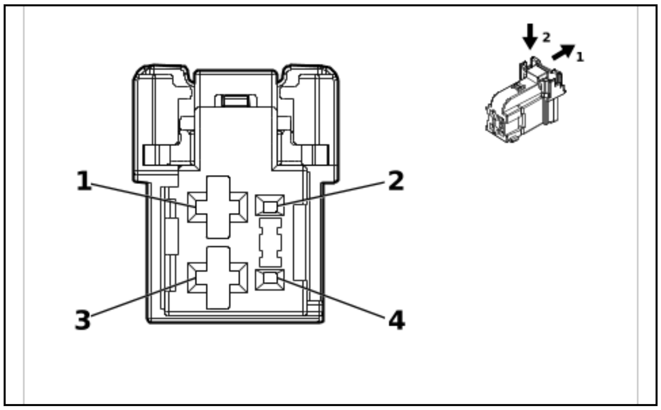
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

M37 Mode Valve Actuator

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK	(1) 1050	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) BU	(2) 2852	(2) Body Control Module LIN Bus 6	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.35	(4) RD	(4) 4634	(4) HVAC Remote Enable Signal	(4) I	(4) —

M50D Front Seat Tilt Adjuster Actuator - Driver (A2X - A45)



5410027

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series(BK)

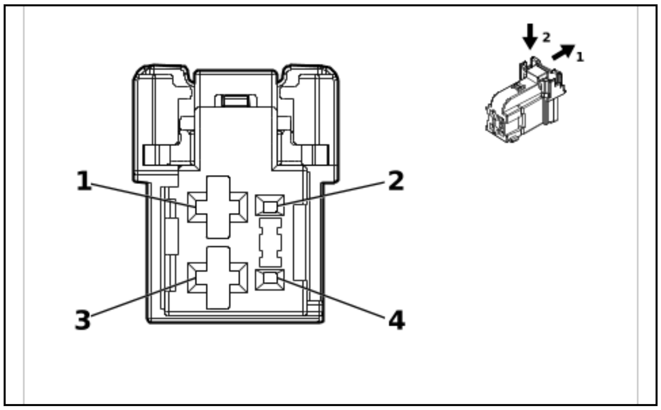
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M50D Front Seat Tilt Adjuster Actuator - Driver (A2X - A45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) BU / VT	(1) 287	(1) Driver Seat Front Vertical Motor Down Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 1.5	(3) GN / BN	(3) 286	(3) Driver Seat Front Vertical Motor Up Control	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M50D Front Seat Tilt Adjuster Actuator - Driver (A2X & A45)



5410027

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series(BK)

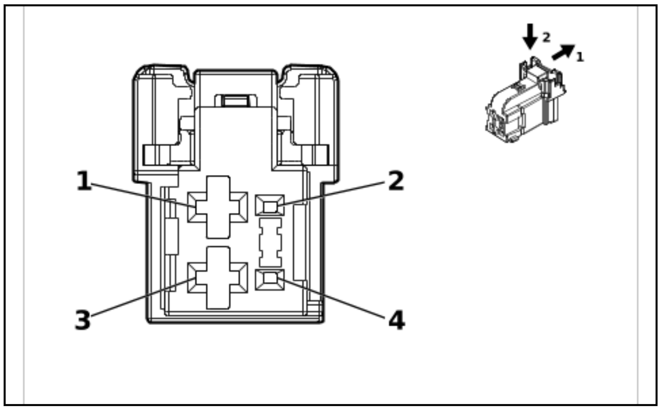
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M50D Front Seat Tilt Adjuster Actuator - Driver (A2X & A45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) BU / VT	(1) 287	(1) Driver Seat Front Vertical Motor Down Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 1.5	(3) GN / BN	(3) 286	(3) Driver Seat Front Vertical Motor Up Control	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M50P Front Seat Tilt Adjuster Actuator - Passenger (- A45)



5410027

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series(BK)

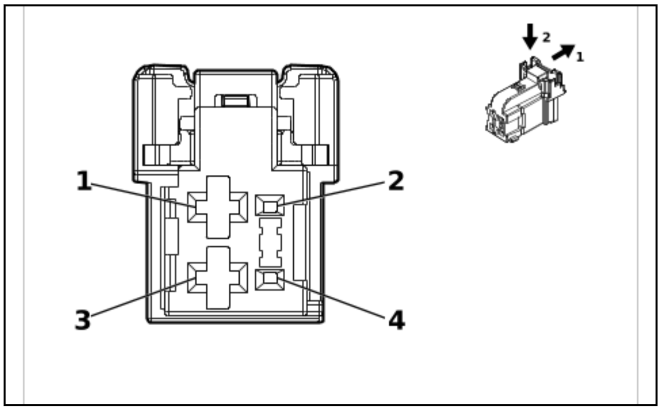
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M50P Front Seat Tilt Adjuster Actuator - Passenger (- A45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) GN / VT	(1) 297	(1) Passenger Seat Front Vertical Motor Up Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 1.5	(3) GN / BU	(3) 298	(3) Passenger Seat Front Vertical Motor Down Control	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M50P Front Seat Tilt Adjuster Actuator - Passenger (A45)



5410027

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series(BK)

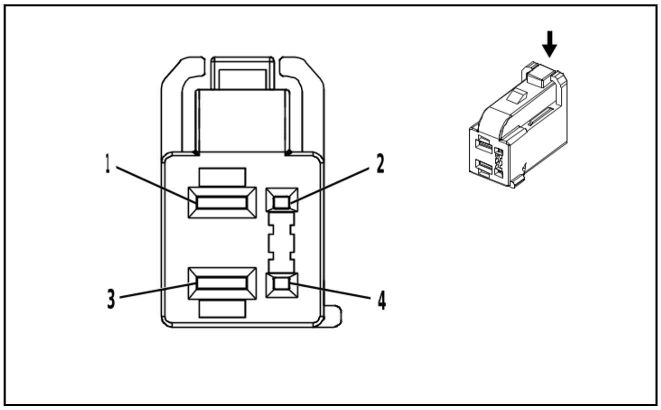
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M50P Front Seat Tilt Adjuster Actuator - Passenger (A45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) GN / VT	(1) 297	(1) Passenger Seat Front Vertical Motor Up Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 1.5	(3) GN / BU	(3) 298	(3) Passenger Seat Front Vertical Motor Down Control	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M51D Front Seat Adjuster Actuator - Driver (A2X)



3683652

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 13583828
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series(BK)

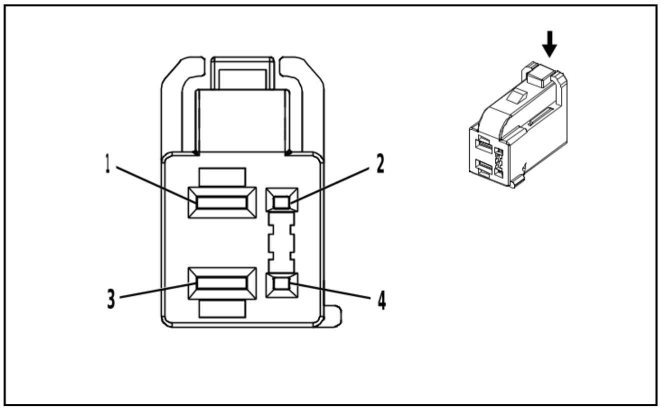
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

M51D Front Seat Adjuster Actuator - Driver (A2X)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) GY / GN	(1) 284	(1) Driver Seat Horizontal Motor Rearward Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 1.5	(3) YE / BU	(3) 285	(3) Driver Seat Horizontal Motor Forward Control	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M51P Front Seat Adjuster Actuator - Passenger



3683652

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 13583828
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series(BK)

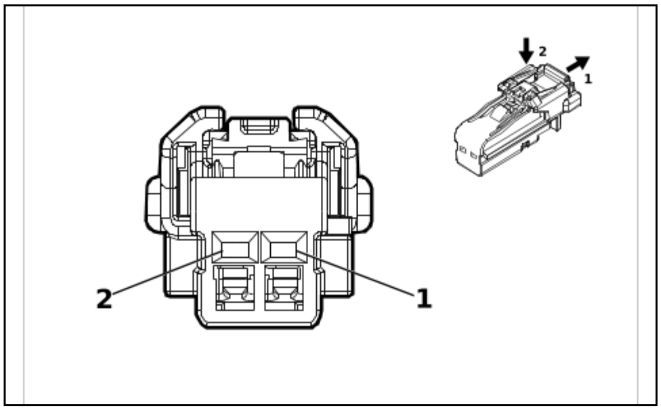
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

M51P Front Seat Adjuster Actuator - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) YE / BU	(1) 290	(1) Passenger Seat Horizontal Motor Rearward Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 1.5	(3) YE / WH	(3) 296	(3) Passenger Seat Horizontal Motor Forward Control	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M53D Front Seat Back Lumbar Motor - Driver (A2X - AVK)



4115691

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

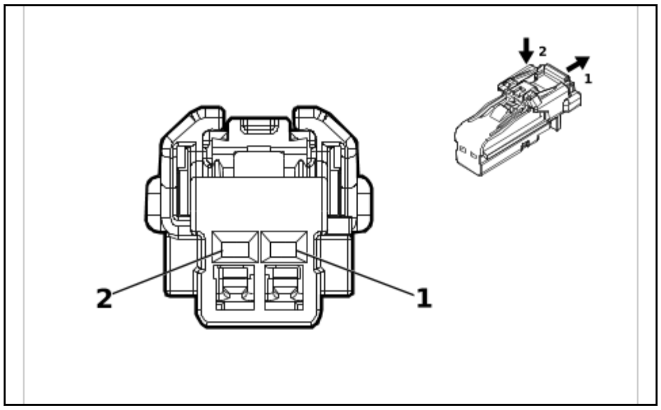
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M53D Front Seat Back Lumbar Motor - Driver (A2X - AVK)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU	(1) 611	(1) Driver Seat Lumbar Support Motor Forward Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) VT	(2) 610	(2) Driver Seat Lumbar Support Motor Backward Control	(2) I	(2) —

M53P Front Seat Back Lumbar Motor - Passenger (A7K - AVU)



4115691

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

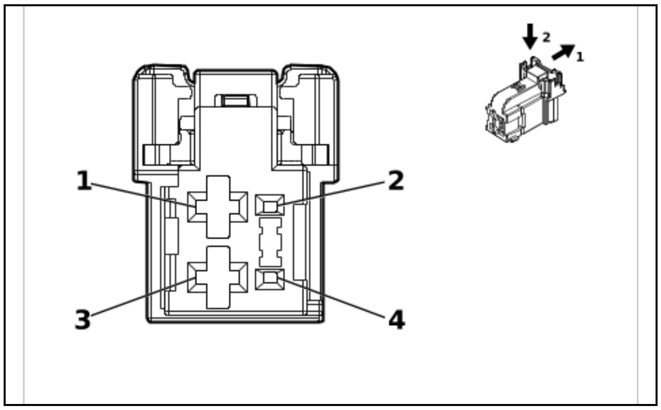
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M53P Front Seat Back Lumbar Motor - Passenger (A7K - AVU)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU	(1) 211	(1) Passenger Seat Lumbar Support Motor Forward Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) VT	(2) 210	(2) Passenger Seat Lumbar Support Motor Backward Control	(2) I	(2) —

M55D Front Seat Vertical Adjuster Actuator - Driver (A2X)



5410027

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series(BK)

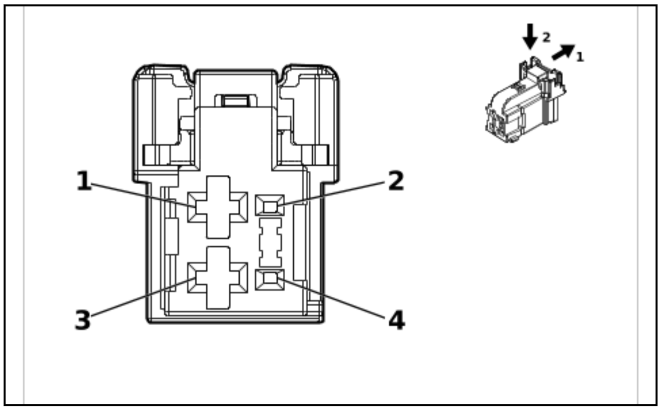
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M55D Front Seat Vertical Adjuster Actuator - Driver (A2X)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) GY / BU	(1) 283	(1) Driver Seat Rear Vertical Motor Down Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 1.5	(3) YE	(3) 282	(3) Driver Seat Rear Vertical Motor Up Control	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M55P Front Seat Vertical Adjuster Actuator - Passenger (AVU & (AHH / AKE))



5410027

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series(BK)

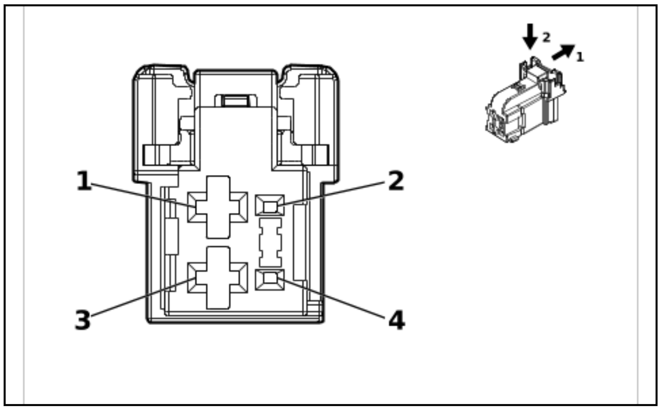
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M55P Front Seat Vertical Adjuster Actuator - Passenger (AVU & (AHH / AKE))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) BU / WH	(1) 289	(1) Passenger Seat Rear Vertical Motor Down Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 1.5	(3) GN / WH	(3) 288	(3) Passenger Seat Rear Vertical Motor Up Control	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M56D Front Seat Recliner Actuator - Driver (A2X)



5410027

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series(BK)

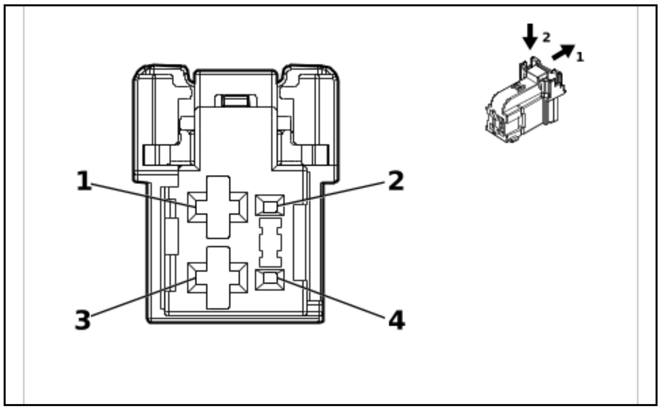
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M56D Front Seat Recliner Actuator - Driver (A2X)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) GN / YE	(1) 276	(1) Driver Seat Recline Motor Forward Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 1.5	(3) BU / YE	(3) 277	(3) Driver Seat Recline Motor Rearward Control	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M56P Front Seat Recliner Actuator - Passenger (AVU & (AHH / AKE))



5410027

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series(BK)

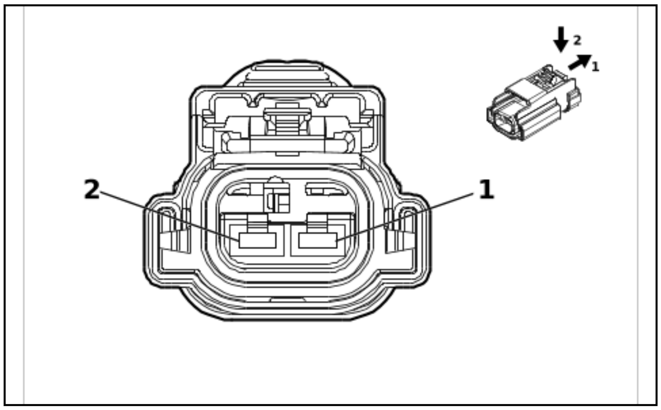
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M56P Front Seat Recliner Actuator - Passenger (AVU & (AHH / AKE))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) GN	(1) 76	(1) Passenger Seat Recline Motor Forward Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 1.5	(3) BU / BN	(3) 77	(3) Passenger Seat Recline Motor Rearward Control	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M63 Rear Sliding Window Motor (A48)



5795169

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 35286783
- Service Connector: 19301518
- Description: 2-Way F 2.8 APEX Series, Sealed(BK)

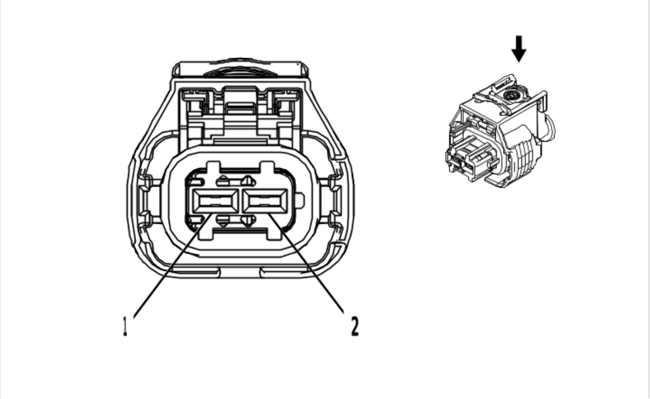
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M63 Rear Sliding Window Motor (A48)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2	(1) YE	(1) 7454	(1) Window Motor Rear Auxiliary Close Control	(1) I	(1) —
(2) 2	(2) 2	(2) VT / YE	(2) 7453	(2) Window Motor Rear Auxiliary Open Control	(2) I	(2) —

M64 Starter X1 (L3B)



2577394

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1 928 405 714
- Service Connector: 13384371
- Description: 2-Way F 2.8 Series, Sealed(BK)

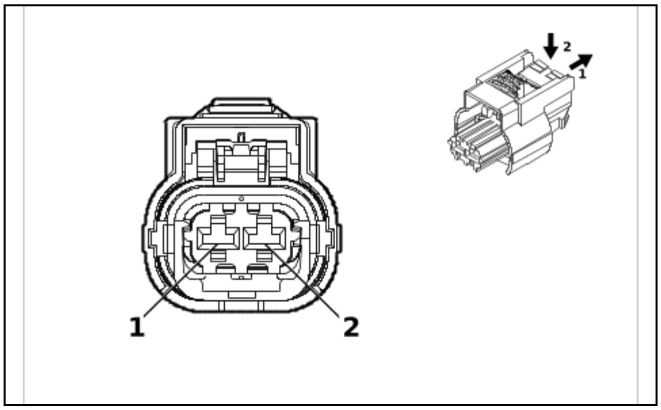
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M64 Starter X1 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) YE	(1) 6	(1) Starter Solenoid Crank Ignition Voltage	(1) I	(1) —
(2) 2	(2) 2.5	(2) YE / GN	(2) 4358	(2) Starter Pinion Solenoid Voltage	(2) I	(2) —

M64 Starter X1 (L84 / L87)



4992524

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 35182447
- Service Connector: 84941154
- Description: 2-Way F 2.8 MCP Series, Sealed(BK)

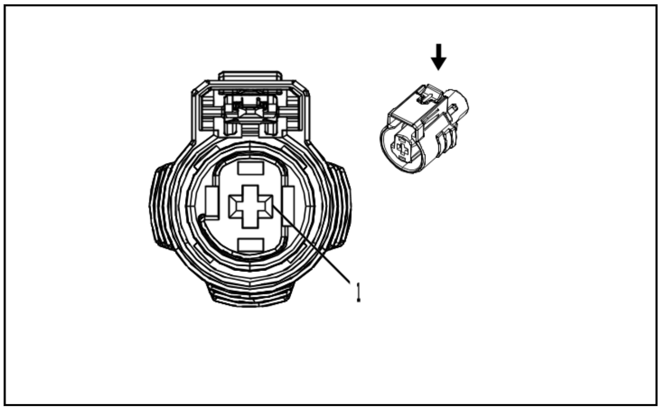
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

M64 Starter X1 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) YE	(1) 6	(1) Starter Solenoid Crank Ignition Voltage	(1) I	(1) —
(2) 2	(2) 2.5	(2) YE / GN	(2) 4358	(2) Starter Pinion Solenoid Voltage	(2) I	(2) —

M64 Starter X1 (LZ0)



2717134

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 2098198-5
- Service Connector: 19300471
- Description: 1-Way F 2.8 MCP Series, Sealed(BK)

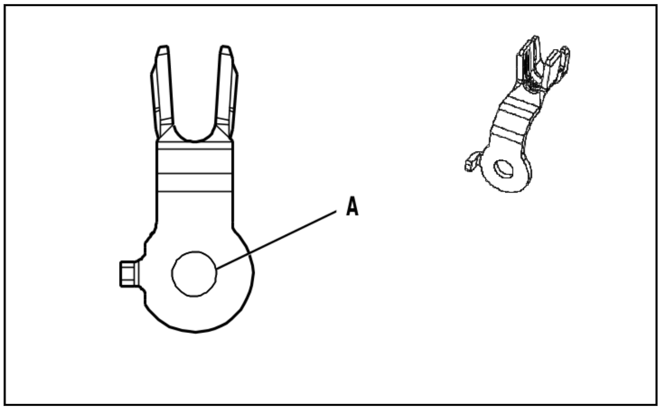
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

M64 Starter X1 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) YE	(1) 6	(1) Starter Solenoid Crank Ignition Voltage	(1) I	(1) —

M64 Starter X2 (L3B)



5020399

Connector Part Information
- Harness Type: Power Steering Wiring Harness
- OEM Connector: 13516388
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

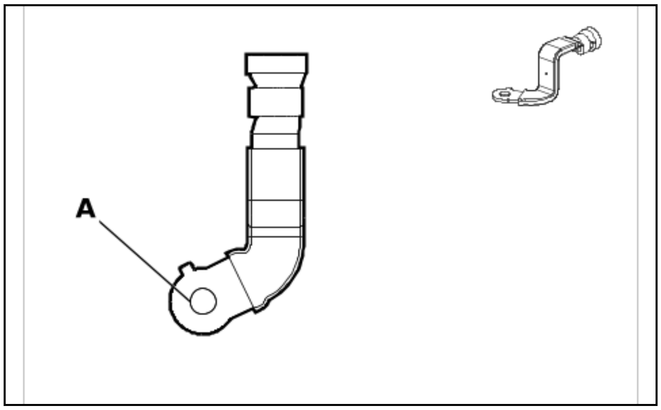
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

M64 Starter X2 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35	RD / YE	2	Battery Positive Voltage	I	—

M64 Starter X2 (L84 / L87)



6609028

Connector Part Information
- Harness Type: Starter Solenoid Cable
- OEM Connector: 86816601
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

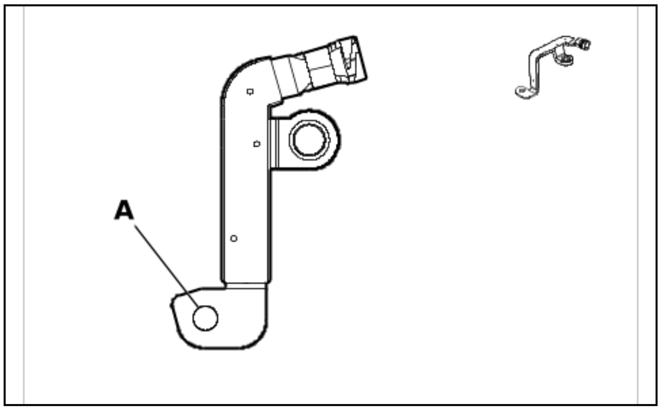
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

M64 Starter X2 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35	RD / YE	2	Battery Positive Voltage	I	L84/ L87

M64 Starter X2 (LZ0)



5911297

Connector Part Information

- Harness Type: Starter Solenoid Cable
- OEM Connector: 86583844
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

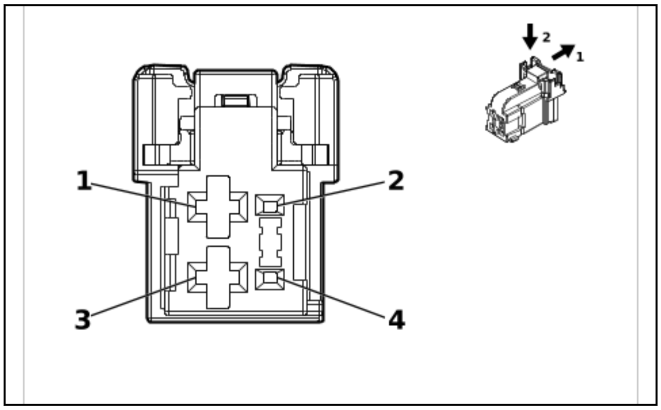
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

M64 Starter X2 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	35	RD / YE	2	Battery Positive Voltage	I	LZ0

M65 Steering Column Telescope Actuator (N38)



5410027

Connector Part Information

- Harness Type: Steering Column Tilt and Telescope Wheel Actuator Motor Harness
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series(BK)

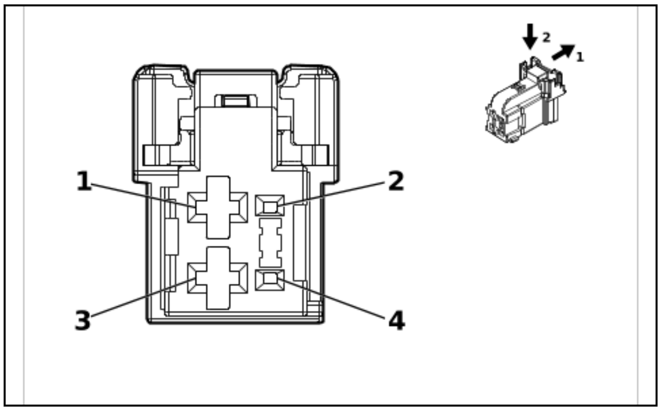
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

M65 Steering Column Telescope Actuator (N38)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) GN	(1) 2098	(1) Steering Column Telescope Motor Forward Control	(1) I	(1) —
(2) 2	(2) 0.35	(2) YE	(2) 2153	(2) Steering Column Telescope Motor Signal	(2) I	(2) —
(3) 3	(3) 1	(3) RD	(3) 2110	(3) Steering Column Telescope Motor Rearward Control	(3) I	(3) —
(4) 4	(4) 0.35	(4) WH	(4) 2152	(4) Steering Column Telescope Motor Low Reference	(4) I	(4) —

M68 Steering Column Tilt Wheel Actuator (N38)



5410027

Connector Part Information
- Harness Type: Steering Column Tilt and Telescope Wheel Actuator Motor Harness
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series(BK)

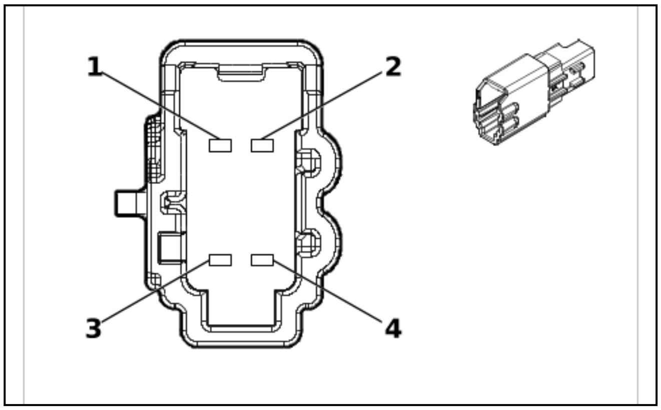
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

M68 Steering Column Tilt Wheel Actuator (N38)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) OG	(1) 2112	(1) Steering Column Tilt Motor Down Control	(1) I	(1) —
(2) 2	(2) 0.35	(2) BN	(2) 2154	(2) Steering Column Tilt Motor Signal	(2) I	(2) —
(3) 3	(3) 1	(3) VT	(3) 2111	(3) Steering Column Tilt Motor Up Control	(3) I	(3) —
(4) 4	(4) 0.35	(4) BU	(4) 2157	(4) Steering Column Tilt Motor Low Reference	(4) I	(4) —

M73A Front Seat Back Ventilation Blower - Driver (KA1 & KQV)



5423974

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series(GY)

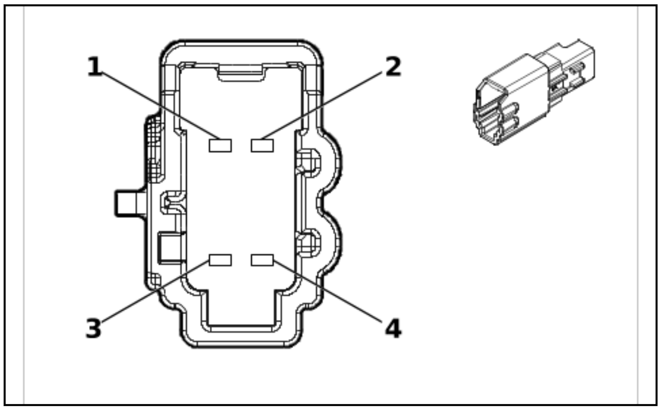
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

M73A Front Seat Back Ventilation Blower - Driver (KA1 & KQV)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) VT / WH	(1) 1139	(1) Run/Crank Ignition 1 Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / VT	(2) 5906	(2) Driver Seat Blower Motor Control 1	(2) I	(2) —
(3) 3	(3) 0.75	(3) BK	(3) 1550	(3) Ground	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M73B Front Seat Back Ventilation Blower - Passenger (KA1 & KQV)



5423974

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series(GY)

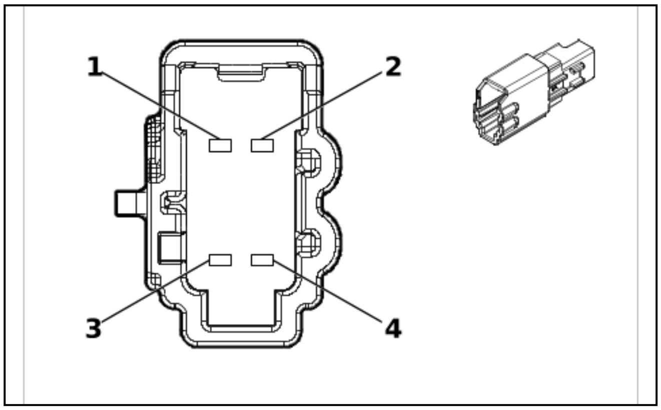
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

M73B Front Seat Back Ventilation Blower - Passenger (KA1 & KQV)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) VT / WH	(1) 1139	(1) Run/Crank Ignition 1 Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / WH	(2) 5908	(2) Passenger Seat Blower Motor Control 1	(2) I	(2) —
(3) 3	(3) 0.75	(3) BK	(3) 1350	(3) Ground	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M73D Front Seat Cushion Ventilation Blower - Driver (KA1 & KQV)



5423974

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series(GY)

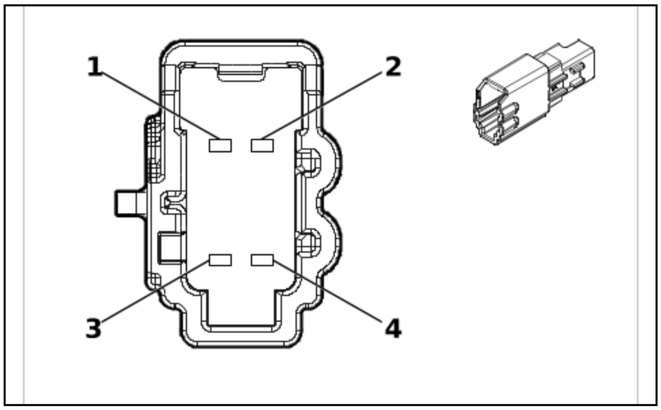
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

M73D Front Seat Cushion Ventilation Blower - Driver (KA1 & KQV)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) VT / WH	(1) 1139	(1) Run/Crank Ignition 1 Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / VT	(2) 5906	(2) Driver Seat Blower Motor Control 1	(2) I	(2) —
(3) 3	(3) 0.75	(3) BK	(3) 1550	(3) Ground	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M73P Front Seat Cushion Ventilation Blower - Passenger (KA1 & KQV)



5423974

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series(GY)

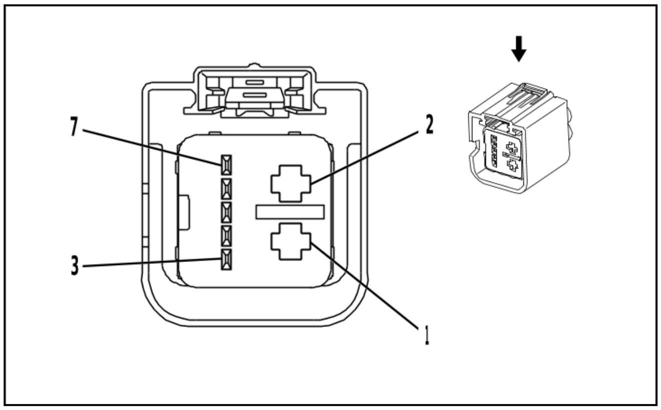
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

M73P Front Seat Cushion Ventilation Blower - Passenger (KA1 & KQV)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) VT / WH	(1) 1139	(1) Run/Crank Ignition 1 Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / WH	(2) 5908	(2) Passenger Seat Blower Motor Control 1	(2) I	(2) —
(3) 3	(3) 0.75	(3) BK	(3) 1350	(3) Ground	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

M74D Front Side Door Window Regulator Motor - Driver (AXG)



2282932

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness - Driver
- OEM Connector: 1-1732115-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 7-Way F 0.64, 2.8 Kaizen Timer Series, Sealed(GY)

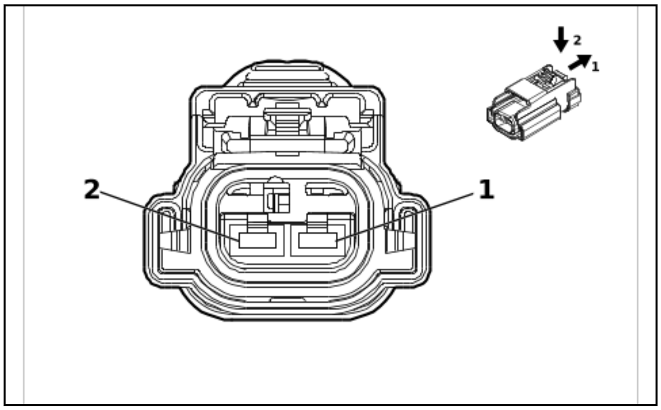
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required
II	Not required	J-35616-64B (L-BU)	No Tool Required

M74D Front Side Door Window Regulator Motor - Driver (AXG)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) BK	(1) 1550	(1) Ground	(1) I	(1) —
(2) 2	(2) 2.5	(2) RD / GY	(2) 3540	(2) Battery Positive Voltage	(2) I	(2) —
(3) 3	(3) 0.5	(3) GY / GN	(3) 2763	(3) Window Switch Left Front Up Signal	(3) II	(3) —
(4) 4	(4) 0.5	(4) GN / YE	(4) 6134	(4) Body Control Module LIN Bus 3	(4) II	(4) —
(5) 5	(5) 0.5	(5) GN	(5) 2766	(5) Power Window Switch Left Front Express Signal	(5) II	(5) —
(6) 6	(6) 0.5	(6) GY	(6) 745	(6) Left Front Door Ajar Switch Signal	(6) II	(6) —
(7) 7	(7) 0.5	(7) WH / BN	(7) 2764	(7) Window Switch Left Front Down Signal	(7) II	(7) —

M74LR Rear Side Door Window Regulator Motor - Left (AEQ & AXG)



5795169

Connector Part Information
- Harness Type: Rear Side Door Door Wiring Harness - Left Rear
- OEM Connector: 35286783
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 APEX Series, Sealed(BK)

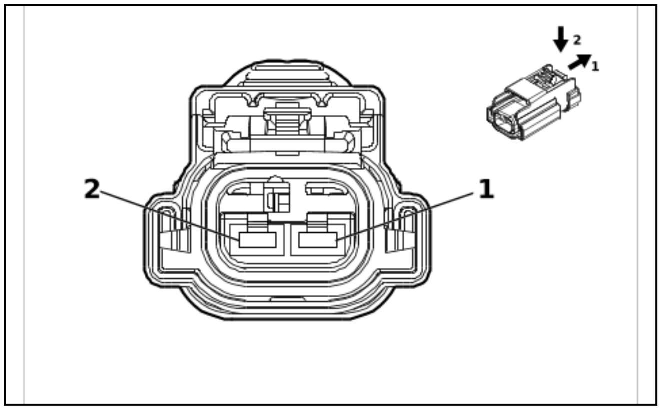
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M74LR Rear Side Door Window Regulator Motor - Left (AEQ & AXG)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2	(1) BU / VT	(1) 668	(1) Left Rear Window Motor Up Control	(1) I	(1) —
(2) 2	(2) 2	(2) YE / BU	(2) 669	(2) Left Rear Window Motor Down Control	(2) I	(2) —

M74P Front Side Door Window Regulator Motor - Passenger (AED)



5795169

Connector Part Information
- Harness Type: Front Side Door Door Wiring Harness - Passenger
- OEM Connector: 35286783
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 APEX Series, Sealed(BK)

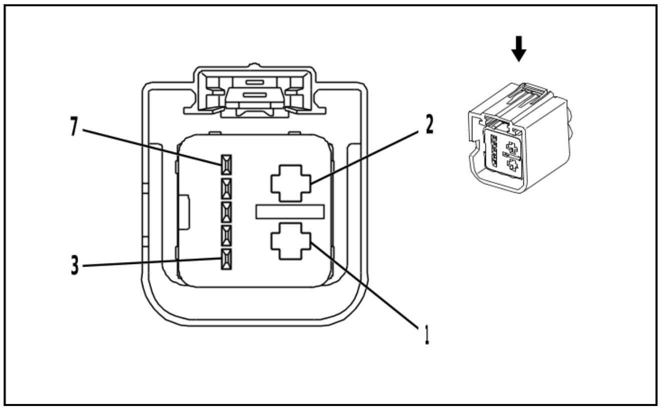
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M74P Front Side Door Window Regulator Motor - Passenger (AED)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2	(1) GN / GY	(1) 666	(1) Right Front Window Motor Up Control	(1) I	(1) —
(2) 2	(2) 2	(2) YE / BU	(2) 667	(2) Right Front Window Motor Down Control	(2) I	(2) —

M74P Front Side Door Window Regulator Motor - Passenger (AEF)



2282932

Connector Part Information
- Harness Type: Front Side Door Door Wiring Harness - Passenger
- OEM Connector: 1-1732115-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 7-Way F 0.64, 2.8 Kaizen Timer Series, Sealed(GY)

Terminal Part Information

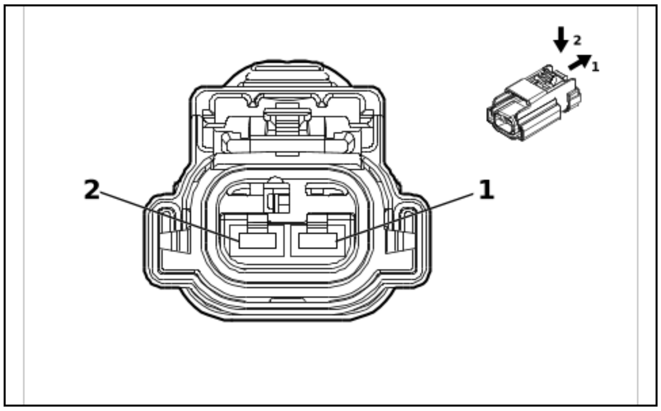
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required
II	Not required	J-35616-64B (L-BU)	No Tool Required

M74P Front Side Door Window Regulator Motor - Passenger (AEF)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) BK	(1) 1350	(1) Ground	(1) I	(1) —
(2) 2	(2) 2.5	(2) RD / BN	(2) 4240	(2) Battery Positive Voltage	(2) I	(2) —
(3) 3	(3) 0.5	(3) GN	(3) 1184	(3) Window Switch Right Front Up Signal	(3) II	(3) —
(4) 4	(4) 0.5	(4) GN / YE	(4) 6134	(4) Body Control Module LIN Bus 3	(4) II	(4) —
(5) 5	(5) 0.5	(5) VT / GY	(5) 2765	(5) Window Switch Right Front Express Signal	(5) II	(5) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(6) 6	(6) 0.5	(6) GY	(6) 746	(6) Right Front Door Ajar Switch Signal	(6) II	(6) —
(7) 7	(7) 0.5	(7) BN	(7) 5295	(7) Window Switch Right Front Down Signal	(7) II	(7) —

M74RR Rear Side Door Window Regulator Motor - Right (AEQ & AXG)



5795169

Connector Part Information
- Harness Type: Rear Side Door Door Wiring Harness - Right Rear
- OEM Connector: 35286783
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 APEX Series, Sealed(BK)

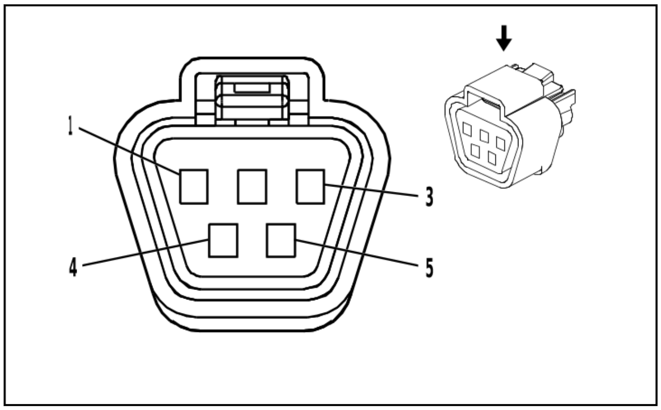
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M74RR Rear Side Door Window Regulator Motor - Right (AEQ & AXG)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2	(1) BU / GY	(1) 670	(1) Right Rear Window Motor Up Control	(1) I	(1) —
(2) 2	(2) 2	(2) GN / BK	(2) 671	(2) Right Rear Window Motor Down Control	(2) I	(2) —

M75 Windshield Wiper Motor



1715213

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 6189-0587
- Service Connector: 13587179
- Description: 5-Way F 090 Series, Sealed(BK)

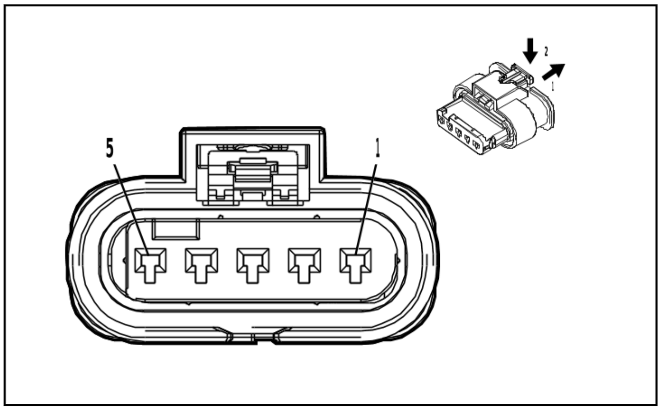
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-18 (BK)	No Tool Required

M75 Windshield Wiper Motor

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2	(1) YE / BN	(1) 95	(1) Windshield Wiper Motor Low Speed Control	(1) II	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) BN / GN	(3) 196	(3) Windshield Wiper Motor Park Switch Signal	(3) I	(3) —
(4) 4	(4) 2	(4) WH	(4) 92	(4) Windshield Wiper Motor High Speed Control	(4) II	(4) —
(5) 5	(5) 2	(5) BK	(5) 150	(5) Ground	(5) II	(5) —

M103 Turbocharger Vane Position Actuator (LZ0)



3338689

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-1718806-1
- Service Connector: 19119351
- Description: 5-Way F 1.2 MCON-LL Series, Sealed(BK)

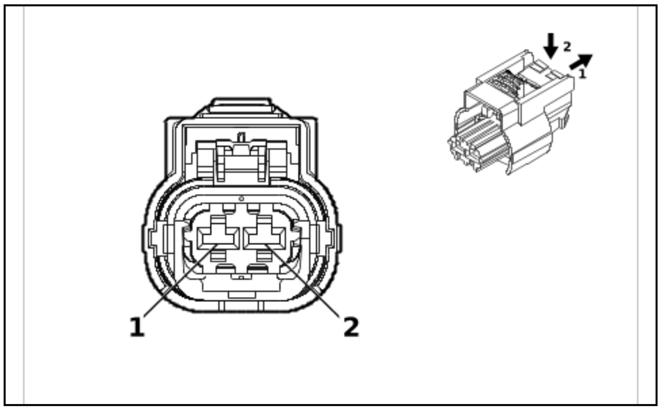
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M103 Turbocharger Vane Position Actuator (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) WH / BN	(1) 1313	(1) Variable Geometry Turbocharger Position Sensor Motor Open Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / YE	(2) 5947	(2) Turbocharger Vane Position Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / GN	(3) 580	(3) Engine Control Sensors Low Reference 2	(3) I	(3) —
(4) 4	(4) 0.5	(4) WH / RD	(4) 480	(4) Engine Control Vehicle Sensors 5 Volt Reference 1	(4) I	(4) —
(5) 5	(5) 0.75	(5) GY / BK	(5) 1330	(5) Variable Geometry Turbocharger Position Sensor Motor Close Control	(5) I	(5) —

M104L Parking Brake Actuator - Left



4992524

Connector Part Information
- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 35182447
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 MCP Series, Sealed(BK)

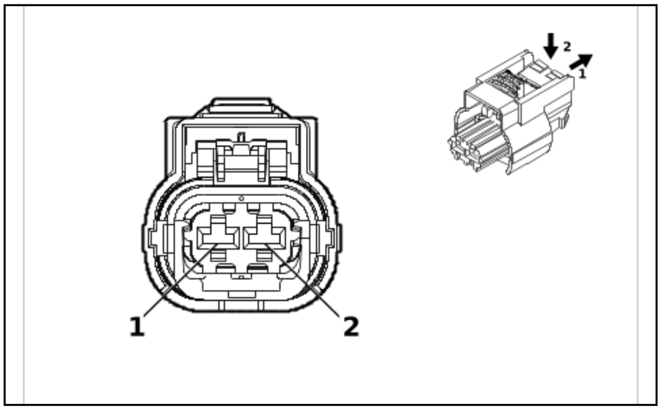
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M104L Parking Brake Actuator - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) WH	(1) 2001	(1) Left Park Brake Motor Apply Control	(1) I	(1) - Z45, Z45, G94
(2) 2	(2) 2.5	(2) GY / BK	(2) 4369	(2) Left Park Brake Motor Low Reference	(2) I	(2) - Z45, Z45, G94

M104R Parking Brake Actuator - Right



4992524

Connector Part Information
- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 35182447
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 MCP Series, Sealed(BK)

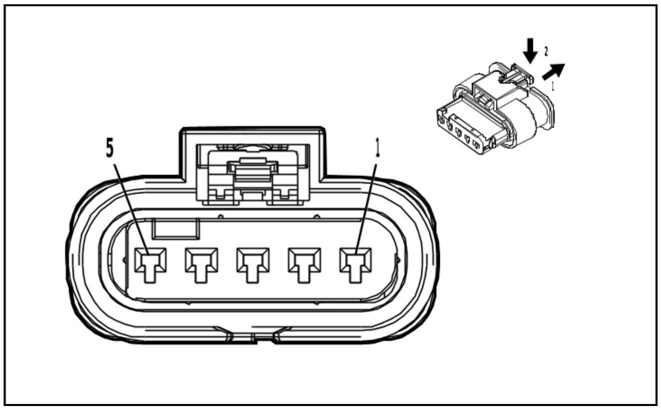
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

M104R Parking Brake Actuator - Right

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) GN / VT	(1) 1988	(1) Right Park Brake Motor Apply Control	(1) I	(1) - Z45, Z45, G94
(2) 2	(2) 2.5	(2) GY	(2) 4368	(2) Right Park Brake Motor Low Reference	(2) I	(2) - Z45, Z45, G94

M106V Exhaust Control Valve Actuator - Variable (L87 & NPP)



3338689

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-1718806-1
- Service Connector: 19119351
- Description: 5-Way F 1.2 MCON-LL Series, Sealed(BK)

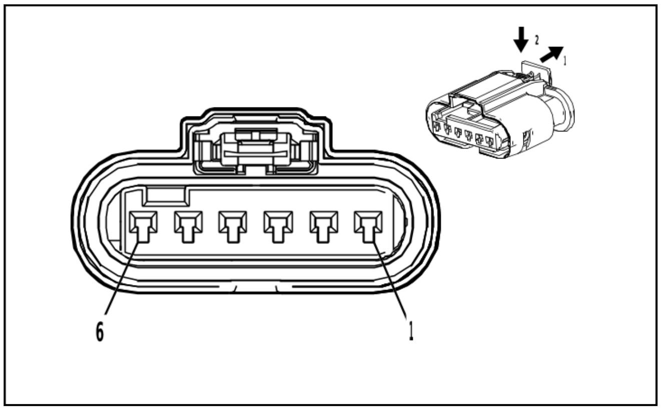
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M106V Exhaust Control Valve Actuator - Variable (L87 & NPP)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 1650	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / GN	(2) 4305	(2) Exhaust Flow Control Valve 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) VT / WH	(3) 639	(3) Run/Crank Ignition 1 Voltage	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / WH	(4) 4306	(4) Exhaust Flow Control Valve 1 - Cylinder Deactivation Feedback Signal	(4) I	(4) —
5	—	—	—	Not Occupied	—	—

M122 Exhaust Pressure Regulator Valve (LZ0)



3960142

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 34900-6119
- Service Connector: 85005020
- Description: 6-Way F 1.2 MCON-LL Series, Sealed(BK)

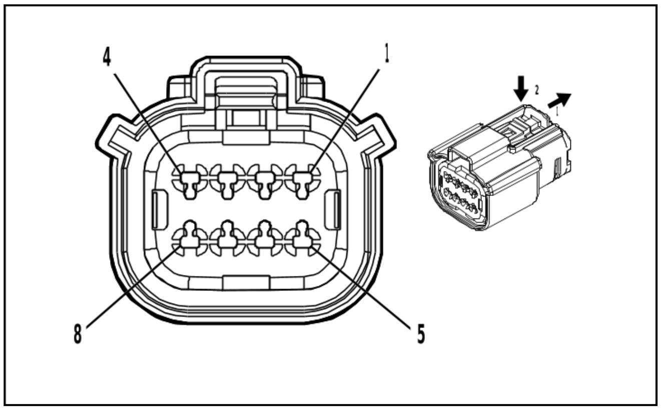
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

M122 Exhaust Pressure Regulator Valve (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) YE / BN	(1) 1420	(1) Exhaust Restrictor Motor Open Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) BN	(2) 1421	(2) Exhaust Restrictor Motor Closed Control	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / YE	(3) 548	(3) Engine Control Sensors Low Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) BN / GN	(4) 4305	(4) Exhaust Flow Control Valve 1	(4) I	(4) —
(5) 5	(5) 0.5	(5) BU / RD	(5) 460	(5) Engine Control Sensors 5 Volt Reference 1	(5) I	(5) —
6	—	—	—	Not Occupied	—	—

M125 Pickup Box Endgate Power Assist Actuator (QK1 & QT6)



4846407

Connector Part Information
- Harness Type: Endgate Wiring Harness
- OEM Connector: 33472-4806
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.5 MX Series, Sealed(BK)

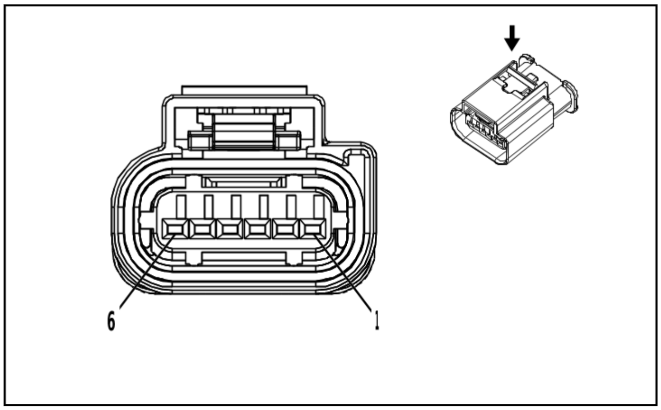
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

M125 Pickup Box Endgate Power Assist Actuator (QK1 & QT6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) BN / WH	(1) 4690	(1) Rear Closure Open/Close Motor Close Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN	(2) 1577	(2) Rear Closure Clutch Control	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / BK	(3) 1590	(3) Rear Closure Clutch Low Return	(3) I	(3) —
(4) 4	(4) 0.5	(4) BN / RD	(4) 4683	(4) Rear Closure Position Sensor Voltage Reference	(4) I	(4) —
(5) 5	(5) 1	(5) WH	(5) 4689	(5) Rear Closure Open/Close Motor Open Control	(5) I	(5) —
(6) 6	(6) 0.5	(6) BN / YE	(6) 4686	(6) Rear Closure Position Sensor Signal 2	(6) I	(6) —
(7) 7	(7) 0.5	(7) BK / GN	(7) 4687	(7) Rear Closure Position Sensor Low Reference	(7) I	(7) —
(8) 8	(8) 0.5	(8) BU / WH	(8) 4685	(8) Rear Closure Position Sensor Signal 1	(8) I	(8) —

M128 Turbocharger Wastegate Actuator (L3B)



3747579

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 2272975-5
- Service Connector: 19352911
- Description: 6-Way F 1.2 MCON Series, Sealed(BK)

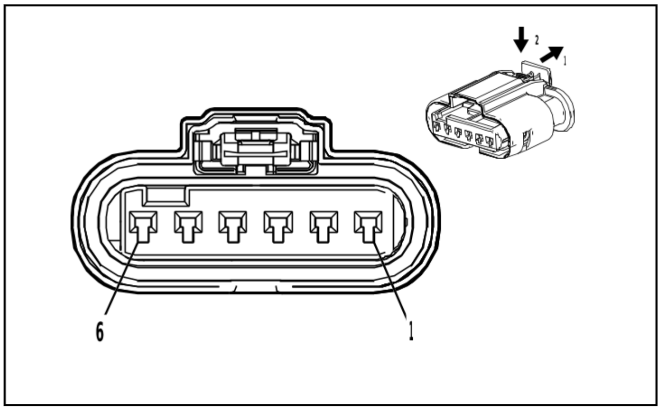
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M128 Turbocharger Wastegate Actuator (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / YE	(1) 548	(1) Engine Control Sensors Low Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH	(2) 2590	(2) Turbocharger Wastegate Motor Feedback Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / RD	(3) 460	(3) Engine Control Sensors 5 Volt Reference 1	(3) I	(3) —
(4) 4	(4) 0.75	(4) WH / BU	(4) 2592	(4) Turbocharger Wastegate Motor Close Control	(4) I	(4) —
(5) 5	(5) 0.75	(5) WH / BN	(5) 2591	(5) Turbocharger Wastegate Motor Open Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—

M129A Intake Camshaft Profile Actuator 1 (L3B)



3960142

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 34900-6219
- Service Connector: 85005020
- Description: 6-Way F 1.2 MCON-LL Series, Sealed(BK)

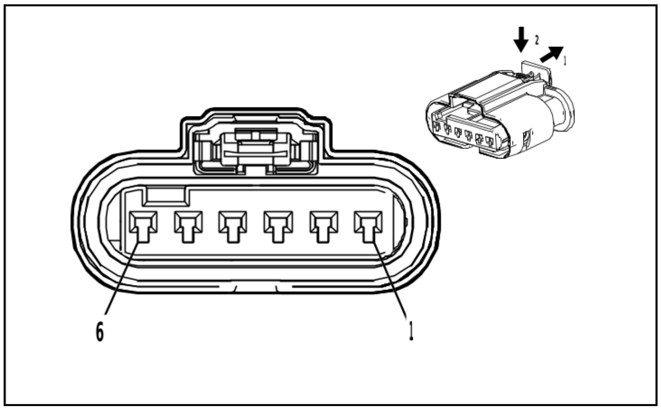
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M129A Intake Camshaft Profile Actuator 1 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / GY	(1) 3615	(1) Intake Camshaft Profile Actuator 1 Control A	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / WH	(2) 3589	(2) Intake Camshaft Profile Actuator 1 Position Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / YE	(3) 548	(3) Engine Control Sensors Low Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / RD	(4) 460	(4) Engine Control Sensors 5 Volt Reference 1	(4) I	(4) —
(5) 5	(5) 0.5	(5) VT / BU	(5) 5293	(5) Powertrain Main Relay Fused Supply Voltage 4	(5) I	(5) —
(6) 6	(6) 0.5	(6) GN / BK	(6) 3616	(6) Intake Camshaft Profile Actuator 1 Control B	(6) I	(6) —

M129B Intake Camshaft Profile Actuator 2 (L3B)



3960142

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 34900-6219
- Service Connector: 85005020
- Description: 6-Way F 1.2 MCON-LL Series, Sealed(BK)

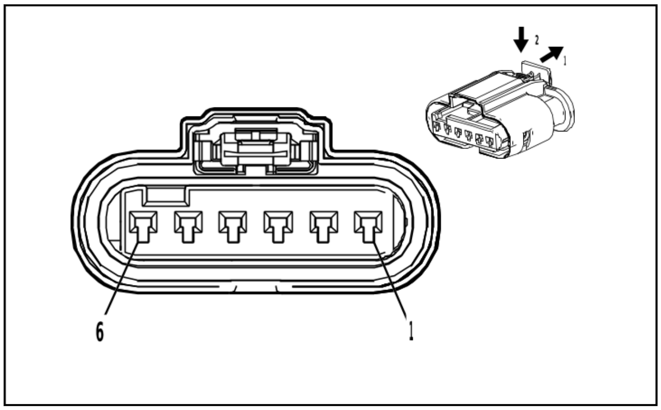
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M129B Intake Camshaft Profile Actuator 2 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN	(1) 3585	(1) Intake Camshaft Profile Actuator 2 Control A	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / WH	(2) 3592	(2) Intake Camshaft Profile Actuator 2 Position Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / YE	(3) 548	(3) Engine Control Sensors Low Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / RD	(4) 460	(4) Engine Control Sensors 5 Volt Reference 1	(4) I	(4) —
(5) 5	(5) 0.5	(5) VT / BU	(5) 5293	(5) Powertrain Main Relay Fused Supply Voltage 4	(5) I	(5) —
(6) 6	(6) 0.5	(6) BU	(6) 3584	(6) Intake Camshaft Profile Actuator 2 Control B	(6) I	(6) —

M129C Intake Camshaft Profile Actuator 3 (L3B)



3960142

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 34900-6219
- Service Connector: 85005020
- Description: 6-Way F 1.2 MCON-LL Series, Sealed(BK)

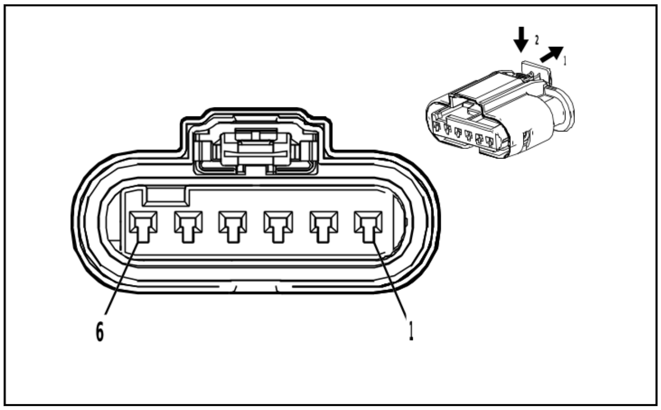
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M129C Intake Camshaft Profile Actuator 3 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BU	(1) 3587	(1) Intake Camshaft Profile Actuator 3 Control A	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 3593	(2) Intake Camshaft Profile Actuator 3 Position Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / YE	(3) 548	(3) Engine Control Sensors Low Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / RD	(4) 460	(4) Engine Control Sensors 5 Volt Reference 1	(4) I	(4) —
(5) 5	(5) 0.5	(5) VT / BU	(5) 5293	(5) Powertrain Main Relay Fused Supply Voltage 4	(5) I	(5) —
(6) 6	(6) 0.5	(6) GY	(6) 3586	(6) Intake Camshaft Profile Actuator 3 Control B	(6) I	(6) —

M129D Intake Camshaft Profile Actuator 4 (L3B)



3960142

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 34900-6219
- Service Connector: 85005020
- Description: 6-Way F 1.2 MCON-LL Series, Sealed(BK)

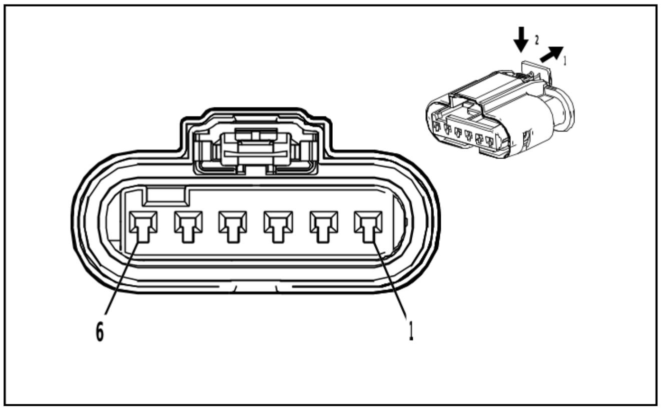
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M129D Intake Camshaft Profile Actuator 4 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / YE	(1) 1402	(1) Intake Camshaft Profile Actuator 4 Control A	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / BN	(2) 1702	(2) Intake Camshaft Profile Actuator 4 Position Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / YE	(3) 548	(3) Engine Control Sensors Low Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / RD	(4) 460	(4) Engine Control Sensors 5 Volt Reference 1	(4) I	(4) —
(5) 5	(5) 0.5	(5) VT / BU	(5) 5293	(5) Powertrain Main Relay Fused Supply Voltage 4	(5) I	(5) —
(6) 6	(6) 0.5	(6) GY / YE	(6) 1502	(6) Intake Camshaft Profile Actuator 4 Control B	(6) I	(6) —

M130B Exhaust Camshaft Profile Actuator 2 (L3B)



3960142

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 34900-6219
- Service Connector: 85005020
- Description: 6-Way F 1.2 MCON-LL Series, Sealed(BK)

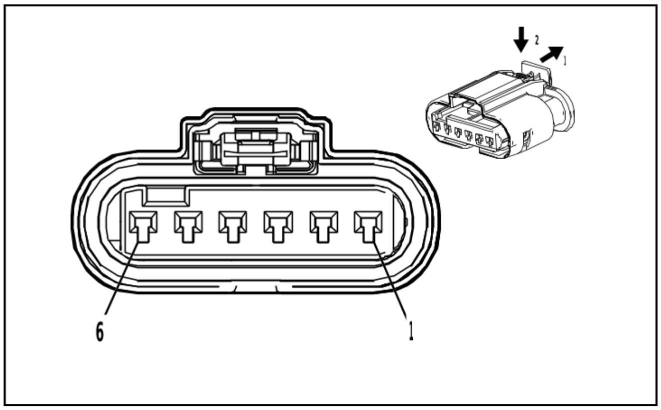
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M130B Exhaust Camshaft Profile Actuator 2 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / VT	(1) 6265	(1) Exhaust Camshaft Profile Actuator 2 Control B	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / BK	(2) 6266	(2) Exhaust Camshaft Profile Actuator 2 Position Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / YE	(3) 548	(3) Engine Control Sensors Low Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / RD	(4) 460	(4) Engine Control Sensors 5 Volt Reference 1	(4) I	(4) —
(5) 5	(5) 0.5	(5) VT / BU	(5) 5293	(5) Powertrain Main Relay Fused Supply Voltage 4	(5) I	(5) —
(6) 6	(6) 0.5	(6) VT / BK	(6) 6264	(6) Exhaust Camshaft Profile Actuator 2 Control A	(6) I	(6) —

M130C Exhaust Camshaft Profile Actuator 3 (L3B)



3960142

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 34900-6219
- Service Connector: 85005020
- Description: 6-Way F 1.2 MCON-LL Series, Sealed(BK)

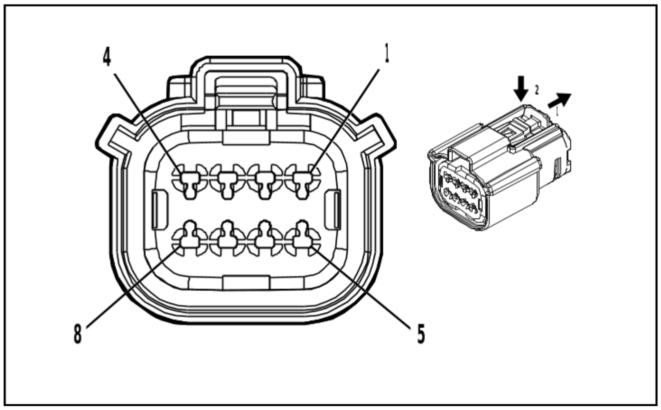
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

M130C Exhaust Camshaft Profile Actuator 3 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BN	(1) 6262	(1) Exhaust Camshaft Profile Actuator 3 Control B	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE	(2) 6263	(2) Exhaust Camshaft Profile Actuator 3 Position Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / YE	(3) 548	(3) Engine Control Sensors Low Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / RD	(4) 460	(4) Engine Control Sensors 5 Volt Reference 1	(4) I	(4) —
(5) 5	(5) 0.5	(5) VT / BU	(5) 5293	(5) Powertrain Main Relay Fused Supply Voltage 4	(5) I	(5) —
(6) 6	(6) 0.5	(6) GN / BN	(6) 6261	(6) Exhaust Camshaft Profile Actuator 3 Control A	(6) I	(6) —

M151L Pickup Box Endgate Cinch Latch Actuator - Left (QK1 & QT6)



4846407

Connector Part Information

- Harness Type: Endgate Wiring Harness
- OEM Connector: 33472-4806
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.5 MX Series, Sealed(BK)

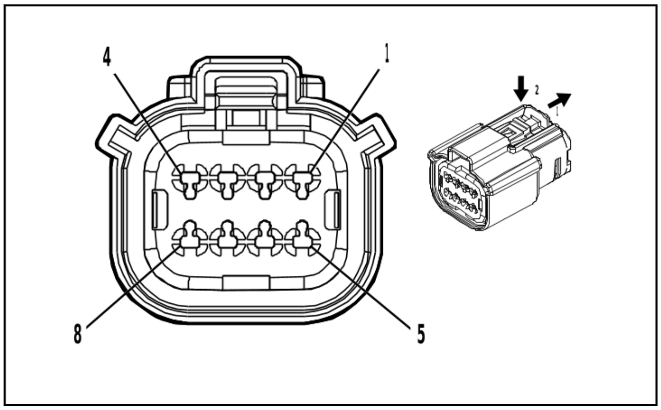
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

M151L Pickup Box Endgate Cinch Latch Actuator - Left (QK1 & QT6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.5	(2) BN / GY	(2) 10281	(2) Rear Closure Latch Secondary Status Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) GY / VT	(3) 4678	(3) Rear Closure Latch Unlatch Status	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK / VT	(4) 4656	(4) Rear Closure Object Sensor Low Reference	(4) I	(4) —
(5) 5	(5) 1	(5) BN	(5) 4681	(5) Rear Closure Cinch Latch Motor Cinch Control	(5) I	(5) —
(6) 6	(6) 1	(6) BU / GY	(6) 4682	(6) Rear Closure Cinch Latch Motor Release Control	(6) I	(6) —
(7) 7	(7) 0.5	(7) WH / GN	(7) 8084	(7) Rear Closure Latch Neutral Status	(7) I	(7) —
(8) 8	(8) 0.5	(8) YE / BK	(8) 8085	(8) Rear Closure Latch Primary Status	(8) I	(8) —

M151R Pickup Box Endgate Cinch Latch Actuator - Right (QK1 & QT6)



4846407

Connector Part Information

- Harness Type: Endgate Wiring Harness
- OEM Connector: 33472-4806
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.5 MX Series, Sealed(BK)

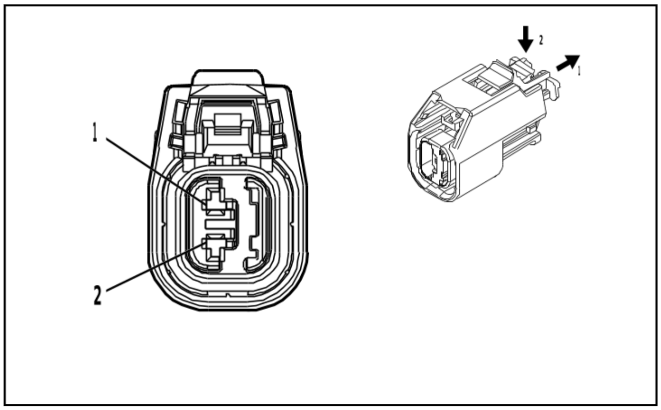
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

M151R Pickup Box Endgate Cinch Latch Actuator - Right (QK1 & QT6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BK	(1) 1575	(1) Rear Closure Sensor Low Reference 2	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN	(2) 7736	(2) Rear Closure Latch 2 Unlatch Status Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) VT / WH	(3) 10284	(3) Rear Closure Latch 2 Secondary Status Signal	(3) I	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) GN / BU	(5) 10283	(5) Rear Closure Latch 2 Primary Status Signal	(5) I	(5) —
(6) 6	(6) 0.5	(6) BU / BN	(6) 10282	(6) Rear Closure Latch 2 Neutral Status Signal	(6) I	(6) —
(7) 7	(7) 1	(7) GN	(7) 1499	(7) Rear Closure Cinch Latch Motor 2 Cinch Control	(7) I	(7) —
(8) 8	(8) 1	(8) BU	(8) 1509	(8) Rear Closure Cinch Latch Motor 2 Release Control	(8) I	(8) —

P13 Horn



4889830

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 33164011
- Service Connector: 86802964
- Description: 2-Way F 1.5 OCS Series, Sealed(BK)

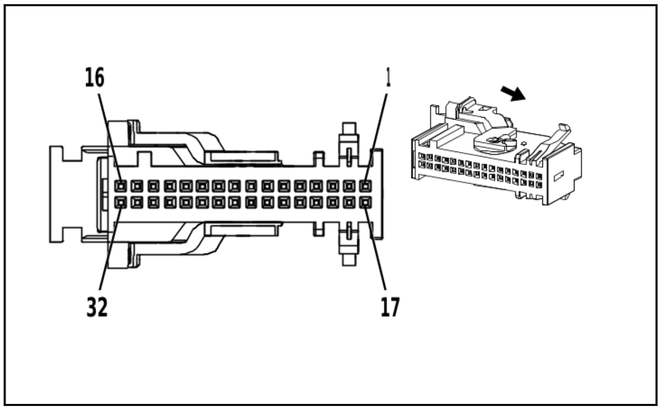
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

P13 Horn

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 650	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.75	(2) BN / GY	(2) 29	(2) Horn Control	(2) I	(2) —

P16 Instrument Panel Cluster Control Module X1



627214

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2-2236674-1
- Service Connector: 13511333
- Description: 32-Way F 0.64 Micro-Quadlock Series(GY)

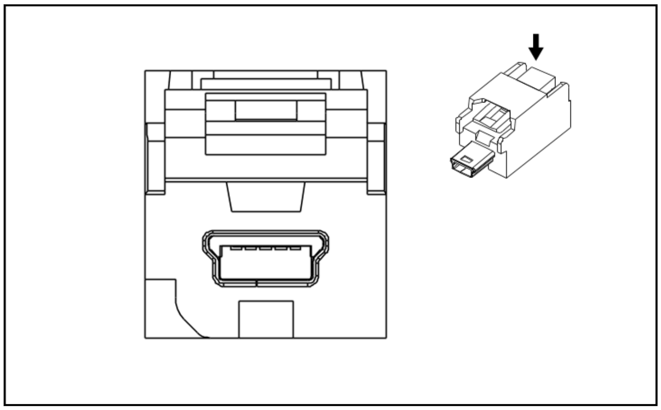
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19300632	J-35616-64B (L-BU)	J-38125-215A
II	Service by Cable	J-35616-64B (L-BU)	J-35616-215A

P16 Instrument Panel Cluster Control Module X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) WH	(1) 7216	(1) Ethernet Bus 7 [-]	(1) II	(1) —
2 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) RD / WH	(7) 1340	(7) Battery Positive Voltage	(7) I	(7) —
(8) 8	(8) 0.35	(8) VT / BK	(8) 339	(8) Run/Crank Ignition 1 Voltage	(8) I	(8) —
9 - 10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.35	(11) GY / BK	(11) 4787	(11) Day Night LED Control	(11) I	(11) —
(12) 12	(12) 0.35	(12) GY / YE	(12) 3885	(12) Forward Collision Alert LED Control	(12) I	(12) —
(13) 13	(13) 0.35	(13) BU / WH	(13) 4985	(13) AUTOSAR CAN Bus [+] 5 Serial Data	(13) I	(13) —
(14) 14	(14) 0.35	(14) BU / YE	(14) 4984	(14) AUTOSAR CAN Bus [-] 5 Serial Data	(14) I	(14) —
15 - 16	—	—	—	Not Occupied	—	—
(17) 17	(17) 0.35	(17) GN	(17) 7217	(17) Ethernet Bus 7 [+]	(17) II	(17) —
18	—	—	—	Not Occupied	—	—
(19) 19	(19) 0.5	(19) BK / WH	(19) 851	(19) Signal Ground	(19) I	(19) —
(20) 20	(20) 0.5	(20) GN / BK	(20) 3894	(20) Instrument Panel Cluster Control Module LIN Bus 1	(20) I	(20) —
21 - 28	—	—	—	Not Occupied	—	—
(29) 29	(29) 0.35	(29) BU / WH	(29) 4985	(29) AUTOSAR CAN Bus [+] 5 Serial Data	(29) I	(29) —
(30) 30	(30) 0.35	(30) BU / YE	(30) 4984	(30) AUTOSAR CAN Bus [-] 5 Serial Data	(30) I	(30) —
31	—	—	—	Not Occupied	—	—
(32) 32	(32) 0.35	(32) GN / BN	(32) 507	(32) Wait To Start Indicator Control	(32) I	(32) —

P16 Instrument Panel Cluster Control Module X2



3214018

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13893437
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type(GY)

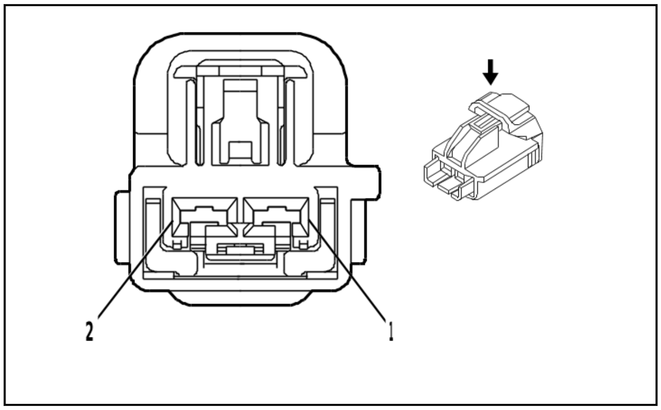
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

P16 Instrument Panel Cluster Control Module X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	LVDS	—	(Head Up Display) Head Up Display Signal	I	—

P19AFC Front Floor Speaker - Console (UQA / UQS)



1803142

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 7283-6445-40
- Service Connector: 19367562
- Description: 2-Way F Kaizen Series(L-GY)

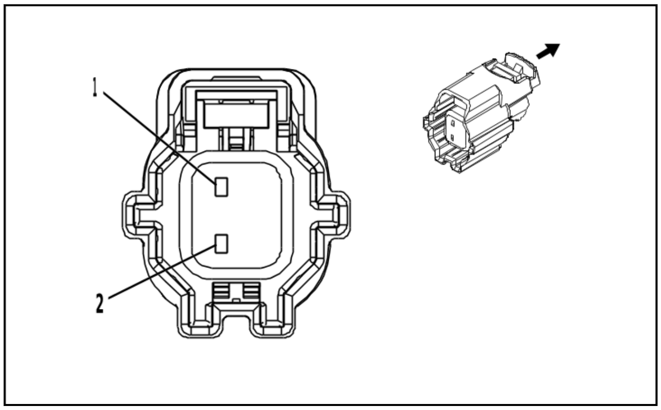
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

P19AFC Front Floor Speaker - Console (UQA / UQS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) GN / BK	(1) 1794	(1) Left/Rear Subwoofer [-] Control	(1) I	(1) —
(2) 2	(2) 2.5	(2) BU / GY	(2) 346	(2) Left/Rear Subwoofer [+] Control	(2) I	(2) —

P19AG Radio Front Side Door Speaker - Left (U95 / UQA / UQF / UQS)



4223204

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness - Driver
- OEM Connector: 34062-0044
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 MX Series, Sealed(BK)

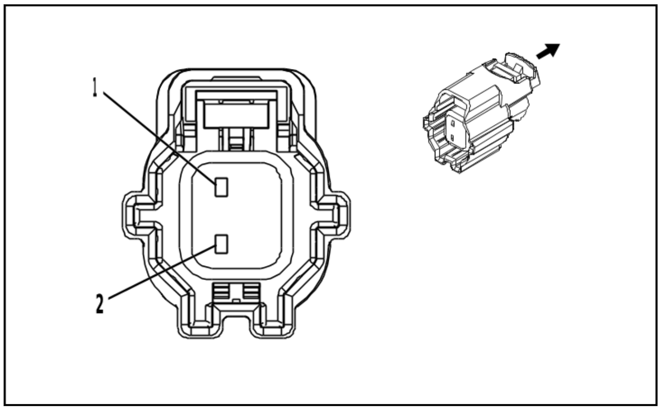
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

P19AG Radio Front Side Door Speaker - Left (U95 / UQA / UQF / UQS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BN / BU	(1) 118	(1) Left Front Speaker [-] Control 1	(1) I	(1) —
(2) 2	(2) 0.75	(2) BU	(2) 201	(2) Left Front Speaker 1 [+] Control	(2) I	(2) —

P19AH Radio Front Side Door Speaker - Right (U95 / UQA / UQF / UQS)



4223204

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness - Passenger
- OEM Connector: 34062-0044
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 MX Series, Sealed(BK)

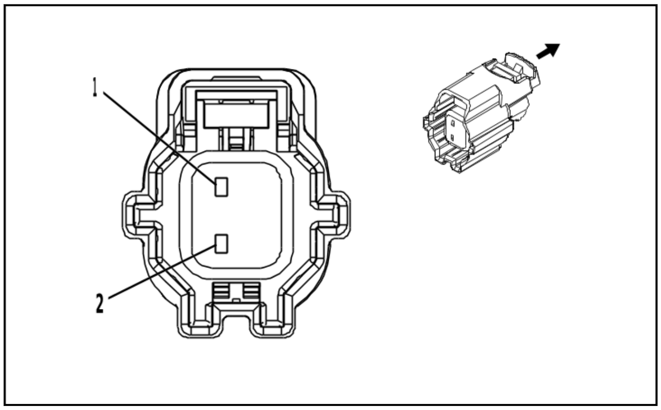
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

P19AH Radio Front Side Door Speaker - Right (U95 / UQA / UQF / UQS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) YE / BK	(1) 117	(1) Right Front Speaker [-] Control 1	(1) I	(1) —
(2) 2	(2) 0.75	(2) YE	(2) 200	(2) Right Front Speaker 1 [+] Control	(2) I	(2) —

P19AL Radio Rear Side Door Speaker - Left (UQA / UQF / UQS)



4223204

Connector Part Information

- Harness Type: Rear Side Door Door Wiring Harness - Left Rear
- OEM Connector: 34062-0044
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 MX Series, Sealed(BK)

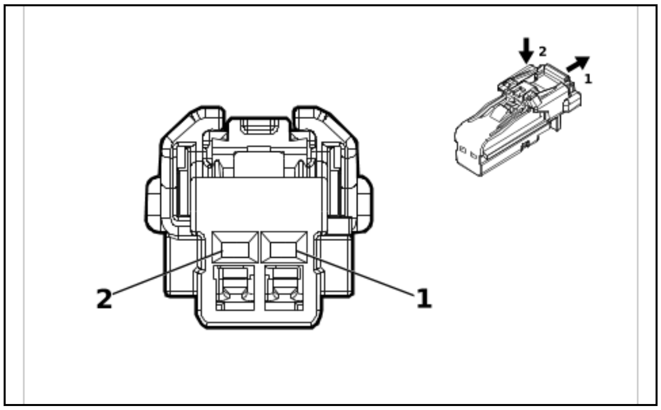
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

P19AL Radio Rear Side Door Speaker - Left (UQA / UQF / UQS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) GN / BK	(1) 116	(1) Left Rear Speaker [-] Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) GN	(2) 199	(2) Left Rear Speaker [+] Control	(2) I	(2) —

P19ALU Radio Rear Side Door Upper Speaker - Left (UQS)



4115691

Connector Part Information

- Harness Type: Rear Side Door Door Wiring Harness - Jumper
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

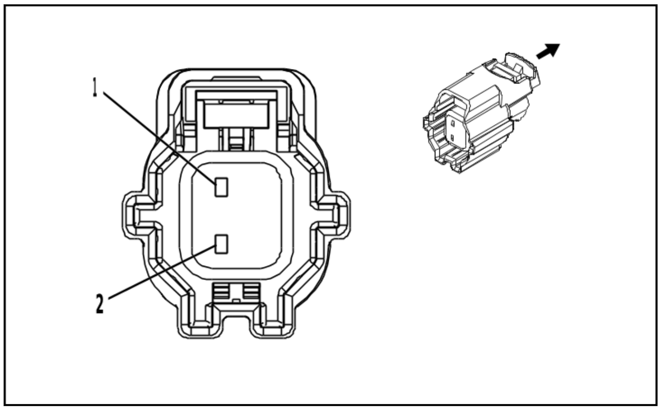
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

P19ALU Radio Rear Side Door Upper Speaker - Left (UQS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) GN / BK	(1) 116	(1) Left Rear Speaker [-] Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) GN	(2) 199	(2) Left Rear Speaker [+] Control	(2) I	(2) —

P19AM Radio Rear Side Door Speaker - Right (UQA / UQF / UQS)



4223204

Connector Part Information
- Harness Type: Rear Side Door Door Wiring Harness - Right Rear
- OEM Connector: 34062-0044
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 MX Series, Sealed(BK)

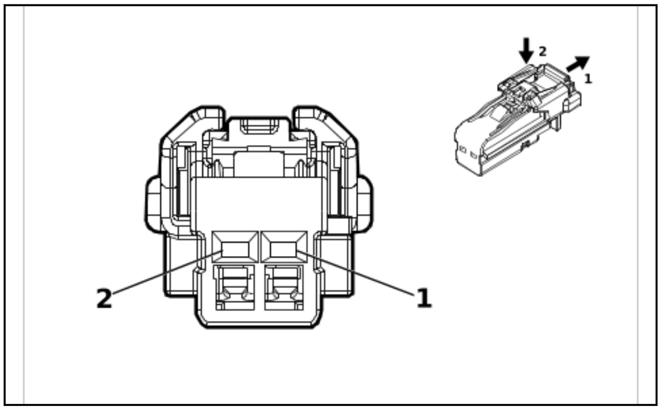
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

P19AM Radio Rear Side Door Speaker - Right (UQA / UQF / UQS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU / BK	(1) 115	(1) Right Rear Speaker [-] Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) WH	(2) 46	(2) Right Rear Speaker [+] Control	(2) I	(2) —

P19AMU Radio Rear Side Door Upper Speaker - Right (UQS)



4115691

Connector Part Information
- Harness Type: Rear Side Door Door Wiring Harness - Jumper
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

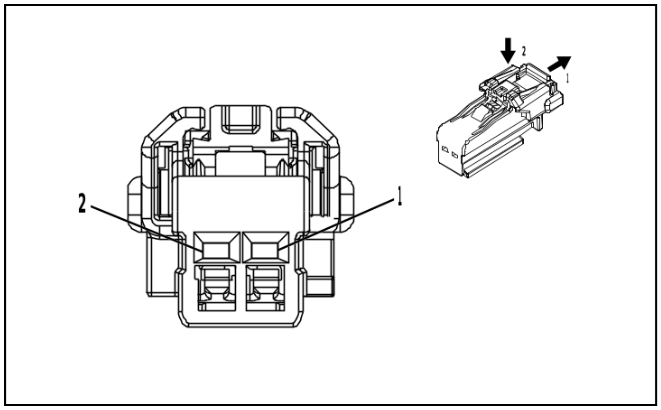
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

P19AMU Radio Rear Side Door Upper Speaker - Right (UQS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) GN / BK	(1) 115	(1) Right Rear Speaker [-] Control	(1) I	(1) UQS
(2) 2	(2) 0.75	(2) GN	(2) 46	(2) Right Rear Speaker [+] Control	(2) I	(2) UQS

P19B Radio Front Center Speaker (UQS)



4373379

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8989
- Service Connector: 19369632
- Description: 2-Way F 1.2 MCON Series(GY)

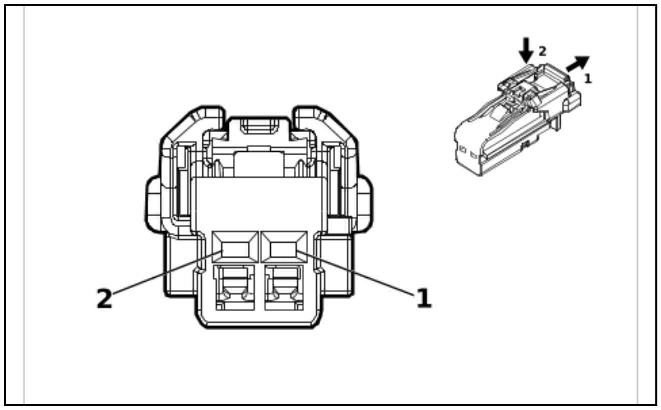
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

P19B Radio Front Center Speaker (UQS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU / YE	(1) 1960	(1) Front Center Speaker [-] Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) YE / WH	(2) 1860	(2) Front Center Speaker [+] Control	(2) I	(2) —

P19H Radio Windshield Side Garnish Molding Speaker - Left Front (UQS)



4115691

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series(BK)

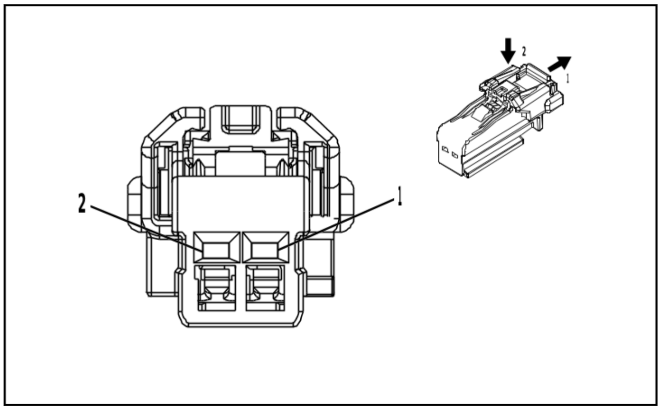
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

P19H Radio Windshield Side Garnish Molding Speaker - Left Front (UQS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BN / BU	(1) 118	(1) Left Front Speaker [-] Control 1	(1) I	(1) —
(2) 2	(2) 0.75	(2) BU	(2) 201	(2) Left Front Speaker 1 [+] Control	(2) I	(2) —

P19J Radio Front Speaker - Instrument Panel Left (UQA / UQS)



4373379

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8989
- Service Connector: 19369632
- Description: 2-Way F 1.2 MCON Series(GY)

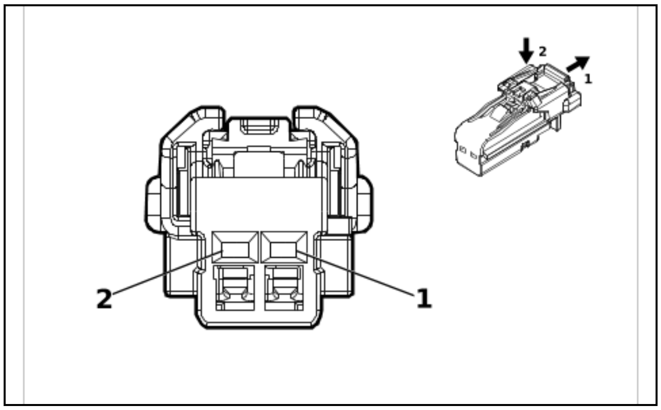
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

P19J Radio Front Speaker - Instrument Panel Left (UQA / UQS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU / BN	(1) 1957	(1) Left Front Midrange Speaker [-] Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) BU / VT	(2) 1857	(2) Left Front Midrange Speaker [+] Control	(2) I	(2) —

P19J Radio Front Speaker - Instrument Panel Left (UQF)



4115691

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series(BK)

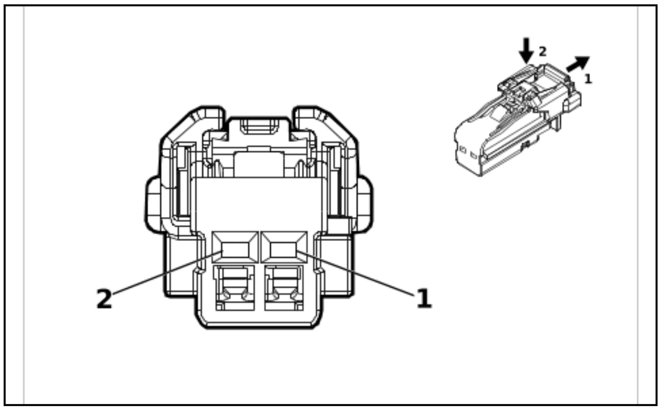
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

P19J Radio Front Speaker - Instrument Panel Left (UQF)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BN / BU	(1) 118	(1) Left Front Speaker [-] Control 1	(1) I	(1) —
(2) 2	(2) 0.75	(2) BU	(2) 201	(2) Left Front Speaker 1 [+] Control	(2) I	(2) —

P19V Radio Windshield Side Garnish Molding Speaker - Right Front (UQS)



4115691

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series(BK)

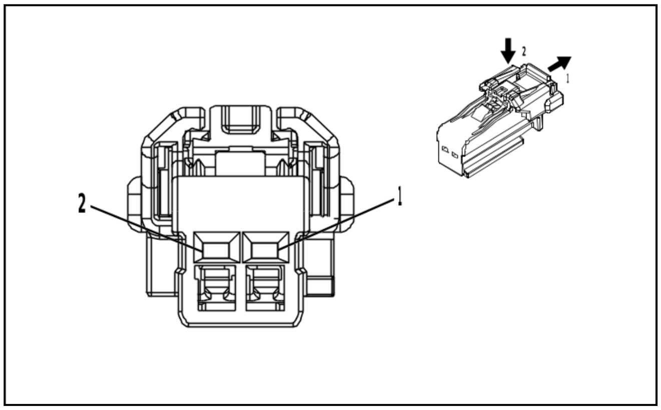
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

P19V Radio Windshield Side Garnish Molding Speaker - Right Front (UQS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) YE / BK	(1) 117	(1) Right Front Speaker [-] Control 1	(1) I	(1) —
(2) 2	(2) 0.75	(2) YE	(2) 200	(2) Right Front Speaker 1 [+] Control	(2) I	(2) —

P19W Radio Front Speaker - Instrument Panel Right (UQA / UQS)



4373379

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8989
- Service Connector: 19369632
- Description: 2-Way F 1.2 MCON Series(GY)

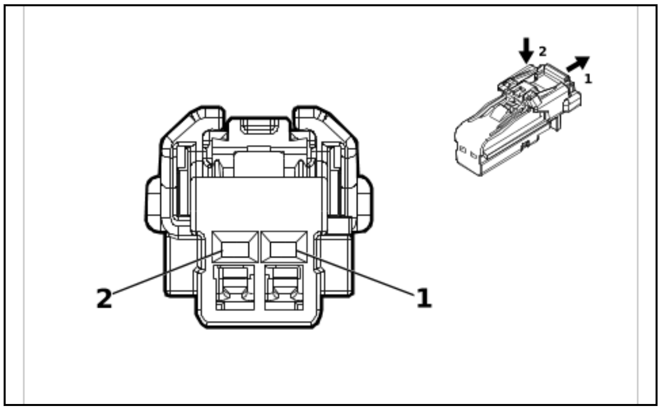
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

P19W Radio Front Speaker - Instrument Panel Right (UQA / UQS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BN / BK	(1) 1953	(1) Right Front Midrange Speaker [-] Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) WH / YE	(2) 1853	(2) Right Front Midrange Speaker [+] Control	(2) I	(2) —

P19W Radio Front Speaker - Instrument Panel Right (UQF)



4115691

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series(BK)

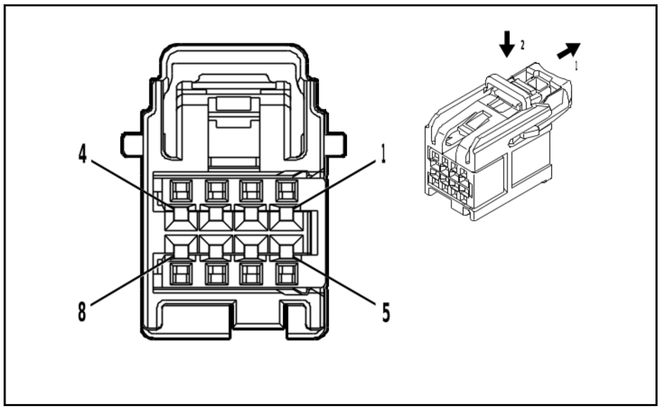
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

P19W Radio Front Speaker - Instrument Panel Right (UQF)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) YE / BK	(1) 117	(1) Right Front Speaker [-] Control 1	(1) I	(1) —
(2) 2	(2) 0.75	(2) YE	(2) 200	(2) Right Front Speaker 1 [+] Control	(2) I	(2) —

P29 Head-Up Display X1



4935776

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 15526972
- Service Connector: 19370429
- Description: 8-Way F 0.64 OCS Series(BK)

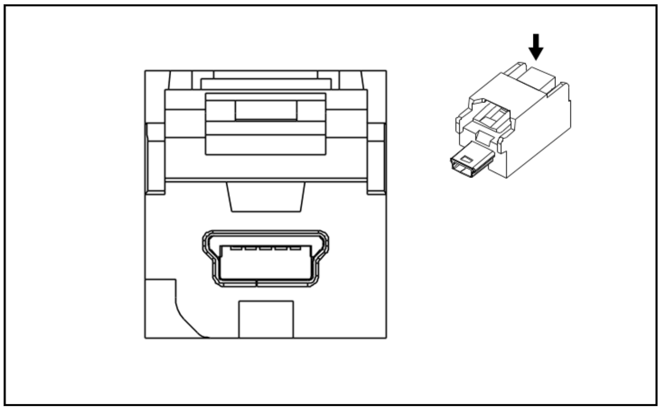
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

P29 Head-Up Display X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GN / BK	(1) 3894	(1) Instrument Panel Cluster Control Module LIN Bus 1	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) YE / WH	(3) 622	(3) Head-Up Display Switch Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK / WH	(4) 851	(4) Signal Ground	(4) I	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.5	(6) RD / WH	(6) 1340	(6) Battery Positive Voltage	(6) I	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.35	(8) BK / GN	(8) 5699	(8) Head-Up Display Switch Low Reference	(8) I	(8) —

P29 Head-Up Display X2



3214018

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13871470
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type(GY)

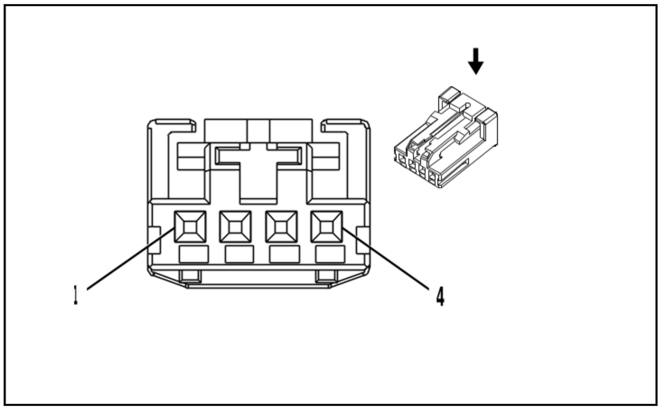
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

P29 Head-Up Display X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	LVDS	—	(Head Up Display) Head Up Display Signal	I	—

P43 Forward Collision Alert Display ((UEU / UHX) - UV6)



2717162

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: 19367524
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

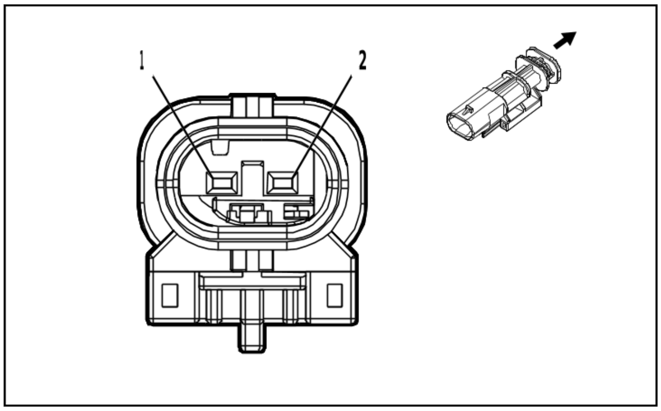
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

P43 Forward Collision Alert Display ((UEU / UHX) - UV6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) VT / BK	(1) 339	(1) Run/Crank Ignition 1 Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) GY / YE	(2) 3885	(2) Forward Collision Alert LED Control	(2) I	(2) —
(3) 3	(3) 0.35	(3) GY / BK	(3) 4787	(3) Day Night LED Control	(3) I	(3) —
(4) 4	(4) 0.35	(4) BK / WH	(4) 851	(4) Signal Ground	(4) I	(4) —

P45L Front Seat Lane Departure Warning Actuator - Left (A45 & HS1)



4569729

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 34899-2080
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed(BK)

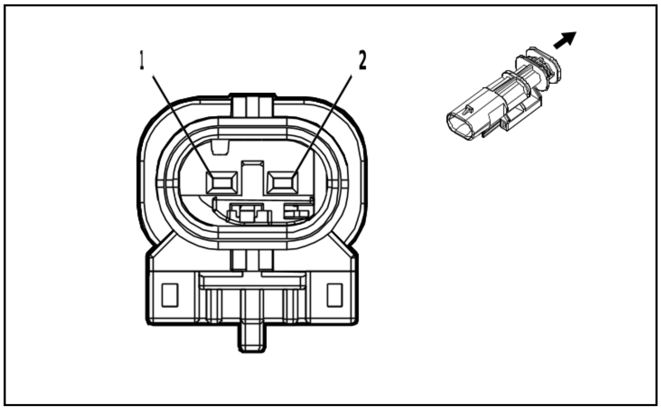
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

P45L Front Seat Lane Departure Warning Actuator - Left (A45 & HS1)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK	(1) 1550	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) YE / BN	(2) 3037	(2) Driver Seat Left Rear Haptic Movement Motor Control	(2) I	(2) —

P45R Front Seat Lane Departure Warning Actuator - Right (A45 & HS1)



4569729

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 34899-2080
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed(BK)

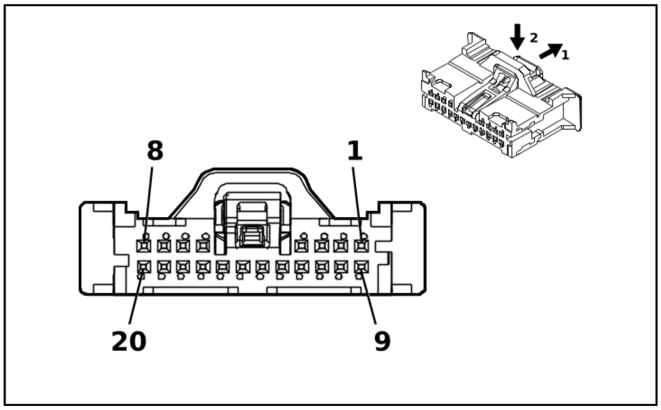
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

P45R Front Seat Lane Departure Warning Actuator - Right (A45 & HS1)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK	(1) 1550	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) BN	(2) 3038	(2) Driver Seat Right Rear Haptic Movement Motor Control	(2) I	(2) —

P53 Driver Information Display X1 (IOR)



5200955

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35068196
- Service Connector: 84769280
- Description: 20-Way F Mini 50 Series(BK)

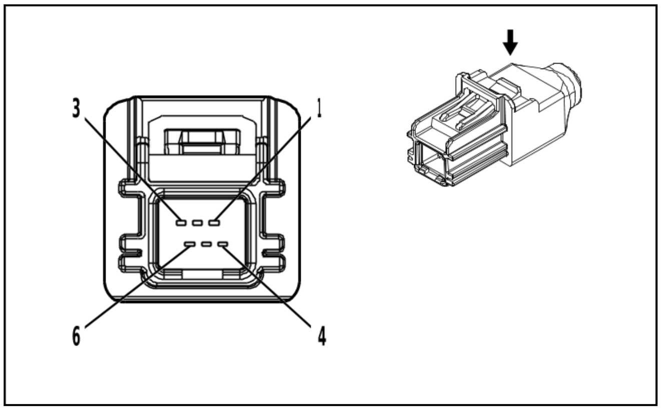
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84944580	EL-35616-58 (BK)	EL-38125-58

P53 Driver Information Display X1 (IOR)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BU / RD	(1) 11246	(1) Infotainment Display 5 Volt Reference	(1) I	(1) —
(2) 2	(2) 0.35	(2) GY / BU	(2) 11247	(2) Infotainment Display LCD Enable Signal	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.35	(4) BU	(4) 11235	(4) Radio Switch Volume Up Signal	(4) I	(4) —
(5) 5	(5) 0.35	(5) GY / BN	(5) 11234	(5) Radio Switch Volume Down Signal	(5) I	(5) —
(6) 6	(6) 0.35	(6) BN / WH	(6) 11233	(6) Radio Switch Power ON/OFF Switch Signal	(6) I	(6) —
(7) 7	(7) 0.35	(7) VT / WH	(7) 11245	(7) Radio Switch Buttons Signal	(7) I	(7) —
(8) 8	(8) 0.35	(8) BU / GY	(8) 11244	(8) Radio Switch Dimming Control	(8) I	(8) —
(9) 9	(9) 0.35	(9) BU / GN	(9) 11248	(9) Infotainment Display Backlight Dimming Control	(9) I	(9) —
10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.35	(11) BK / WH	(11) 11252	(11) Infotainment Display Low Reference	(11) I	(11) —
(12) 12	(12) 0.35	(12) YE / RD	(12) 11236	(12) Radio Switch 5 Volt Reference	(12) I	(12) —
(13) 13	(13) 0.35	(13) BK / BU	(13) 11237	(13) Radio Switch Low Reference 1	(13) I	(13) —
(14) 14	(14) 0.35	(14) BU	(14) 11235	(14) Radio Switch Volume Up Signal	(14) I	(14) —
(15) 15	(15) 0.35	(15) GY / BN	(15) 11234	(15) Radio Switch Volume Down Signal	(15) I	(15) —
(16) 16	(16) 0.35	(16) BN / WH	(16) 11233	(16) Radio Switch Power ON/OFF Switch Signal	(16) I	(16) —
(17) 17	(17) 0.35	(17) VT / WH	(17) 11245	(17) Radio Switch Buttons Signal	(17) I	(17) —
(18) 18	(18) 0.35	(18) BU / GY	(18) 11244	(18) Radio Switch Dimming Control	(18) I	(18) —
(19) 19	(19) 0.35	(19) GY / VT	(19) 11249	(19) Infotainment Display Backlight Enable Control	(19) I	(19) —
(20) 20	(20) 0.35	(20) BK / GN	(20) 11238	(20) Radio Switch Low Reference 2	(20) I	(20) —

P53 Driver Information Display X2 (IOR)



4806625

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 100337-1020
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 6-Way M HSAL-2 Series(BK)

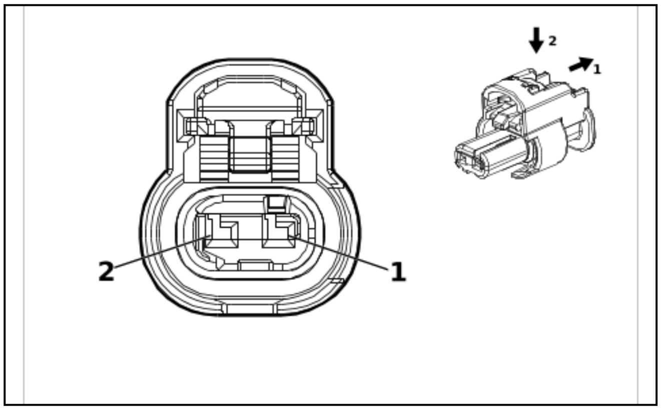
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

P53 Driver Information Display X2 (IOR)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	LVDS	—	(Infotainment) Infotainment Display Signal	I	—

Q2 Air Conditioning Clutch (L3B)



4649903

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: 85761014
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

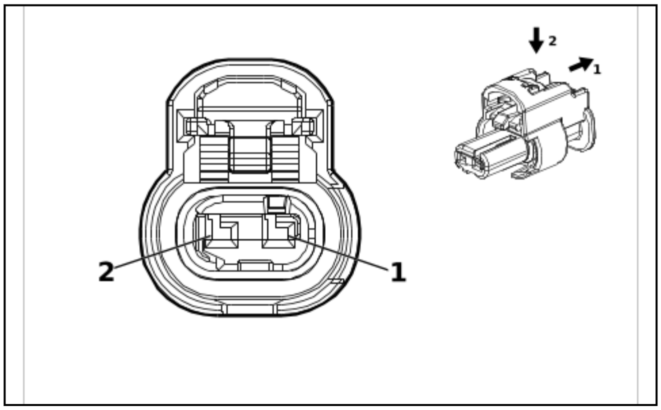
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q2 Air Conditioning Clutch (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK	(1) 450	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.75	(2) BN / GN	(2) 59	(2) Air Conditioning Compressor Clutch Control	(2) I	(2) —

Q2 Air Conditioning Clutch (L84 / L87)



4649903

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: 85761014
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

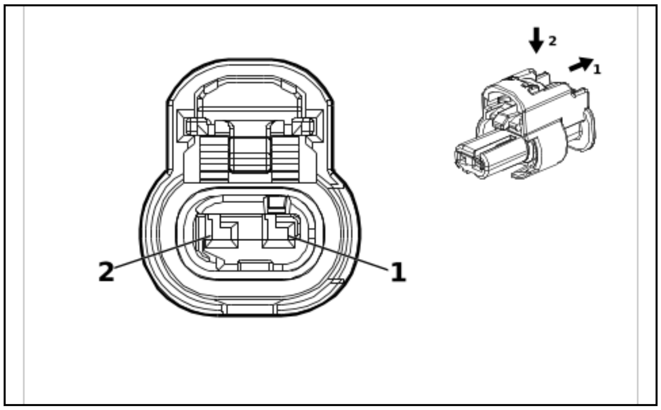
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

Q2 Air Conditioning Clutch (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) BK	(1) 450	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.75	(2) BN / GN	(2) 59	(2) Air Conditioning Compressor Clutch Control	(2) I	(2) —

Q2 Air Conditioning Clutch (LZ0)



4649903

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: 85761014
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

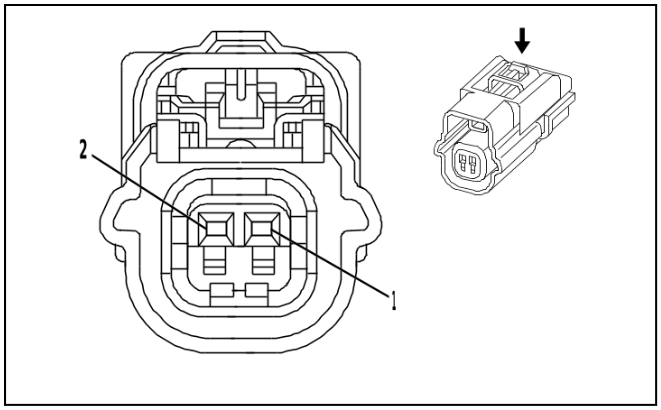
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q2 Air Conditioning Clutch (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 450	(1) Ground	(1) I	(1) —
(2) 2	(2) 0.75	(2) BN / GN	(2) 59	(2) Air Conditioning Compressor Clutch Control	(2) I	(2) —

Q6 Camshaft Position Actuator Solenoid Valve (L84 / L87)



1664592

Connector Part Information

- Harness Type: Camshaft Position Sensor Wire
- OEM Connector: 54390239
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 Kaizen Series, Sealed(BK)

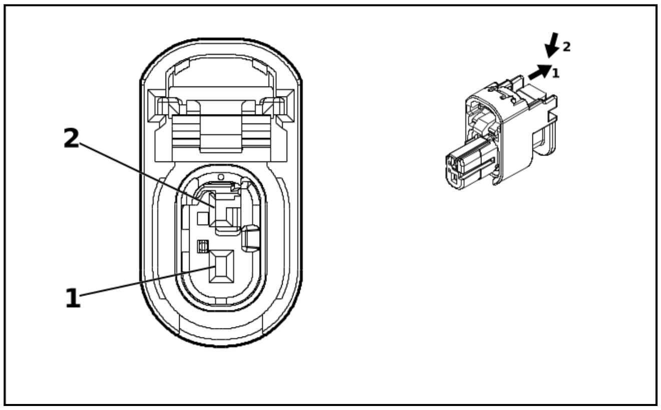
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-3 (GY)	No Tool Required

Q6 Camshaft Position Actuator Solenoid Valve (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / BN	(1) 6753	(1) Camshaft Position Actuator Solenoid Valve 1 Low Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / BN	(2) 5284	(2) Intake Camshaft Position Actuator Solenoid Valve 1	(2) I	(2) —

Q6E Camshaft Position Actuator Solenoid Valve - Exhaust (L3B)



5340268

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296702-2
- Service Connector: 19371204
- Description: 2-Way F 1.2 MCON-CB Series, Sealed(BK)

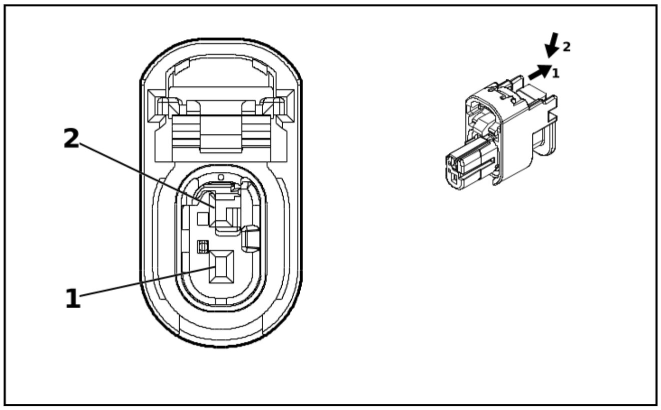
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

Q6E Camshaft Position Actuator Solenoid Valve - Exhaust (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BU	(1) 5282	(1) Exhaust Camshaft Position Actuator Solenoid Valve 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / VT	(2) 6754	(2) Camshaft Position Actuator Solenoid Valve 1 Low Reference	(2) I	(2) —

Q6F Camshaft Position Actuator Solenoid Valve - Intake (L3B)



5340268

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296702-2
- Service Connector: 19371204
- Description: 2-Way F 1.2 MCON-CB Series, Sealed(BK)

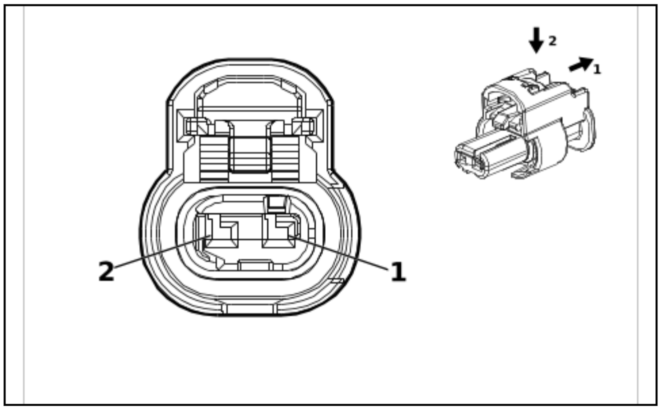
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

Q6F Camshaft Position Actuator Solenoid Valve - Intake (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BN	(1) 5284	(1) Intake Camshaft Position Actuator Solenoid Valve 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / BN	(2) 6753	(2) Camshaft Position Actuator Solenoid Valve 1 Low Reference	(2) I	(2) —

Q9R Differential Locking Actuator - Rear (G94)



4649903

Connector Part Information

- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

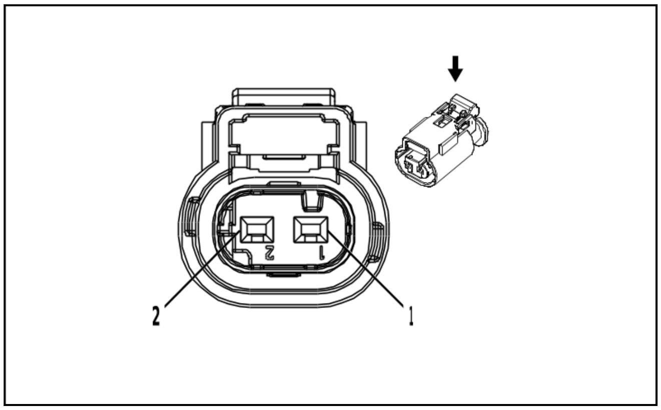
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q9R Differential Locking Actuator - Rear (G94)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) VT / BN	(1) 7258	(1) Rear Differential Lock Actuator Control	(1) I	(1) G94
(2) 2	(2) 0.75	(2) GY / BK	(2) 7253	(2) Rear Differential Lock Actuator Low Control	(2) I	(2) G94

Q12 Evaporative Emission Canister Purge Solenoid Valve (L3B)



2717066

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10010337
- Service Connector: 13587326
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)

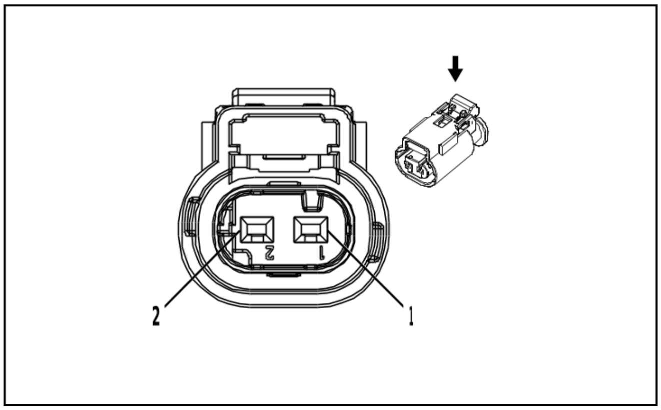
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

Q12 Evaporative Emission Canister Purge Solenoid Valve (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BU	(1) 5293	(1) Powertrain Main Relay Fused Supply Voltage 4	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / BU	(2) 428	(2) EVAP Canister Purge Solenoid Control	(2) I	(2) —

Q12 Evaporative Emission Canister Purge Solenoid Valve (L84 / L87)



2717066

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10010337
- Service Connector: 13587326
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)

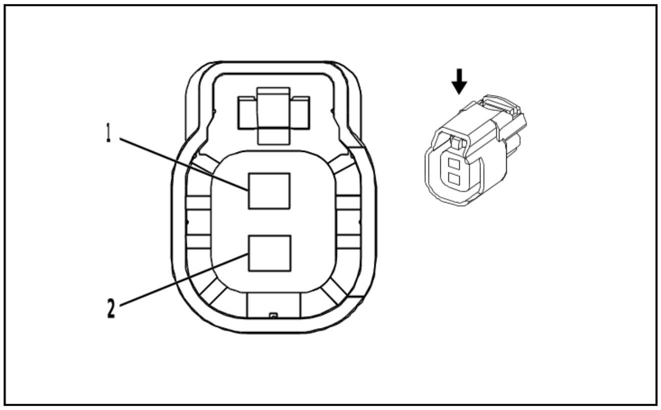
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

Q12 Evaporative Emission Canister Purge Solenoid Valve (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BU	(1) 5293	(1) Powertrain Main Relay Fused Supply Voltage 4	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / BU	(2) 428	(2) EVAP Canister Purge Solenoid Control	(2) I	(2) —

Q13 Evaporative Emission Canister Vent Solenoid Valve (FHS / FJW)



2422378

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 34062-0028
- Service Connector: 13579002
- Description: 2-Way F 1.5 Series, Sealed(BK)

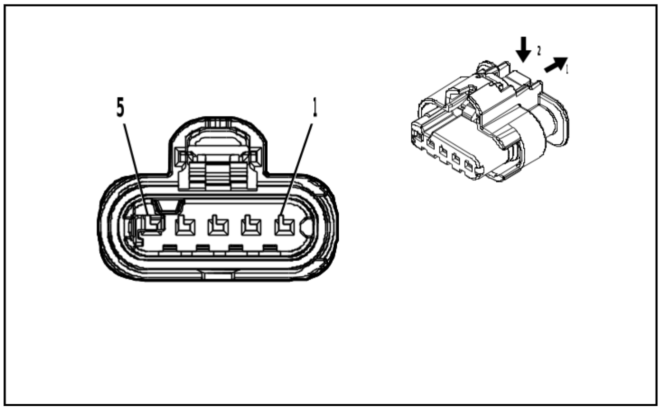
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

Q13 Evaporative Emission Canister Vent Solenoid Valve (FHS / FJW)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 1310	(1) EVAP Vent Solenoid Valve Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) RD / WH	(2) 3440	(2) Battery Positive Voltage	(2) I	(2) —

Q14A Exhaust Gas Recirculation Valve 1 (LZ0)



4997783

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296697-1
- Service Connector: 19371195
- Description: 5-Way F 1.2 MCON-CB Series, Sealed(BK)

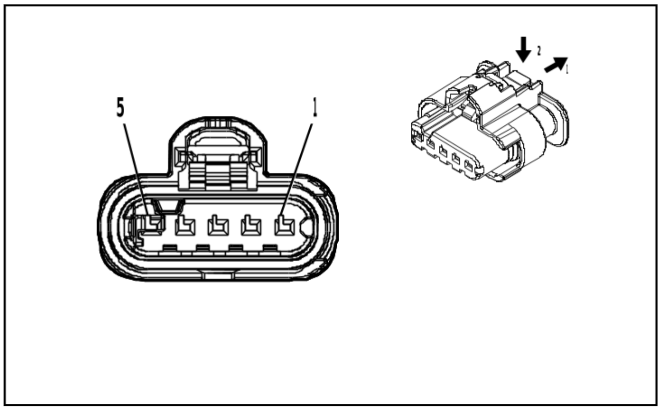
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

Q14A Exhaust Gas Recirculation Valve 1 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU / RD	(1) 460	(1) Engine Control Sensors 5 Volt Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / WH	(2) 5763	(2) Exhaust Gas Recirculation Position Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / YE	(3) 548	(3) Engine Control Sensors Low Reference 1	(3) I	(3) —
(4) 4	(4) 0.75	(4) WH / VT	(4) 5764	(4) Exhaust Gas Recirculation Valve High Control	(4) I	(4) —
(5) 5	(5) 0.75	(5) VT / BK	(5) 5746	(5) Exhaust Gas Recirculation Valve Low Control	(5) I	(5) —

Q14B Exhaust Gas Recirculation Valve 2 (LZ0)



4997783

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296697-1
- Service Connector: 19371195
- Description: 5-Way F 1.2 MCON-CB Series, Sealed(BK)

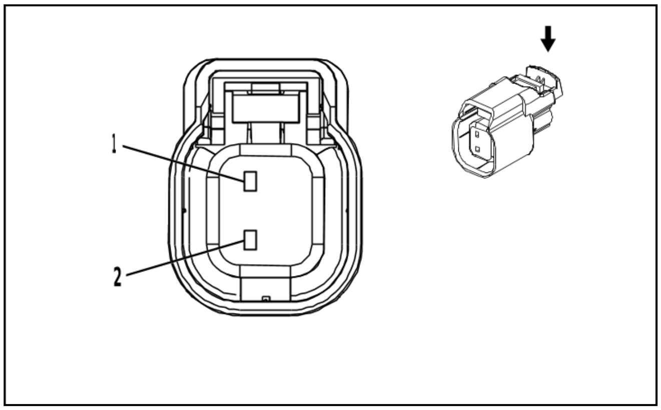
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

Q14B Exhaust Gas Recirculation Valve 2 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / YE	(1) 548	(1) Engine Control Sensors Low Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / GN	(2) 4012	(2) Exhaust Gas Recirculation 2 Valve Position Sensor Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / RD	(3) 460	(3) Engine Control Sensors 5 Volt Reference 1	(3) I	(3) —
(4) 4	(4) 0.75	(4) BU / WH	(4) 4014	(4) Exhaust Gas Recirculation 2 Valve Open Control	(4) I	(4) —
(5) 5	(5) 0.75	(5) BU / BN	(5) 4013	(5) Exhaust Gas Recirculation 2 Valve Close Control	(5) I	(5) —

Q17A Fuel Injector 1 (L84 / L87)



2792100

Connector Part Information
- Harness Type: Fuel Injector Wiring Harness - Bank 1
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed(BK)

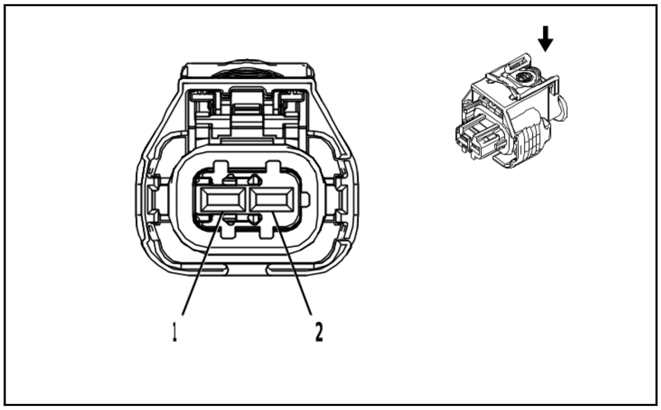
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

Q17A Fuel Injector 1 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BN / WH	(1) 4901	(1) Direct Fuel Injector High Voltage Supply Cylinder 1	(1) I	(1) —
(2) 2	(2) 0.75	(2) BN	(2) 4801	(2) Direct Fuel Injector High Voltage Control Cylinder 1	(2) I	(2) —

Q17A Fuel Injector 1 (LZ0)



2845578

Connector Part Information
- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 1 928 405 715
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 Series, Sealed(BK)

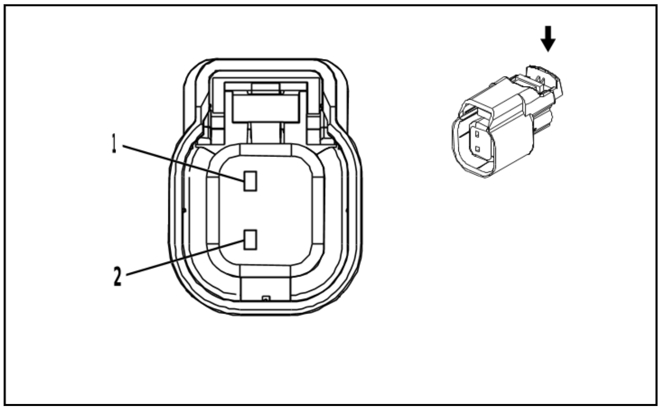
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

Q17A Fuel Injector 1 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) BN / WH	(1) 4901	(1) Direct Fuel Injector High Voltage Supply Cylinder 1	(1) I	(1) —
(2) 2	(2) 1.5	(2) BN	(2) 4801	(2) Direct Fuel Injector High Voltage Control Cylinder 1	(2) I	(2) —

Q17B Fuel Injector 2 (L84 / L87)



2792100

Connector Part Information
- Harness Type: Fuel Injector Wiring Harness - Bank 2
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed(BK)

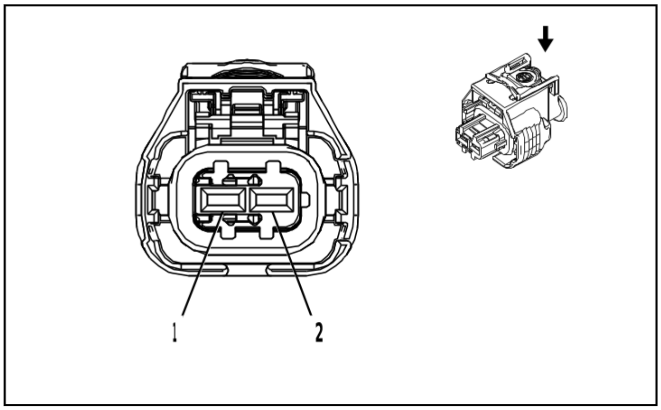
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

Q17B Fuel Injector 2 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU / GY	(1) 4902	(1) Direct Fuel Injector High Voltage Supply Cylinder 2	(1) I	(1) —
(2) 2	(2) 0.75	(2) BU	(2) 4802	(2) Direct Fuel Injector High Voltage Control Cylinder 2	(2) I	(2) —

Q17B Fuel Injector 2 (LZ0)



2845578

Connector Part Information

- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 1 928 405 715
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 Series, Sealed(BK)

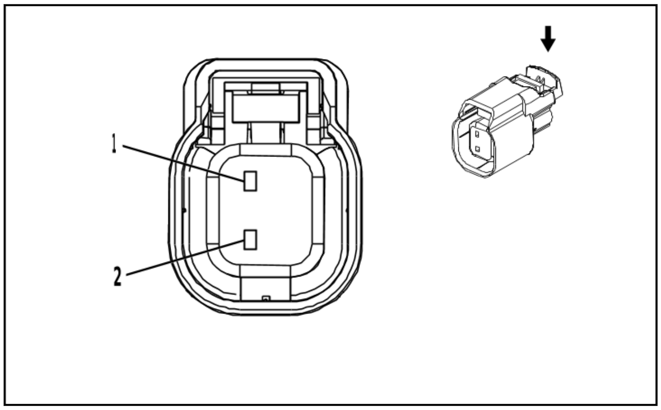
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

Q17B Fuel Injector 2 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) BU / GY	(1) 4902	(1) Direct Fuel Injector High Voltage Supply Cylinder 2	(1) I	(1) —
(2) 2	(2) 1.5	(2) BU	(2) 4802	(2) Direct Fuel Injector High Voltage Control Cylinder 2	(2) I	(2) —

Q17C Fuel Injector 3 (L84 / L87)



2792100

Connector Part Information

- Harness Type: Fuel Injector Wiring Harness - Bank 1
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed(BK)

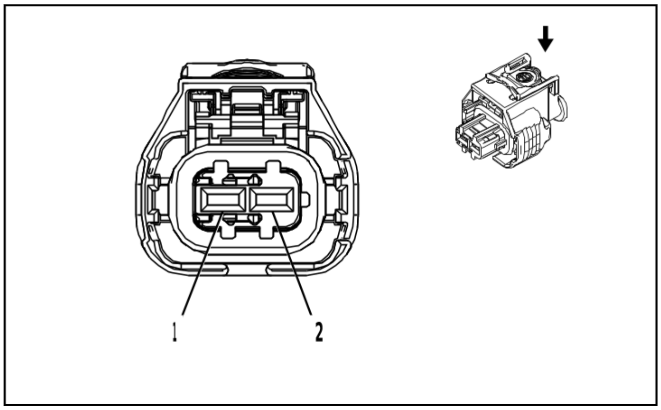
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

Q17C Fuel Injector 3 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) GN / GY	(1) 4903	(1) Direct Fuel Injector High Voltage Supply Cylinder 3	(1) I	(1) —
(2) 2	(2) 0.75	(2) GN	(2) 4803	(2) Direct Fuel Injector High Voltage Control Cylinder 3	(2) I	(2) —

Q17C Fuel Injector 3 (LZ0)



2845578

Connector Part Information
- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 1 928 405 715
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 Series, Sealed(BK)

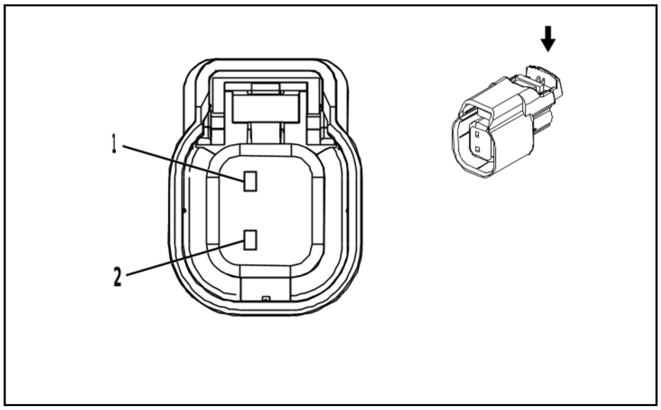
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

Q17C Fuel Injector 3 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) GN / GY	(1) 4903	(1) Direct Fuel Injector High Voltage Supply Cylinder 3	(1) I	(1) —
(2) 2	(2) 1.5	(2) GN	(2) 4803	(2) Direct Fuel Injector High Voltage Control Cylinder 3	(2) I	(2) —

Q17D Fuel Injector 4 (L84 / L87)



2792100

Connector Part Information
- Harness Type: Fuel Injector Wiring Harness - Bank 2
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed(BK)

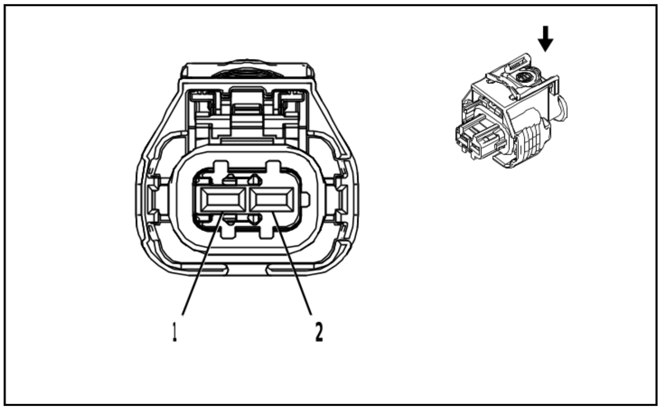
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

Q17D Fuel Injector 4 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU / WH	(1) 4904	(1) Direct Fuel Injector High Voltage Supply Cylinder 4	(1) I	(1) —
(2) 2	(2) 0.75	(2) GY / BU	(2) 4804	(2) Direct Fuel Injector High Voltage Control Cylinder 4	(2) I	(2) —

Q17D Fuel Injector 4 (LZ0)



2845578

Connector Part Information
- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 1 928 405 715
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 Series, Sealed(BK)

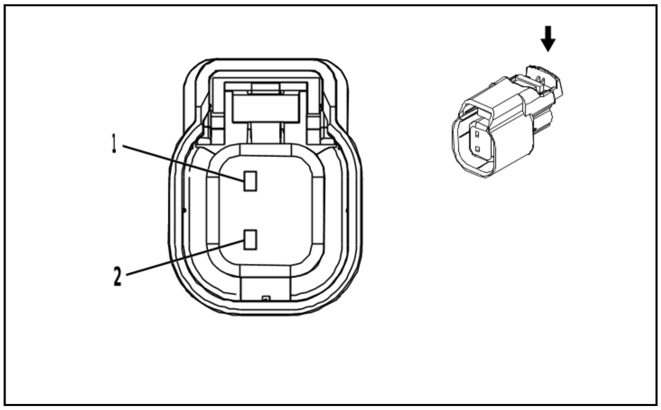
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

Q17D Fuel Injector 4 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) BU / WH	(1) 4904	(1) Direct Fuel Injector High Voltage Supply Cylinder 4	(1) I	(1) —
(2) 2	(2) 1.5	(2) GY / BU	(2) 4804	(2) Direct Fuel Injector High Voltage Control Cylinder 4	(2) I	(2) —

Q17E Fuel Injector 5 (L84 / L87)



2792100

Connector Part Information

- Harness Type: Fuel Injector Wiring Harness - Bank 1
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed(BK)

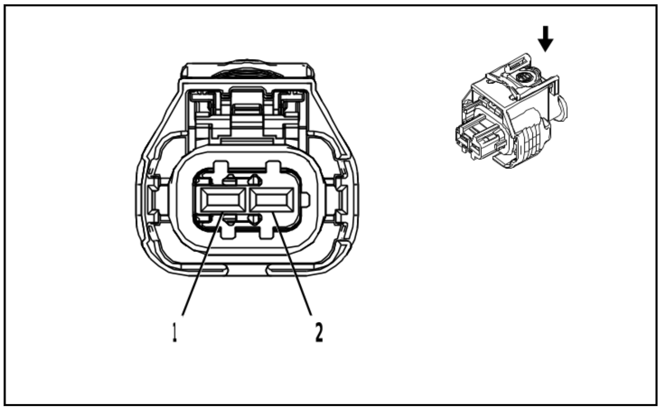
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

Q17E Fuel Injector 5 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 18	(1) GN / WH	(1) 4905	(1) Direct Fuel Injector High Voltage Supply Cylinder 5	(1) I	(1) —
(2) 2	(2) 18	(2) WH / GN	(2) 4805	(2) Direct Fuel Injector High Voltage Control Cylinder 5	(2) I	(2) —

Q17E Fuel Injector 5 (LZ0)



2845578

Connector Part Information

- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 1 928 405 715
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 Series, Sealed(BK)

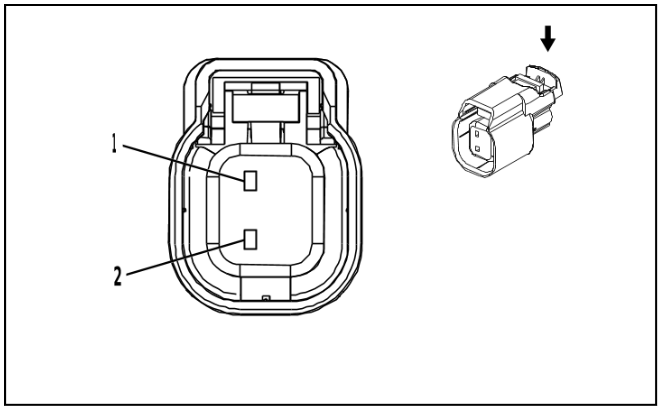
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

Q17E Fuel Injector 5 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) GN / WH	(1) 4905	(1) Direct Fuel Injector High Voltage Supply Cylinder 5	(1) I	(1) —
(2) 2	(2) 1.5	(2) WH / GN	(2) 4805	(2) Direct Fuel Injector High Voltage Control Cylinder 5	(2) I	(2) —

Q17F Fuel Injector 6 (L84 / L87)



2792100

Connector Part Information

- Harness Type: Fuel Injector Wiring Harness - Bank 2
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed(BK)

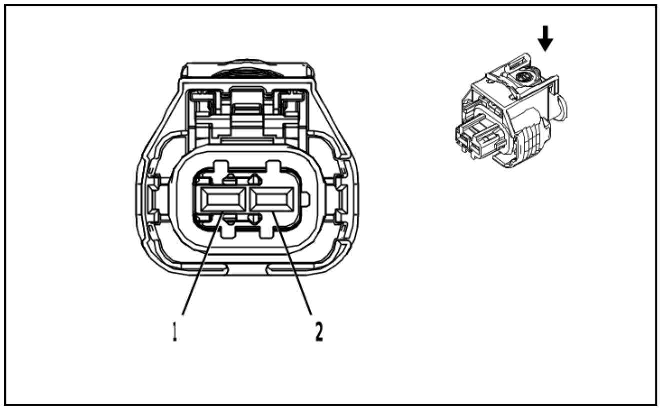
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

Q17F Fuel Injector 6 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) VT / GY	(1) 4906	(1) Direct Fuel Injector High Voltage Supply Cylinder 6	(1) I	(1) —
(2) 2	(2) 0.75	(2) VT / GN	(2) 4806	(2) Direct Fuel Injector High Voltage Control Cylinder 6	(2) I	(2) —

Q17F Fuel Injector 6 (LZ0)



2845578

Connector Part Information
- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 1 928 405 715
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 Series, Sealed(BK)

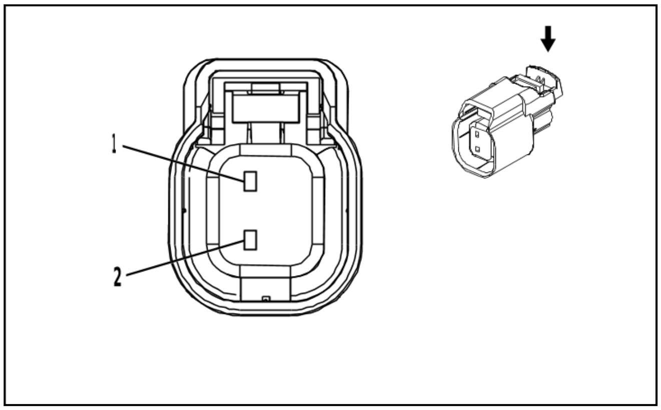
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

Q17F Fuel Injector 6 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) VT / GY	(1) 4906	(1) Direct Fuel Injector High Voltage Supply Cylinder 6	(1) I	(1) —
(2) 2	(2) 1.5	(2) VT / GN	(2) 4806	(2) Direct Fuel Injector High Voltage Control Cylinder 6	(2) I	(2) —

Q17G Fuel Injector 7 (L84 / L87)



2792100

Connector Part Information
- Harness Type: Fuel Injector Wiring Harness - Bank 1
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed(BK)

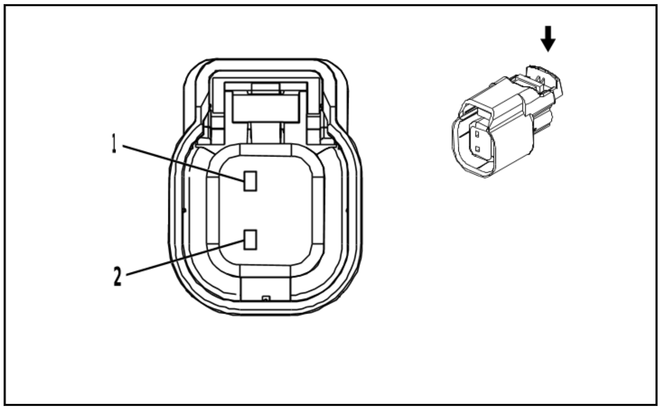
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

Q17G Fuel Injector 7 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) WH / YE	(1) 4907	(1) Direct Fuel Injector High Voltage Supply Cylinder 7	(1) I	(1) —
(2) 2	(2) 0.75	(2) YE / GY	(2) 4807	(2) Direct Fuel Injector High Voltage Control Cylinder 7	(2) I	(2) —

Q17H Fuel Injector 8 (L84 / L87)



2792100

Connector Part Information
- Harness Type: Fuel Injector Wiring Harness - Bank 2
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed(BK)

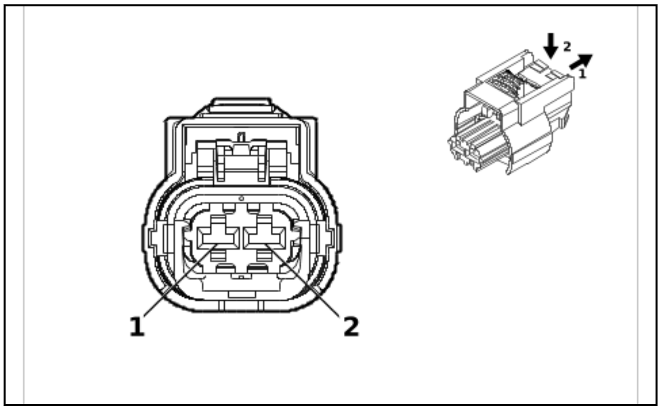
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

Q17H Fuel Injector 8 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) GY / WH	(1) 4908	(1) Direct Fuel Injector High Voltage Supply Cylinder 8	(1) I	(1) —
(2) 2	(2) 0.75	(2) GY	(2) 4808	(2) Direct Fuel Injector High Voltage Control Cylinder 8	(2) I	(2) —

Q18A Fuel Pressure Regulator 1 (LZ0)



4992524

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 35182447
- Service Connector: 84941154
- Description: 2-Way F 2.8 MCP Series, Sealed(BK)

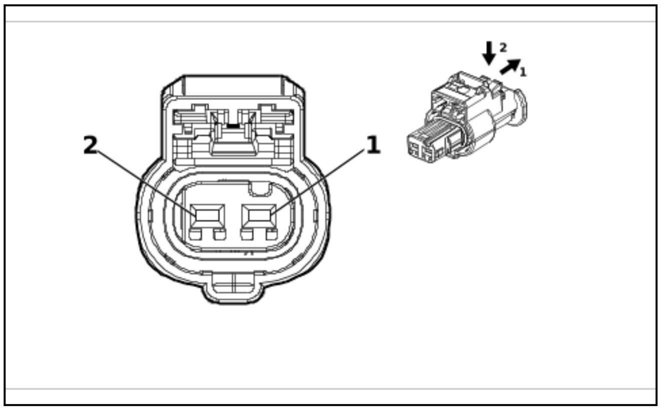
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

Q18A Fuel Pressure Regulator 1 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) YE / VT	(1) 7245	(1) High Pressure Fuel Pump Low Enable Signal	(1) I	(1) —
(2) 2	(2) 0.75	(2) GY / BN	(2) 7244	(2) High Pressure Fuel Pump High Side Control	(2) I	(2) —

Q18B Fuel Pressure Regulator 2 (LZ0)



6055996

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 5-2297795-1
- Service Connector: 85625525
- Description: 2-Way F 1.2 HPF Series, Sealed(BK)

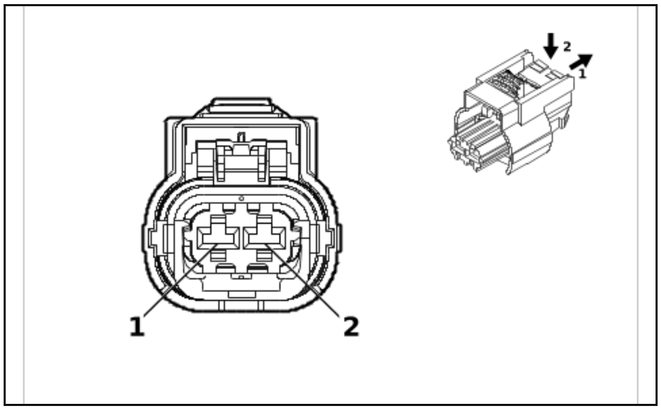
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q18B Fuel Pressure Regulator 2 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / YE	(1) 2834	(1) Fuel Rail Pressure Solenoid Valve Low Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / WH	(2) 2530	(2) Fuel Rail Pressure Solenoid Valve Control	(2) I	(2) —

Q18C Fuel Pressure Regulator 3 (LZ0)



4992524

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 35182447
- Service Connector: 84941154
- Description: 2-Way F 2.8 MCP Series, Sealed(BK)

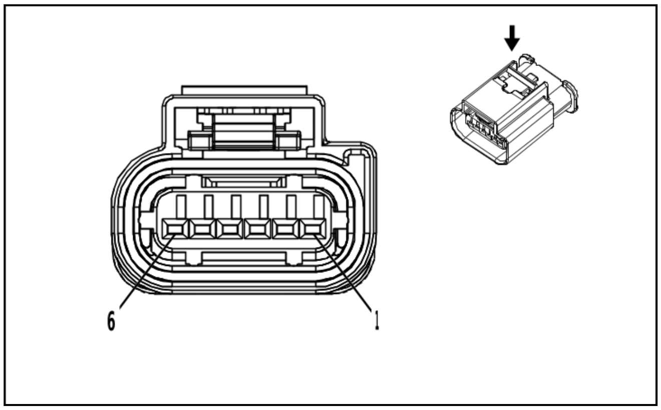
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

Q18C Fuel Pressure Regulator 3 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) YE / VT	(1) 2420	(1) Fuel High Pressure Pump Low Enable Signal	(1) I	(1) —
(2) 2	(2) 0.75	(2) GY / BN	(2) 2419	(2) Fuel High Pressure Pump High Side Supply Voltage	(2) I	(2) —

Q20 Intake Airflow Control Valve (LZ0)



3747579

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 2272975-5
- Service Connector: 19352911
- Description: 6-Way F 1.2 MCON Series, Sealed(BK)

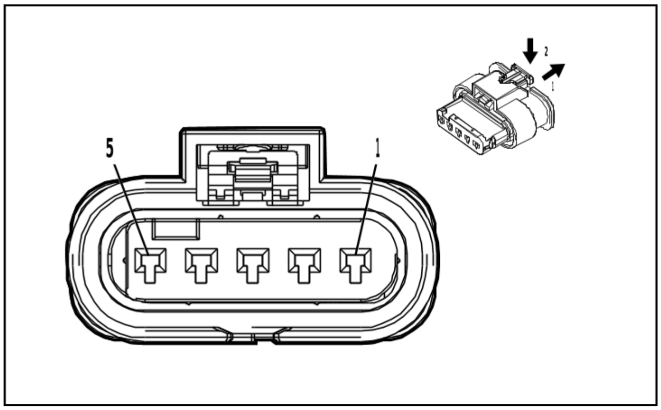
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q20 Intake Airflow Control Valve (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) YE	(1) 581	(1) Throttle Actuator Open Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) BN / WH	(2) 582	(2) Throttle Actuator Close Control	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / WH	(3) 3630	(3) Throttle Position Sensor SENT 1 Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK / YE	(4) 548	(4) Engine Control Sensors Low Reference 1	(4) I	(4) —
(5) 5	(5) 0.5	(5) BU / RD	(5) 460	(5) Engine Control Sensors 5 Volt Reference 1	(5) I	(5) —
6	—	—	—	Not Occupied	—	—

Q22 Intake Manifold Tuning Solenoid Valve (LZ0)



3338689

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-1718806-1
- Service Connector: 19119351
- Description: 5-Way F 1.2 MCON-LL Series, Sealed(BK)

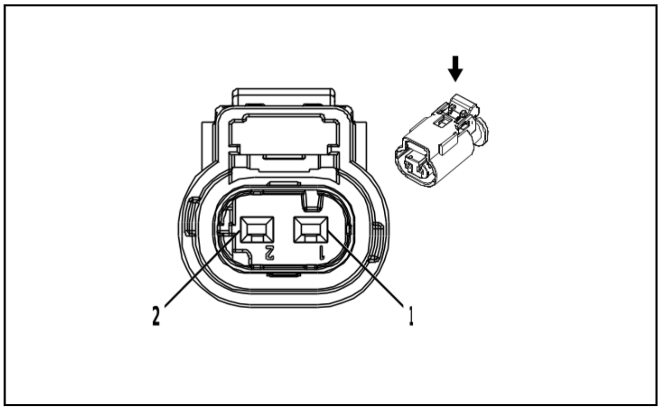
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q22 Intake Manifold Tuning Solenoid Valve (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / YE	(1) 548	(1) Engine Control Sensors Low Reference 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / GY	(2) 7316	(2) Intake Manifold Runner Valve Actuator Control	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / RD	(3) 460	(3) Engine Control Sensors 5 Volt Reference 1	(3) I	(3) —
(4) 4	(4) 0.75	(4) BK / BU	(4) 1408	(4) Variable Swirl Valve Close Control	(4) I	(4) —
(5) 5	(5) 0.75	(5) BK / GN	(5) 1389	(5) Variable Swirl Valve Open Control	(5) I	(5) —

Q37LFB Front Shock Absorber Actuator - Left (Z45)



2717066

Connector Part Information
- Harness Type: Electronic Suspension Strut Wiring Harness Extension Harness
- OEM Connector: 10010337
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)

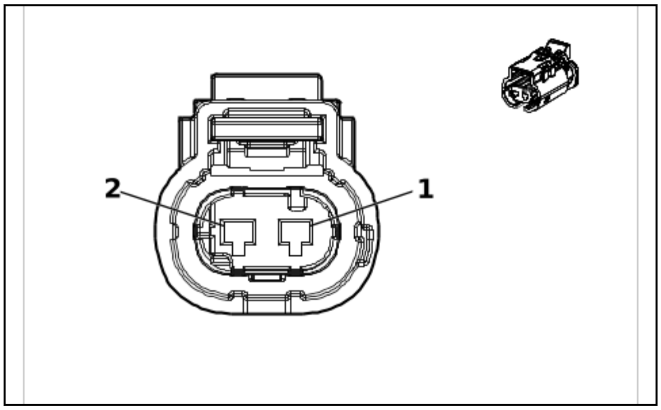
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q37LFB Front Shock Absorber Actuator - Left (Z45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU / WH	(1) 1107	(1) Left Front Shock Absorber Actuator Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) GY	(2) 1113	(2) Left Front Shock Absorber Actuator Control	(2) I	(2) —

Q37LRB Rear Shock Absorber Actuator - Left (Z45)



6776339

Connector Part Information
- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 10530497
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MLK Series, Sealed(BK)

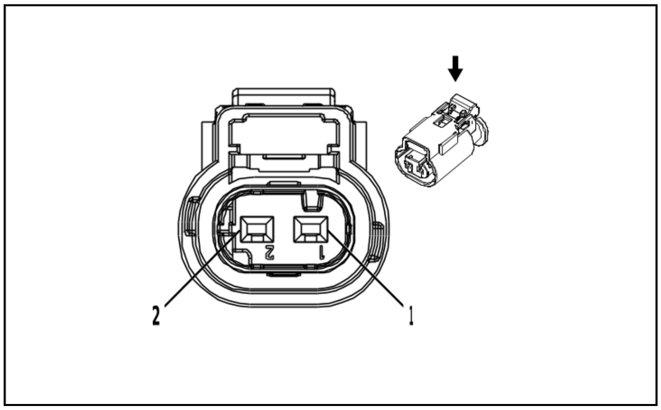
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q37LRB Rear Shock Absorber Actuator - Left (Z45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU / GY	(1) 1114	(1) Left Rear Shock Absorber Actuator Control	(1) I	(1) Z45
(2) 2	(2) 0.75	(2) GN / VT	(2) 1115	(2) Left Rear Shock Absorber Actuator Control	(2) I	(2) Z45

Q37RFB Front Shock Absorber Actuator - Right (Z45)



2717066

Connector Part Information

- Harness Type: Electronic Suspension Strut Wiring Harness Extension Harness
- OEM Connector: 10010337
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)

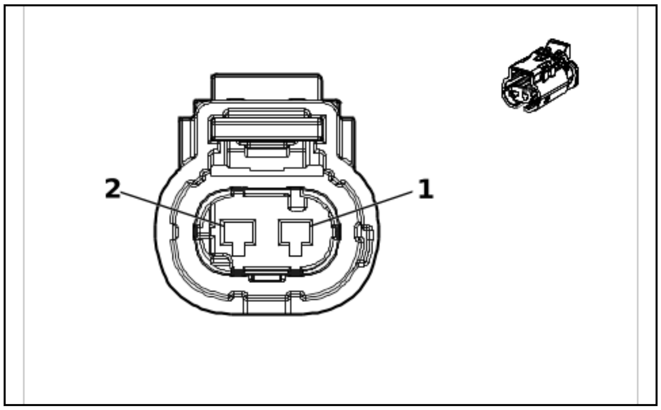
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q37RFB Front Shock Absorber Actuator - Right (Z45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU / WH	(1) 1116	(1) Right Front Shock Absorber Actuator Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) GY	(2) 1117	(2) Right Front Shock Absorber Actuator Control	(2) I	(2) —

Q37RRB Rear Shock Absorber Actuator - Right (Z45)



6776339

Connector Part Information
- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 10530497
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MLK Series, Sealed(BK)

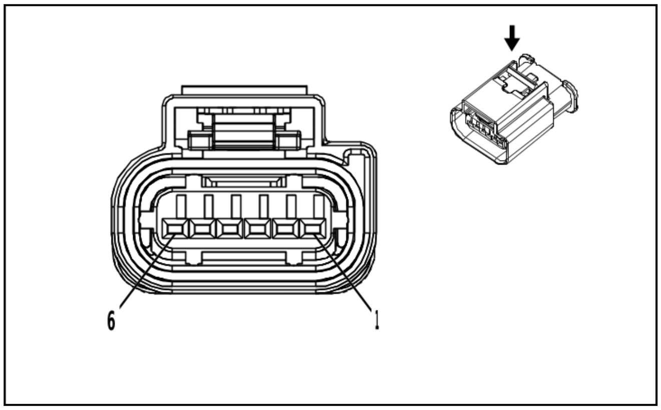
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q37RRB Rear Shock Absorber Actuator - Right (Z45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BN / GN	(1) 1118	(1) Right Rear Shock Absorber Actuator Control	(1) I	(1) Z45
(2) 2	(2) 0.75	(2) GN / GY	(2) 1119	(2) Right Rear Shock Absorber Actuator Control	(2) I	(2) Z45

Q38 Throttle Body (L3B / L84 / L87)



3747579

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 2272975-5
- Service Connector: 19352911
- Description: 6-Way F 1.2 MCON Series, Sealed(BK)

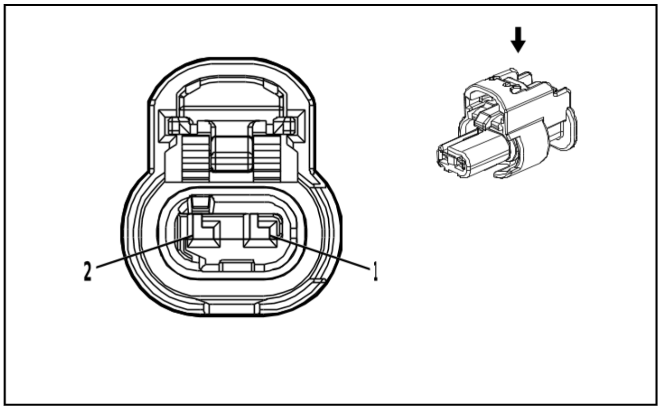
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q38 Throttle Body (L3B / L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE	(1) 581	(1) Throttle Actuator Open Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / WH	(2) 582	(2) Throttle Actuator Close Control	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / WH	(3) 3630	(3) Throttle Position Sensor SENT 1 Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK / BN	(4) 2752	(4) Throttle Position Sensor Low Reference	(4) I	(4) —
(5) 5	(5) 0.5	(5) BN / RD	(5) 2701	(5) Throttle Position Sensor 5V Reference	(5) I	(5) —
6	—	—	—	Not Occupied	—	—

Q40 Turbocharger Bypass Valve Solenoid (L3B)



4690744

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296694-3
- Service Connector: 19366871
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

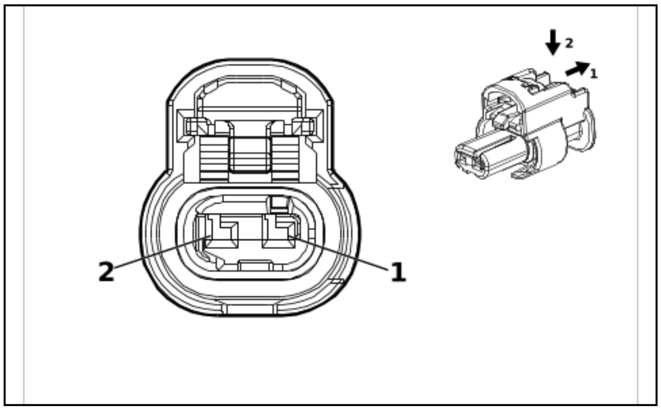
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

Q40 Turbocharger Bypass Valve Solenoid (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BU	(1) 5293	(1) Powertrain Main Relay Fused Supply Voltage 4	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN	(2) 3060	(2) Turbocharger Bypass Solenoid Valve Control Bank 1	(2) I	(2) —

Q44 Engine Oil Pressure Control Solenoid Valve (LZ0)



4036662

Connector Part Information

- Harness Type: Oil Pump Flow Control Solenoid Valve Harness
- OEM Connector: 1-2296704-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed(BK)

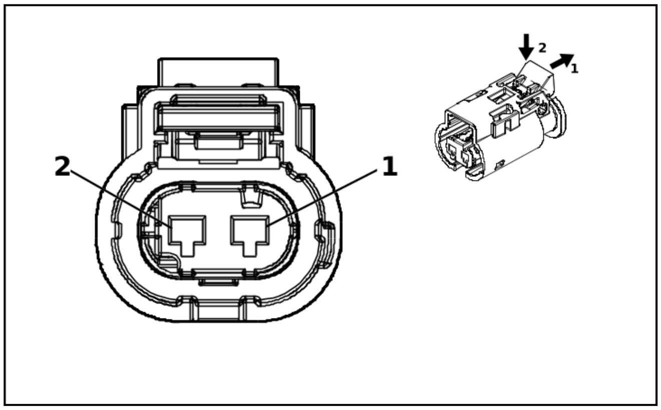
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q44 Engine Oil Pressure Control Solenoid Valve (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BN	(1) 106	(1) Oil Pump Motor Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU	(2) 179	(2) Engine Oil Pump Control	(2) I	(2) —

Q44 Engine Oil Pressure Control Solenoid Valve (L3B)



5245486

Connector Part Information

- Harness Type: Oil Pump Flow Control Solenoid Valve Wiring Harness
- OEM Connector: 10142540
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MLK Series, Sealed(BK)

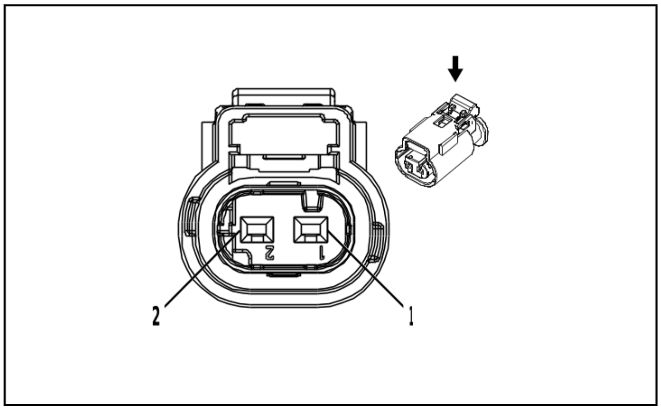
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

Q44 Engine Oil Pressure Control Solenoid Valve (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BN	(1) 106	(1) Oil Pump Motor Control	(1) I	(1) L3B
(2) 2	(2) 0.5	(2) BU	(2) 179	(2) Engine Oil Pump Control	(2) I	(2) L3B

Q44 Engine Oil Pressure Control Solenoid Valve (L87)



2717066

Connector Part Information
- Harness Type: Camshaft Position Sensor Wire
- OEM Connector: 10010337
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)

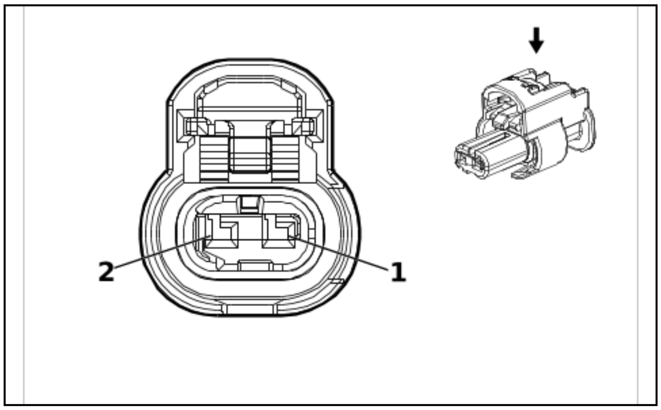
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q44 Engine Oil Pressure Control Solenoid Valve (L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BU	(1) 5293	(1) Powertrain Main Relay Fused Supply Voltage 4	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU	(2) 179	(2) Engine Oil Pump Control	(2) I	(2) —

Q46 Air Conditioning Compressor Solenoid Valve (L3B)



4335931

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296694-2
- Service Connector: 19366843
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

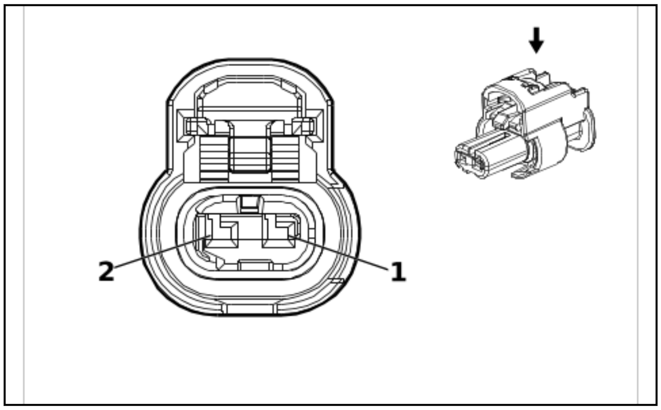
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q46 Air Conditioning Compressor Solenoid Valve (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU / YE	(1) 7574	(1) Air Conditioning Compressor Solenoid Valve Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) BU / BN	(2) 7573	(2) Air Conditioning Compressor Solenoid Valve Control	(2) I	(2) —

Q46 Air Conditioning Compressor Solenoid Valve (L84 / L87)



4335931

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296694-2
- Service Connector: 19366843
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

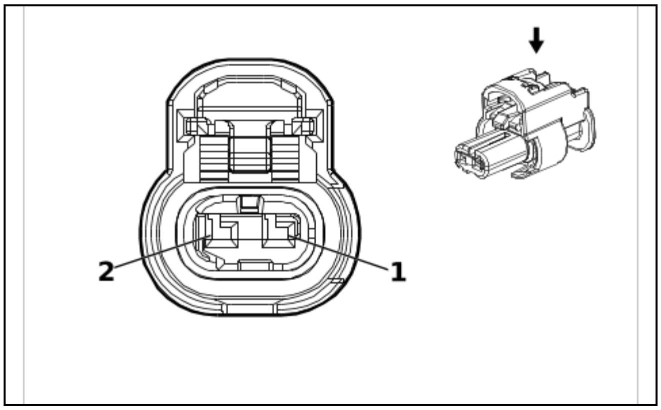
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

Q46 Air Conditioning Compressor Solenoid Valve (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU / YE	(1) 7574	(1) Air Conditioning Compressor Solenoid Valve Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) BU / BN	(2) 7573	(2) Air Conditioning Compressor Solenoid Valve Control	(2) I	(2) —

Q46 Air Conditioning Compressor Solenoid Valve (LZ0)



4335931

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296694-2
- Service Connector: 19366843
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

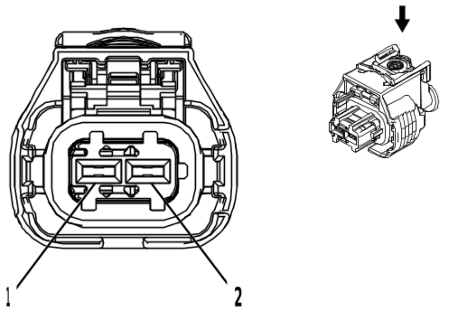
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q46 Air Conditioning Compressor Solenoid Valve (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU / YE	(1) 7574	(1) Air Conditioning Compressor Solenoid Valve Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) BU / BN	(2) 7573	(2) Air Conditioning Compressor Solenoid Valve Control	(2) I	(2) —

Q61 Reductant Fluid Injector (LZ0)



2577394

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1 928 405 714
- Service Connector: 13384371
- Description: 2-Way F 2.8 Series, Sealed(BK)

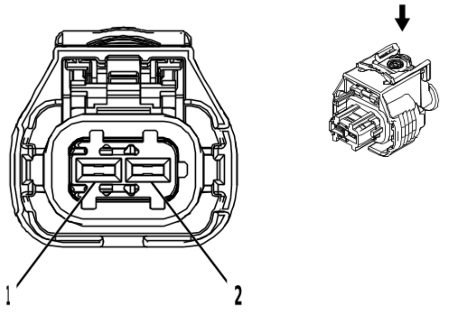
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

Q61 Reductant Fluid Injector (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BN / WH	(1) 3100	(1) Diesel Exhaust Fluid Dosing Valve Low Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) BN	(2) 3099	(2) Diesel Exhaust Fluid Dosing Valve High Control	(2) I	(2) —

Q61B Reductant Fluid Injector 2 (LZ0)



2577394

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 1 928 405 714
- Service Connector: 13384371
- Description: 2-Way F 2.8 Series, Sealed(BK)

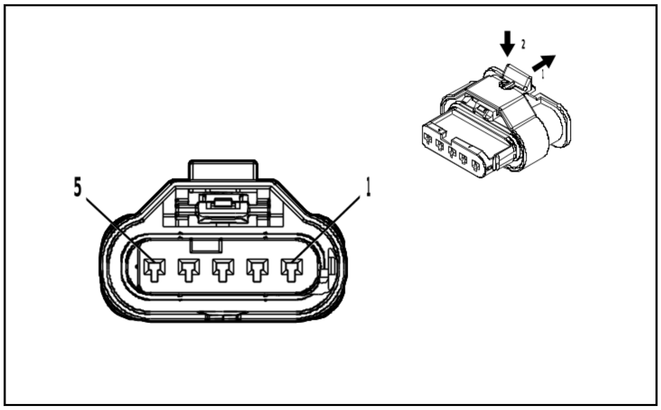
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

Q61B Reductant Fluid Injector 2 (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU / YE	(1) 11616	(1) Diesel Exhaust Fluid Dosing Valve Low Control 2	(1) I	(1) —
(2) 2	(2) 0.75	(2) BU	(2) 11615	(2) Diesel Exhaust Fluid Dosing Valve High Control 2	(2) I	(2) —

Q74 Engine Coolant Bypass Valve (L3B)



4994456

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 2-2236898-5
- Service Connector: 19371191
- Description: 5-Way F 1.2 MCON-LL Series, Sealed(NA)

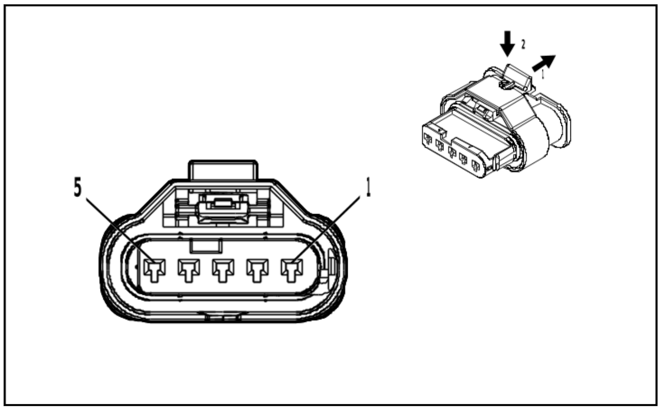
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q74 Engine Coolant Bypass Valve (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU	(1) 2976	(1) Coolant Diverter Valve Actuator Control Open	(1) I	(1) —
(2) 2	(2) 0.75	(2) BU / BN	(2) 2977	(2) Coolant Diverter Valve Actuator Control Close	(2) I	(2) —
(3) 3	(3) 0.5	(3) WH / RD	(3) 480	(3) Engine Control Vehicle Sensors 5 Volt Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / GY	(4) 2978	(4) Coolant Diverter Valve Position Signal	(4) I	(4) —
(5) 5	(5) 0.5	(5) BK / GN	(5) 580	(5) Engine Control Sensors Low Reference 2	(5) I	(5) —

Q74 Engine Coolant Bypass Valve (LZ0)



4994456

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 2-2236898-5
- Service Connector: 19371191
- Description: 5-Way F 1.2 MCON-LL Series, Sealed(NA)

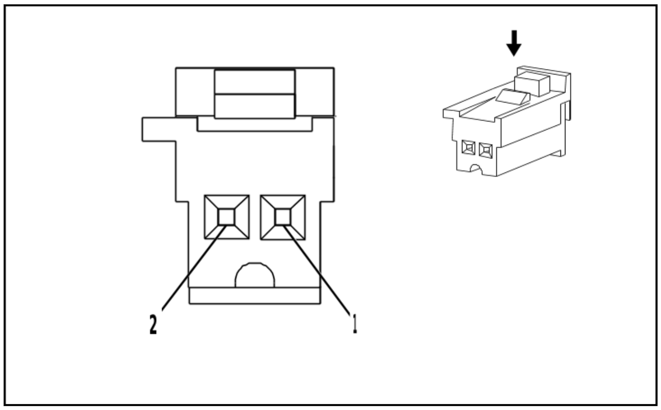
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q74 Engine Coolant Bypass Valve (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU	(1) 2976	(1) Coolant Diverter Valve Actuator Control Open	(1) I	(1) —
(2) 2	(2) 0.75	(2) BU / BN	(2) 2977	(2) Coolant Diverter Valve Actuator Control Close	(2) I	(2) —
(3) 3	(3) 0.5	(3) WH / RD	(3) 480	(3) Engine Control Vehicle Sensors 5 Volt Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / GY	(4) 2978	(4) Coolant Diverter Valve Position Signal	(4) I	(4) —
(5) 5	(5) 0.5	(5) BK / GN	(5) 580	(5) Engine Control Sensors Low Reference 2	(5) I	(5) —

Q77A Transmission Control Solenoid Valve 1 (MFC)



4051391

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 13956948
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 MTS Series(VT)

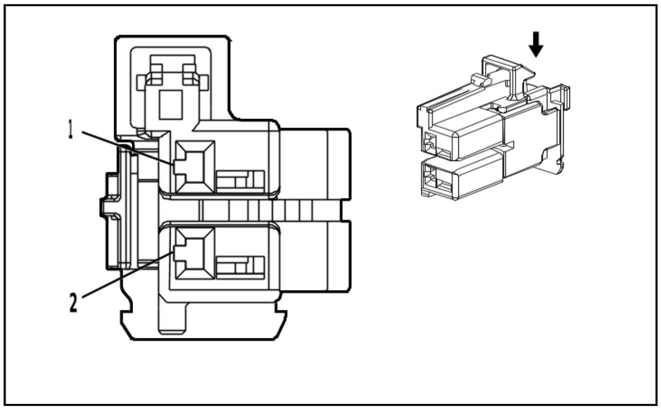
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

Q77A Transmission Control Solenoid Valve 1 (MFC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN	(1) 6400	(1) Clutch Solenoid Valve A Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY / BN	(2) 6388	(2) Transmission High Side Driver 2 Control	(2) I	(2) —

Q77A Transmission Control Solenoid Valve 1 (MI2 / MQB / MQC / MHS / MHT)



4672650

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356394-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BN)

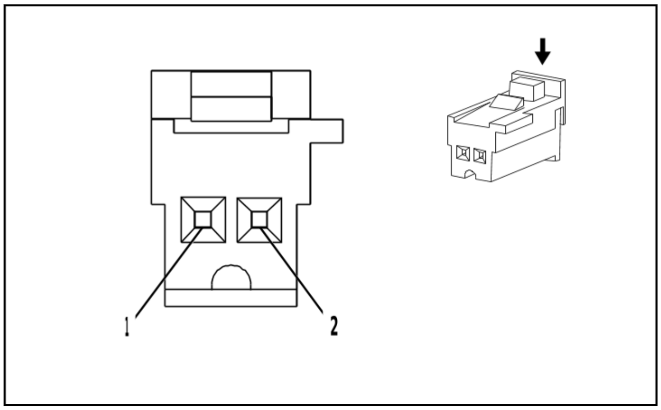
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q77A Transmission Control Solenoid Valve 1 (MI2 / MQB / MQC / MHS / MHT)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 6388	(1) Transmission High Side Driver 2 Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT	(2) 12513	(2) Transmission Default Disable Solenoid Control	(2) I	(2) —

Q77B Transmission Control Solenoid Valve 2 (MFC)



4008644

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 13941672
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 MTS Series(GY)

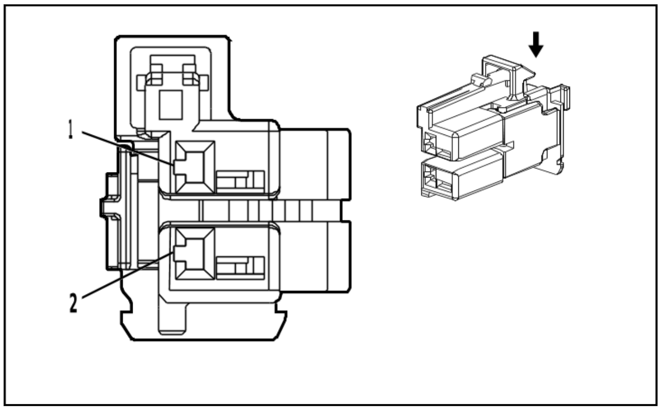
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

Q77B Transmission Control Solenoid Valve 2 (MFC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU	(1) 6401	(1) Clutch Solenoid Valve B Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY / BN	(2) 6388	(2) Transmission High Side Driver 2 Control	(2) I	(2) —

Q77B Transmission Control Solenoid Valve 2 (MI2 / MQB / MQC / MHS / MHT)



4672650

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356394-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BN)

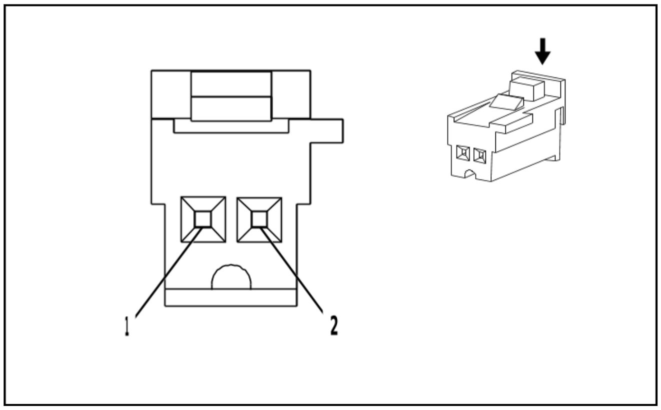
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q77B Transmission Control Solenoid Valve 2 (MI2 / MQB / MQC / MHS / MHT)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 6388	(1) Transmission High Side Driver 2 Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY	(2) 12463	(2) Transmission Valve 3 Solenoid Control	(2) I	(2) —

Q77C Transmission Control Solenoid Valve 3 (MFC)



4008644

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 13941672
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 MTS Series(GY)

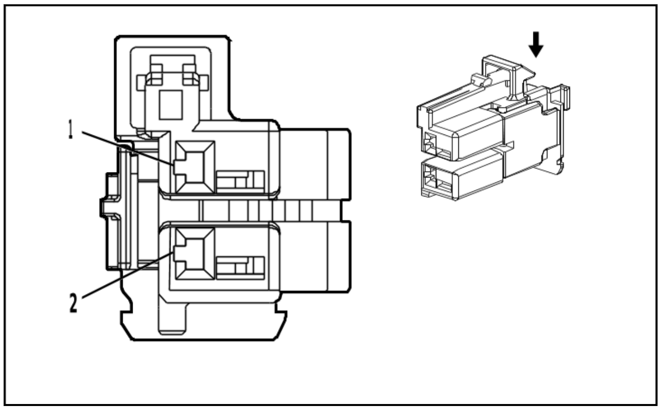
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

Q77C Transmission Control Solenoid Valve 3 (MFC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY	(1) 6402	(1) Clutch Solenoid Valve C Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY / BN	(2) 6388	(2) Transmission High Side Driver 2 Control	(2) I	(2) —

Q77C Transmission Control Solenoid Valve 3 (MI2 / MQB / MQC / MHS / MHT)



4672650

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356394-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BN)

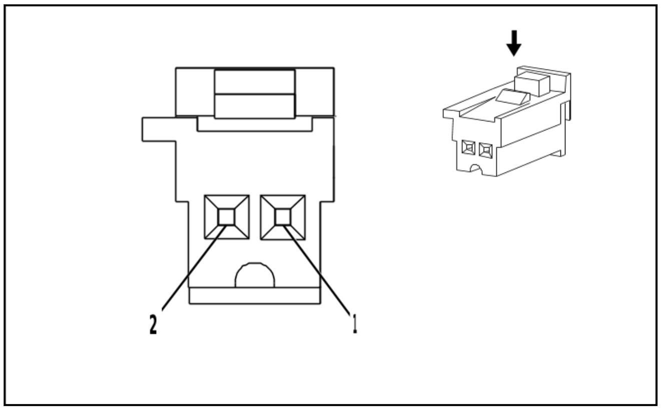
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q77C Transmission Control Solenoid Valve 3 (MI2 / MQB / MQC / MHS / MHT)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 6388	(1) Transmission High Side Driver 2 Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / GY	(2) 12466	(2) Transmission Valve 6 Solenoid Control	(2) I	(2) —

Q77D Transmission Control Solenoid Valve 4 (MFC)



4051391

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 13956948
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 MTS Series(VT)

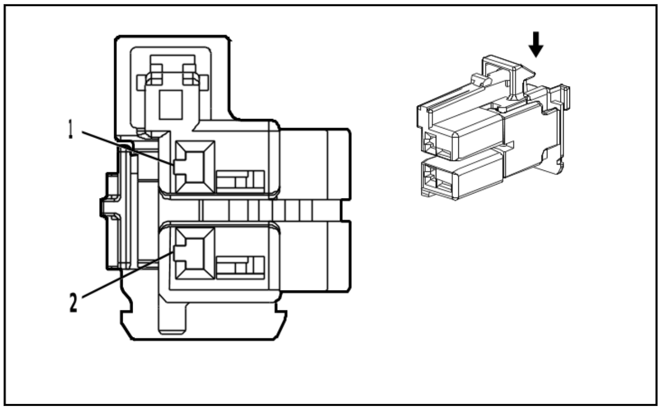
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

Q77D Transmission Control Solenoid Valve 4 (MFC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 4508	(1) Transmission Clutch G Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / GY	(2) 6387	(2) Transmission High Side Driver 1 Control	(2) I	(2) —

Q77D Transmission Control Solenoid Valve 4 (MI2 / MQB / MQC / MHS / MHT)



4672650

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356394-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BN)

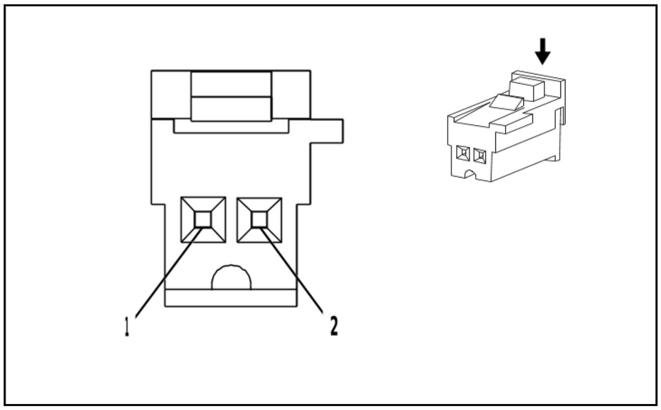
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q77D Transmission Control Solenoid Valve 4 (MI2 / MQB / MQC / MHS / MHT)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 6388	(1) Transmission High Side Driver 2 Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / VT	(2) 12465	(2) Transmission Valve 5 Solenoid Control	(2) I	(2) —

Q77E Transmission Control Solenoid Valve 5 (MFC)



4008644

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 13941672
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 MTS Series(GY)

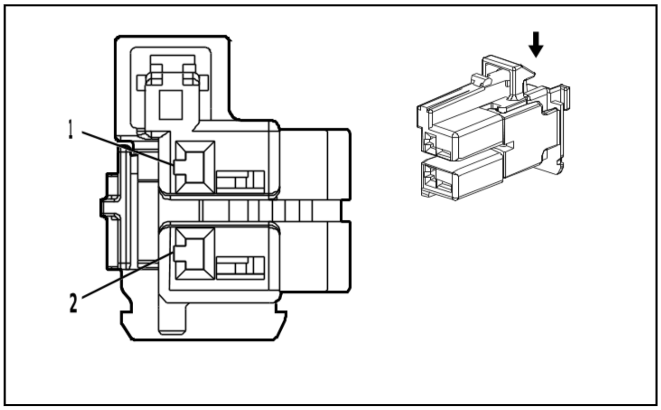
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

Q77E Transmission Control Solenoid Valve 5 (MFC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BN	(1) 6404	(1) Clutch Solenoid Valve E Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY / BN	(2) 6388	(2) Transmission High Side Driver 2 Control	(2) I	(2) —

Q77E Transmission Control Solenoid Valve 5 (MI2 / MQB / MQC / MHS / MHT)



4672650

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356394-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BN)

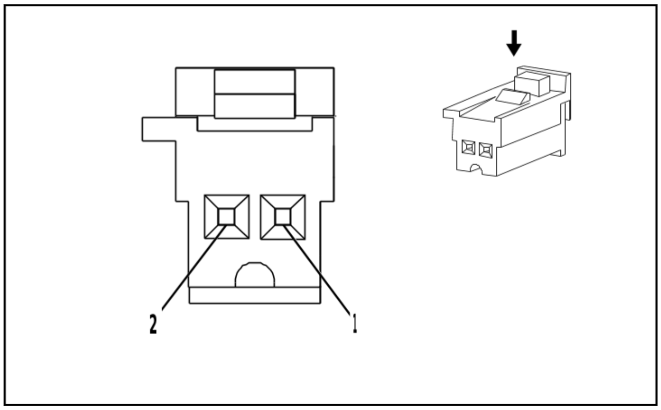
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q77E Transmission Control Solenoid Valve 5 (MI2 / MQB / MQC / MHS / MHT)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 6388	(1) Transmission High Side Driver 2 Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / BN	(2) 12462	(2) Transmission Valve 2 Solenoid Control	(2) I	(2) —

Q77F Transmission Control Solenoid Valve 6 (MFC)



4051391

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 13956948
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 MTS Series(VT)

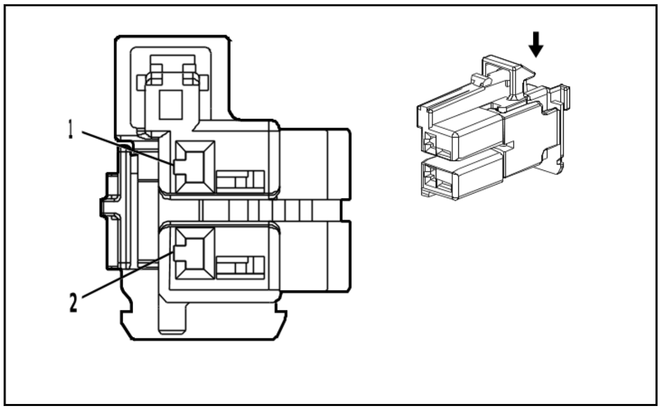
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

Q77F Transmission Control Solenoid Valve 6 (MFC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / BU	(1) 4507	(1) Transmission Clutch H Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / GY	(2) 6387	(2) Transmission High Side Driver 1 Control	(2) I	(2) —

Q77F Transmission Control Solenoid Valve 6 (MI2 / MQB / MQC / MHS / MHT)



4672650

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356394-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BN)

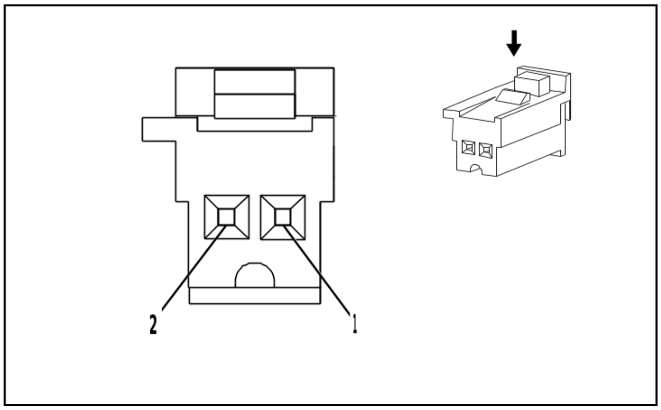
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q77F Transmission Control Solenoid Valve 6 (MI2 / MQB / MQC / MHS / MHT)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 6388	(1) Transmission High Side Driver 2 Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / GN	(2) 12461	(2) Transmission Valve 1 Solenoid Control	(2) I	(2) —

Q77G Transmission Control Solenoid Valve 7 (MFC)



4051391

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 13956948
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 MTS Series(VT)

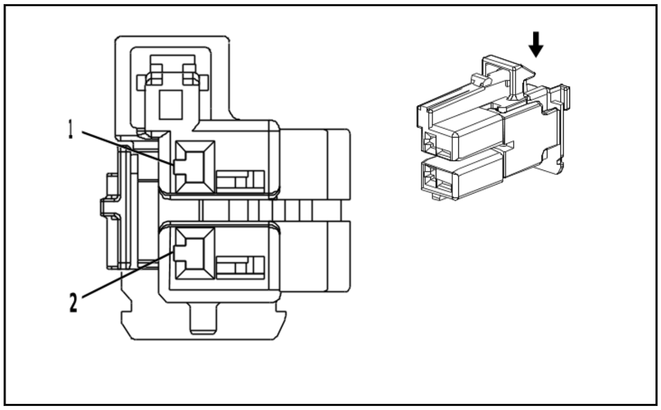
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

Q77G Transmission Control Solenoid Valve 7 (MFC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BN	(1) 6404	(1) Clutch Solenoid Valve E Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY / BN	(2) 6388	(2) Transmission High Side Driver 2 Control	(2) I	(2) —

Q77G Transmission Control Solenoid Valve 7 (MI2 / MQB / MQC / MHS / MHT)



4364736

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356394-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BU)

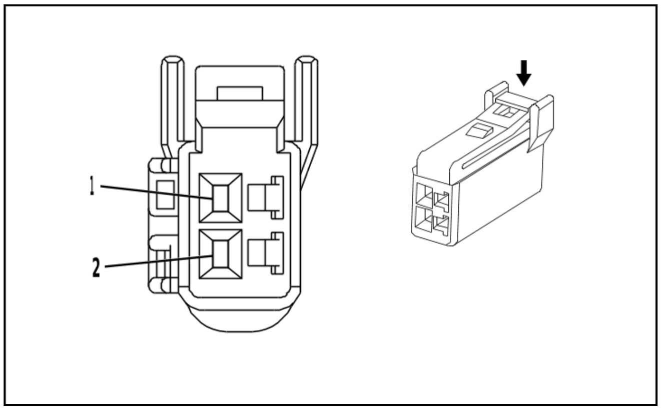
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q77G Transmission Control Solenoid Valve 7 (MI2 / MQB / MQC / MHS / MHT)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN	(1) 6387	(1) Transmission High Side Driver 1 Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / OG	(2) 1530	(2) Transmission Line Pressure Control Solenoid Valve Control	(2) I	(2) —

Q77H Transmission Control Solenoid Valve 8 (MFC)



4051682

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 7287-0122
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 040 III Series(NA)

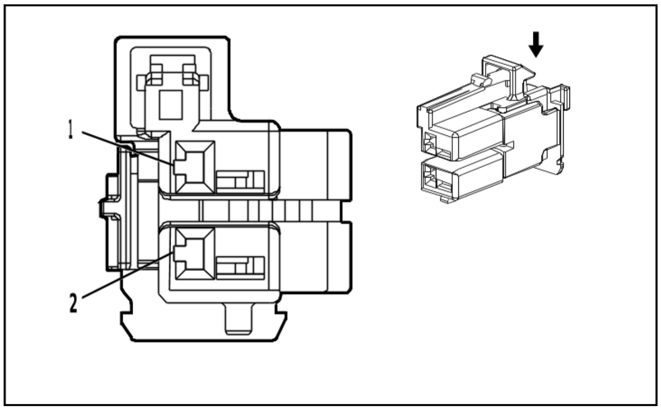
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q77H Transmission Control Solenoid Valve 8 (MFC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / GY	(1) 6387	(1) Transmission High Side Driver 1 Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / WH	(2) 6380	(2) Torque Converter Clutch Enable Solenoid Valve A Control	(2) I	(2) —

Q77H Transmission Control Solenoid Valve 8 (MI2 / MQB / MQC / MHS / MHT)



4672683

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356394-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(GN)

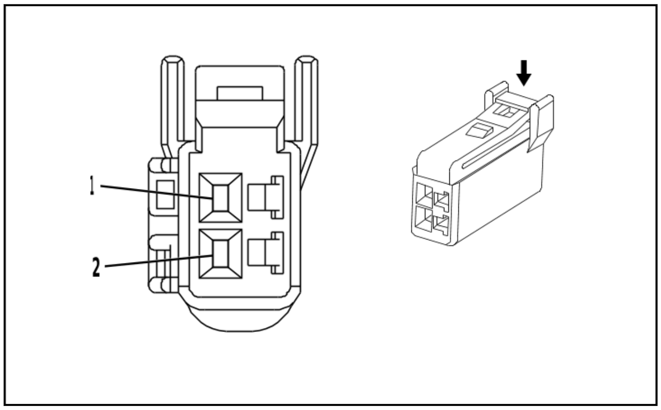
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q77H Transmission Control Solenoid Valve 8 (MI2 / MQB / MQC / MHS / MHT)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN	(1) 6387	(1) Transmission High Side Driver 1 Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY / BN	(2) 422	(2) Torque Converter Clutch Solenoid Valve Control	(2) I	(2) —

Q77J Transmission Control Solenoid Valve 9 (MFC)



4051682

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 7287-0122
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 040 III Series(NA)

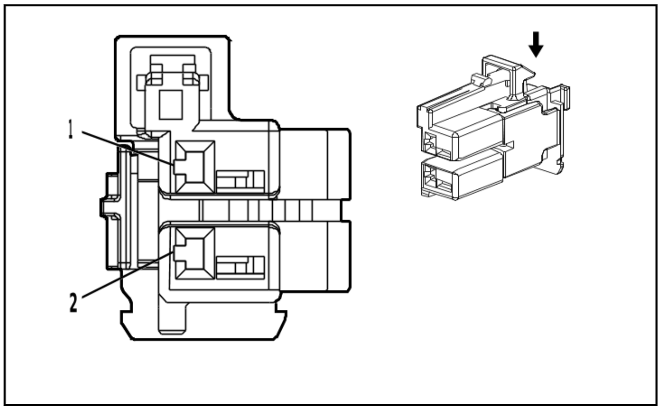
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q77J Transmission Control Solenoid Valve 9 (MFC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BN	(1) 6388	(1) Transmission High Side Driver 2 Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / BN	(2) 6210	(2) Torque Converter Clutch Enable Solenoid Valve B Control	(2) I	(2) —

Q77J Transmission Control Solenoid Valve 9 (MI2 / MQB / MQC / MHS / MHT)



4672650

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356394-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BN)

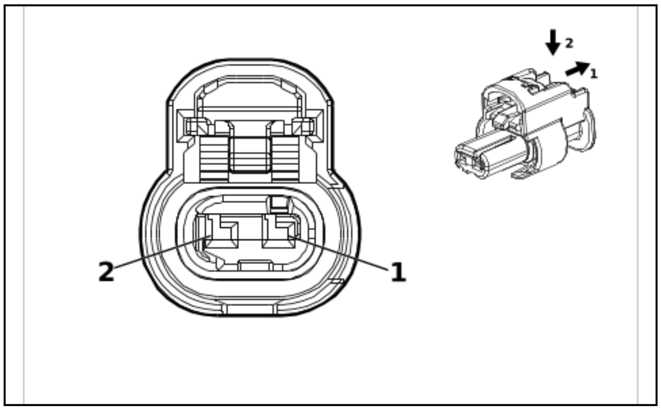
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q77J Transmission Control Solenoid Valve 9 (MI2 / MQB / MQC / MHS / MHT)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 6388	(1) Transmission High Side Driver 2 Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / WH	(2) 7819	(2) Default Disable Solenoid Control	(2) I	(2) —

Q83AA Valve Lifter Oil Solenoid Valve - Cylinder 1 (L84 / L87)



4036662

Connector Part Information
- Harness Type: Valve Rocker Arm Oil Control Valve Harness
- OEM Connector: 1-2296704-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed(BK)

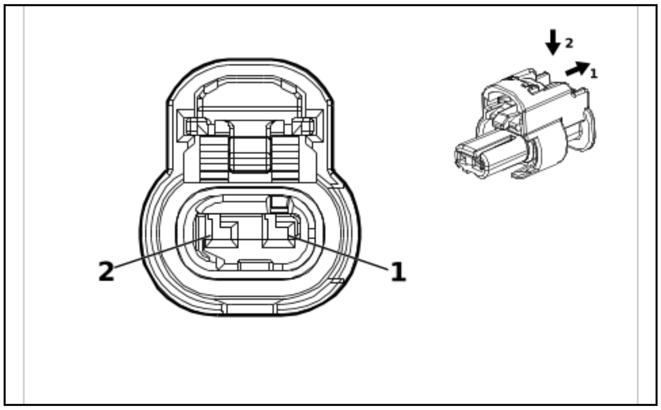
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q83AA Valve Lifter Oil Solenoid Valve - Cylinder 1 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / BU	(1) 2491	(1) Cylinder Shutoff Solenoid Enable Signal 1	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU	(2) 5491	(2) Cylinder Deactivation Solenoid Valve Control 1	(2) I	(2) —

Q83AB Valve Lifter Oil Solenoid Valve - Cylinder 2 (L84 / L87)



4036662

Connector Part Information
- Harness Type: Valve Rocker Arm Oil Control Valve Harness
- OEM Connector: 1-2296704-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed(BK)

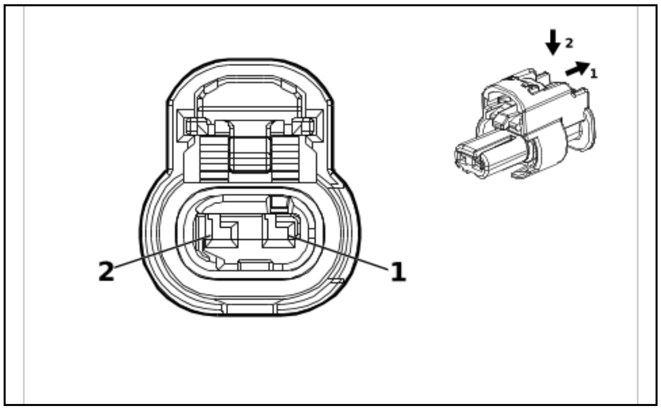
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q83AB Valve Lifter Oil Solenoid Valve - Cylinder 2 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / GN	(1) 2492	(1) Cylinder Shutoff Solenoid Enable Signal 2	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN	(2) 5492	(2) Cylinder Deactivation Solenoid Valve Control 2	(2) I	(2) —

Q83AC Valve Lifter Oil Solenoid Valve - Cylinder 3 (L84 / L87)



4036662

Connector Part Information
- Harness Type: Valve Rocker Arm Oil Control Valve Harness
- OEM Connector: 1-2296704-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed(BK)

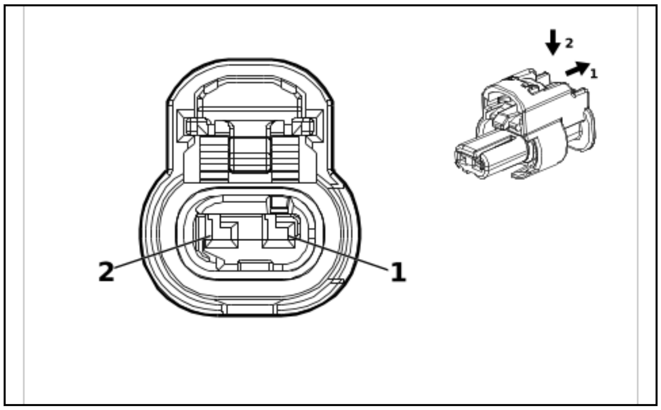
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q83AC Valve Lifter Oil Solenoid Valve - Cylinder 3 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / GY	(1) 2493	(1) Cylinder Shutoff Solenoid Enable Signal 3	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY	(2) 5493	(2) Cylinder Deactivation Solenoid Valve Control 3	(2) I	(2) —

Q83AD Valve Lifter Oil Solenoid Valve - Cylinder 4 (L84 / L87)



4036662

Connector Part Information

- Harness Type: Valve Rocker Arm Oil Control Valve Harness
- OEM Connector: 1-2296704-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed(BK)

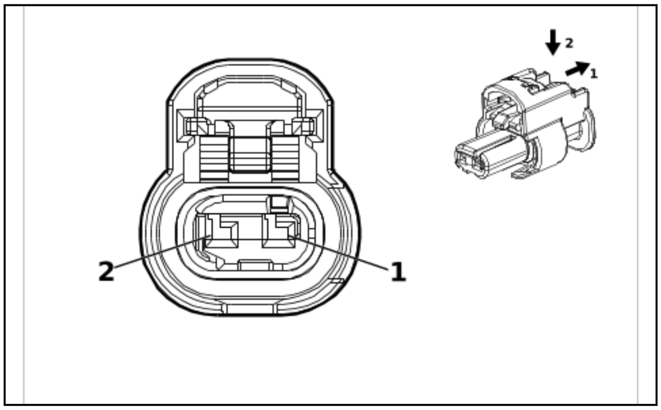
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q83AD Valve Lifter Oil Solenoid Valve - Cylinder 4 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / GN	(1) 2494	(1) Cylinder Shutoff Solenoid Enable Signal 4	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / BU	(2) 5494	(2) Cylinder Deactivation Solenoid Valve Control 4	(2) I	(2) —

Q83AE Valve Lifter Oil Solenoid Valve - Cylinder 5 (L84 / L87)



4036662

Connector Part Information

- Harness Type: Valve Rocker Arm Oil Control Valve Harness
- OEM Connector: 1-2296704-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed(BK)

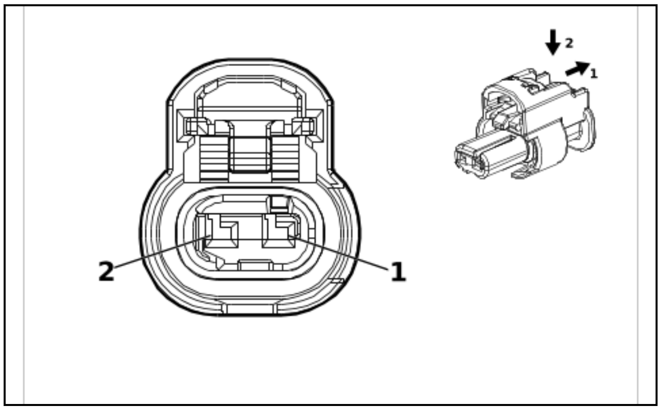
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q83AE Valve Lifter Oil Solenoid Valve - Cylinder 5 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / VT	(1) 2495	(1) Cylinder Shutoff Solenoid Enable Signal 5	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT	(2) 5495	(2) Cylinder Deactivation Solenoid Valve Control 5	(2) I	(2) —

Q83AF Valve Lifter Oil Solenoid Valve - Cylinder 6 (L84 / L87)



4036662

Connector Part Information

- Harness Type: Valve Rocker Arm Oil Control Valve Harness
- OEM Connector: 1-2296704-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed(BK)

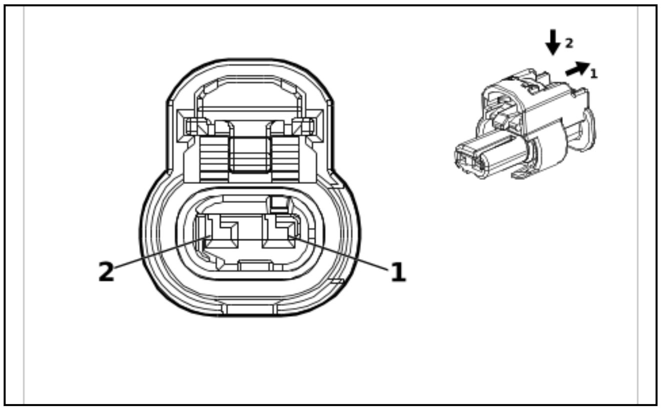
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q83AF Valve Lifter Oil Solenoid Valve - Cylinder 6 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BN	(1) 2496	(1) Cylinder Shutoff Solenoid Enable Signal 6	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN	(2) 5496	(2) Cylinder Deactivation Solenoid Valve Control 6	(2) I	(2) —

Q83AG Valve Lifter Oil Solenoid Valve - Cylinder 7 (L84 / L87)



4036662

Connector Part Information

- Harness Type: Valve Rocker Arm Oil Control Valve Harness
- OEM Connector: 1-2296704-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed(BK)

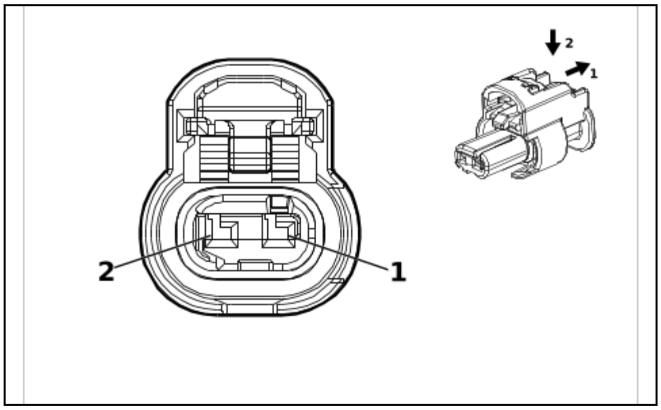
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q83AG Valve Lifter Oil Solenoid Valve - Cylinder 7 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / GY	(1) 2497	(1) Cylinder Shutoff Solenoid Enable Signal 7	(1) I	(1) —
(2) 2	(2) 0.5	(2) WH	(2) 5497	(2) Cylinder Deactivation Solenoid Valve Control 7	(2) I	(2) —

Q83AH Valve Lifter Oil Solenoid Valve - Cylinder 8 (L84 / L87)



4036662

Connector Part Information

- Harness Type: Valve Rocker Arm Oil Control Valve Harness
- OEM Connector: 1-2296704-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed(BK)

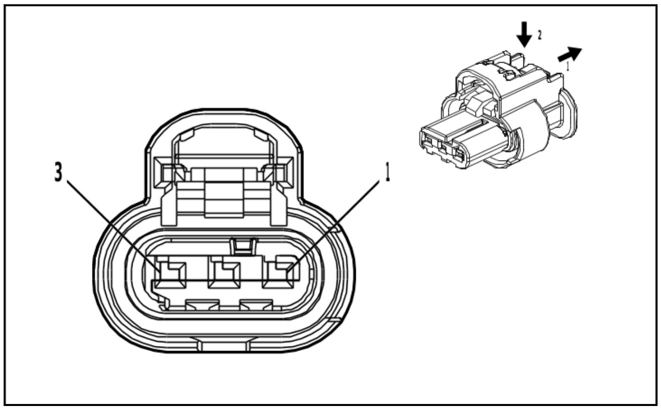
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q83AH Valve Lifter Oil Solenoid Valve - Cylinder 8 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / YE	(1) 2498	(1) Cylinder Shutoff Solenoid Enable Signal 8	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE	(2) 5498	(2) Cylinder Deactivation Solenoid Valve Control 8	(2) I	(2) —

Q97B Engine Coolant Flow Control Valve - Block (L3B)



4778903

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-2
- Service Connector: 86792095
- Description: 3-Way F 1.2 MCON-CB Series, Sealed(BK)

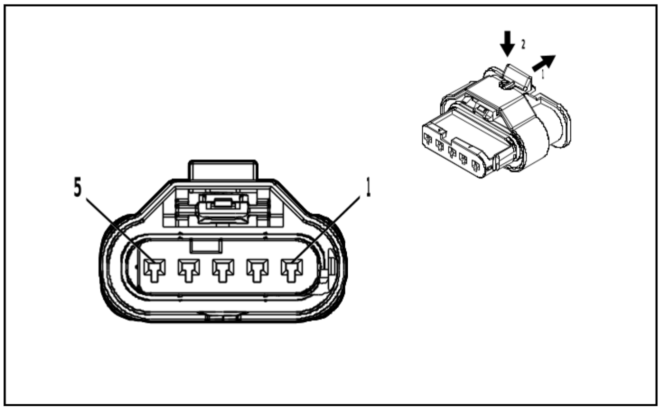
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required

Q97B Engine Coolant Flow Control Valve - Block (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / BN	(1) 2732	(1) Engine Control Module LIN Bus 4	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 6550	(2) Ground	(2) I	(2) —
(3) 3	(3) 0.5	(3) VT / BU	(3) 5294	(3) Powertrain Main Relay Fused Supply Voltage 5	(3) I	(3) —

Q97M Engine Coolant Flow Control Valve - Main (LZ0)



4994456

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 2-2236898-5
- Service Connector: 19371191
- Description: 5-Way F 1.2 MCON-LL Series, Sealed(NA)

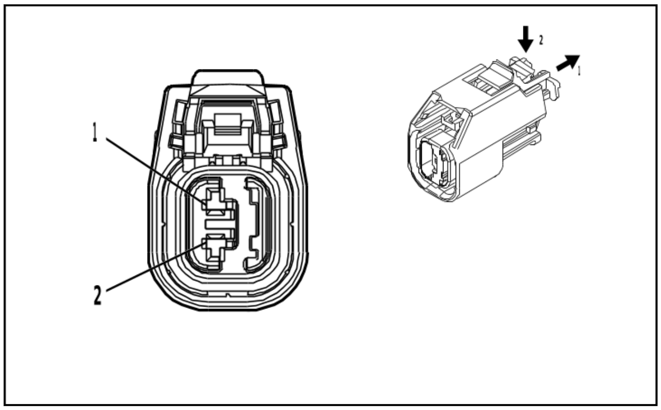
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

Q97M Engine Coolant Flow Control Valve - Main (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) GY / BN	(1) 2972	(1) Coolant Flow Control Actuator Control Close	(1) I	(1) —
(2) 2	(2) 0.75	(2) GY / BU	(2) 2971	(2) Coolant Flow Control Actuator Control Open	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / RD	(3) 460	(3) Engine Control Sensors 5 Volt Reference 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) GY	(4) 2973	(4) Coolant Flow Control Valve Position Signal	(4) I	(4) —
(5) 5	(5) 0.5	(5) BK / YE	(5) 548	(5) Engine Control Sensors Low Reference 1	(5) I	(5) —

R6A Terminating Resistor - High Speed Bus



4889830

Connector Part Information
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 33164011
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 OCS Series, Sealed(BK)

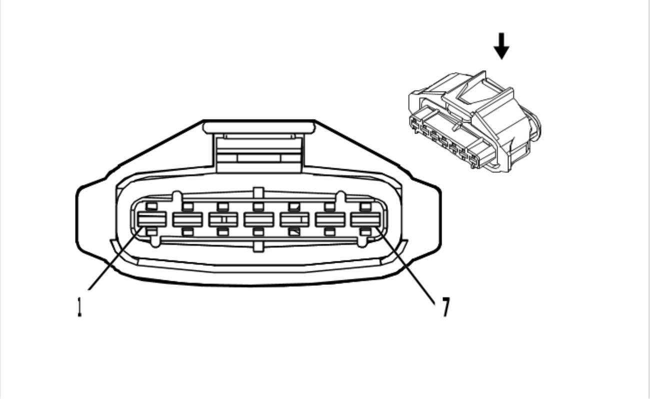
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required

R6A Terminating Resistor - High Speed Bus

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 4100	(1) AUTOSAR CAN Bus [-] 4 Serial Data	(1) I	(1) —
(2) 2	(2) 0.5	(2) BU / VT	(2) 4101	(2) AUTOSAR CAN Bus [+] 4 Serial Data	(2) I	(2) —

R29 Fuel Filter (LZ0)



2537256

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 10774827
- Service Connector: 19354080
- Description: 7-Way F 2.8 Junior Power Timer Series, Sealed(BK)

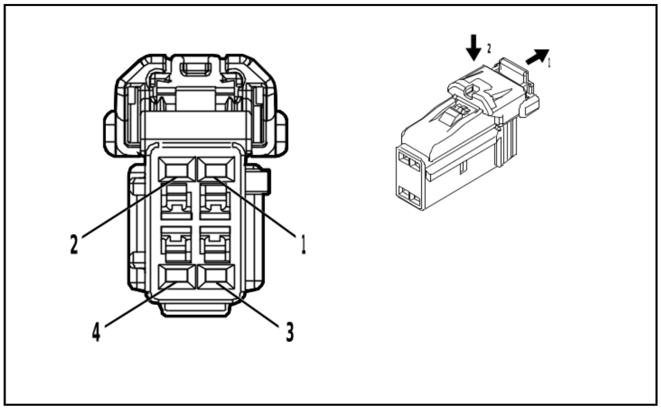
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

R29 Fuel Filter (LZ0)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) BK	(1) 1650	(1) Ground	(1) I	(1) —
(2) 2	(2) 2.5	(2) BN / YE	(2) 2996	(2) Fuel Heater Control 1	(2) I	(2) —
(3) 3	(3) 1	(3) VT / GN	(3) 4320	(3) Powertrain Sensor Bus Enable	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK / BU	(4) 6863	(4) Water In Fuel Sensor Low Reference	(4) I	(4) —
(5) 5	(5) 0.5	(5) BU / YE	(5) 6861	(5) Water In Fuel Sensor Signal	(5) I	(5) —
(6) 6	(6) 0.5	(6) BN / GY	(6) 7072	(6) Fuel Temperature Sensor 1 Signal	(6) I	(6) —
(7) 7	(7) 0.5	(7) BN / WH	(7) 7073	(7) Fuel Temperature Sensor 1 Low Reference	(7) I	(7) —

S3 Automatic Transmission Control (MI2 / MQB / MHT / MFC)



4872683

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8435
- Service Connector: 19369633
- Description: 4-Way F 1.2 Series(BK)

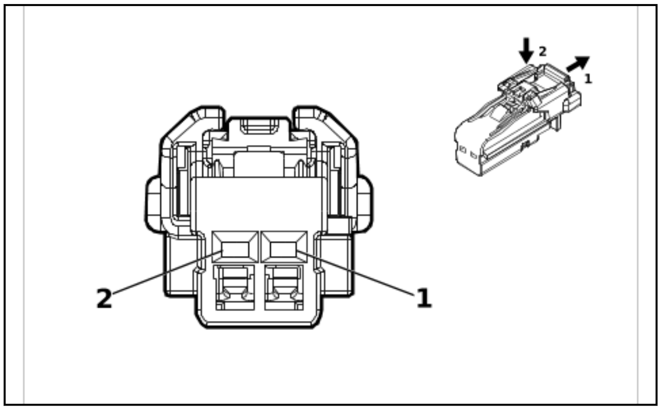
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-16 (L-GN)	No Tool Required

S3 Automatic Transmission Control (MI2 / MQB / MHT / MFC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) YE / WH	(1) 816	(1) Brake Transmission Shift Interlock Solenoid Actuator Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 1050	(2) Ground	(2) II	(2) —
(3) 3	(3) 0.35	(3) VT / BK	(3) 7553	(3) Park Lock Solenoid Actuator Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 1050	(4) Ground	(4) II	(4) —

S3C Automatic Transmission Control Lever (MI2 / MQB / MHT / MFC)



4115691

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series(BK)

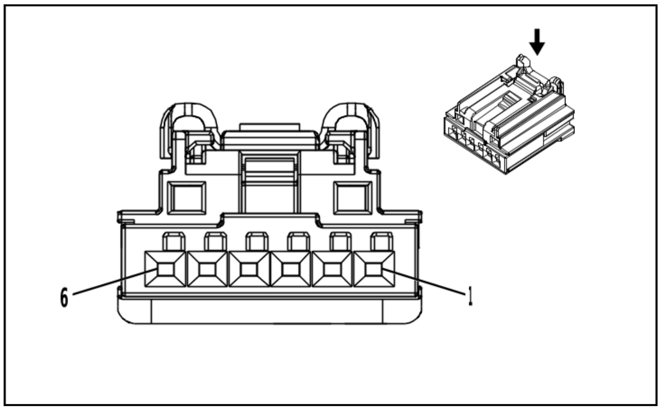
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-16 (L-GN)	No Tool Required

S3C Automatic Transmission Control Lever (MI2 / MQB / MHT / MFC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GN / BU	(1) 3738	(1) Tap Up/Tap Down Switch Signal 2	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / WH	(2) 851	(2) Signal Ground	(2) II	(2) —

S13D Door Lock Switch - Driver - Double Cab / Crew Cab ((AU3 - (GF2 / GF5 / GFF / GPZ)))



4145138

Connector Part Information

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Driver
- OEM Connector: 2035363-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

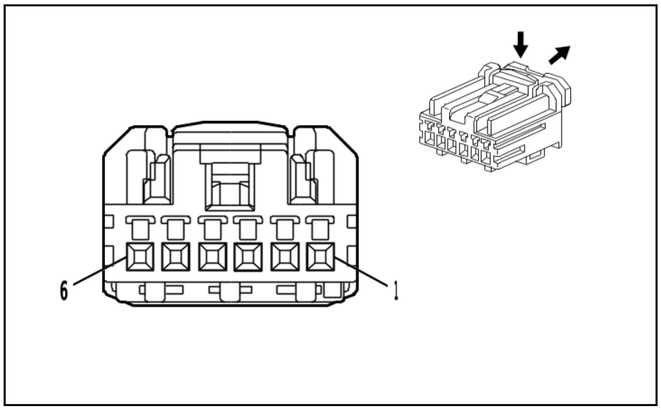
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S13D Door Lock Switch - Driver - Double Cab / Crew Cab ((AU3 - (GF2 / GF5 / GFF / GPZ)))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / GY	(1) 4784	(1) Left Front Door LED Backlight Dimming Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) BN / YE	(3) 2771	(3) Left Front Door Lock Switch Lock Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) BN / WH	(4) 2772	(4) Left Front Door Lock Switch Unlock Signal	(4) I	(4) —
(5) 5	(5) 0.5	(5) BK	(5) 1550	(5) Ground	(5) I	(5) —
6	—	—	—	Not Occupied	—	—

S13D Door Lock Switch - Driver - Double Cab / Crew Cab ((AU3 & (GF2 / GF5 / GFF / GPZ)))



4650256

Connector Part Information

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Driver
- OEM Connector: 13597262
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 HCM Series(BK)

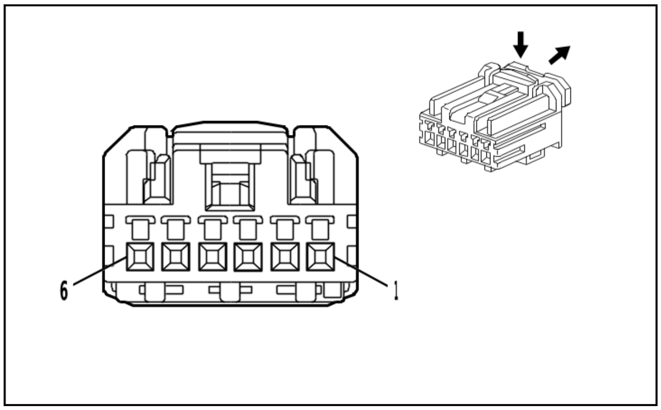
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S13D Door Lock Switch - Driver - Double Cab / Crew Cab ((AU3 & (GF2 / GF5 / GFF / GPZ)))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5 (1) 0.5	(1) YE (1) BN / GY	(1) 6817 (1) 4784	(1) LED Backlight Dimming Control 1 (1) Left Front Door LED Backlight Dimming Control	(1) I (1) I	(1) - DEZ (1) DEZ
(2) 2	(2) 0.5	(2) BN / YE	(2) 2771	(2) Left Front Door Lock Switch Lock Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BN / WH	(3) 2772	(3) Left Front Door Lock Switch Unlock Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 1550	(4) Ground	(4) I	(4) —
5 - 6	—	—	—	Not Occupied	—	—

S13D Door Lock Switch - Driver - Regular Cab (AU3)



4650256

Connector Part Information

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Driver
- OEM Connector: 13597262
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 HCM Series(BK)

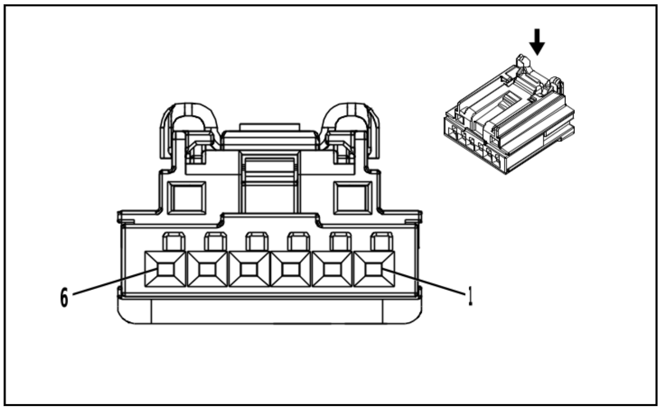
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S13D Door Lock Switch - Driver - Regular Cab (AU3)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / GY	(1) 4784	(1) Left Front Door LED Backlight Dimming Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BN / YE	(2) 2771	(2) Left Front Door Lock Switch Lock Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BN / WH	(3) 2772	(3) Left Front Door Lock Switch Unlock Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 1550	(4) Ground	(4) I	(4) —
5 - 6	—	—	—	Not Occupied	—	—

S13P Door Lock Switch - Passenger - Double Cab / Crew Cab ((AU3 - (GF2 / GF5 / GFF / GPZ)))



4145138

Connector Part Information

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Passenger
- OEM Connector: 2035363-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

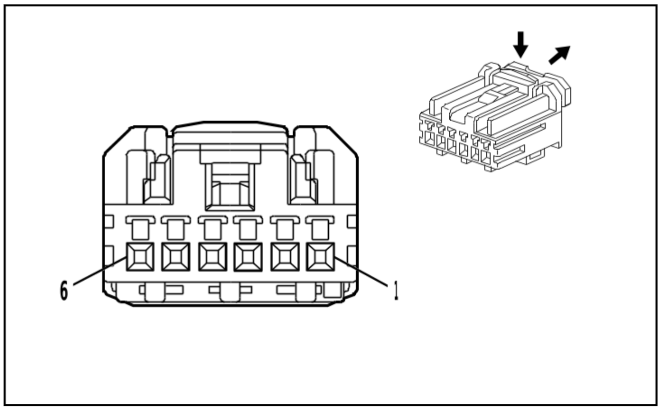
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S13P Door Lock Switch - Passenger - Double Cab / Crew Cab ((AU3 - (GF2 / GF5 / GFF / GPZ)))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / VT	(1) 4638	(1) LED Backlight Dimming Control Right Front Door	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) YE / VT	(3) 2773	(3) Right Front Door Lock Switch Lock Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) BN / VT	(4) 2774	(4) Right Front Door Lock Switch Unlock Control	(4) I	(4) —
(5) 5	(5) 0.5	(5) BK	(5) 1350	(5) Ground	(5) I	(5) —
6	—	—	—	Not Occupied	—	—

S13P Door Lock Switch - Passenger - Double Cab / Crew Cab ((AU3 & (GF2 / GF5 / GFF / GPZ)))



4650256

Connector Part Information

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Passenger
- OEM Connector: 13597262
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 HCM Series(BK)

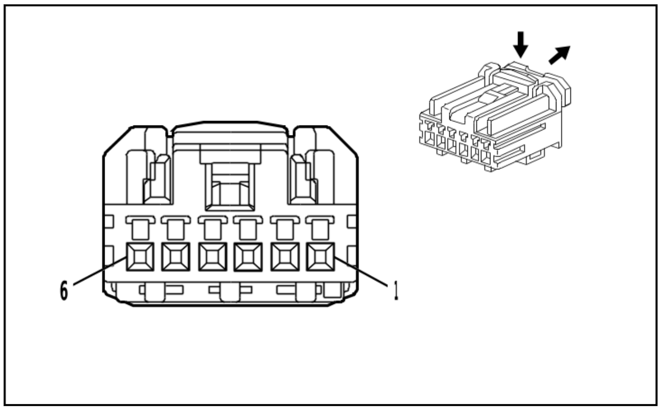
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S13P Door Lock Switch - Passenger - Double Cab / Crew Cab ((AU3 & (GF2 / GF5 / GFF / GPZ)))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5 (1) 0.5	(1) YE (1) GY / VT	(1) 6817 (1) 4638	(1) LED Backlight Dimming Control 1 (1) LED Backlight Dimming Control Right Front Door	(1) I (1) I	(1) DOUBLE CAB/ CREW CAB (1) REGULAR CAB
(2) 2	(2) 0.5	(2) YE / VT	(2) 2773	(2) Right Front Door Lock Switch Lock Control	(2) I	(2) —
(3) 3	(3) 0.5	(3) BN / VT	(3) 2774	(3) Right Front Door Lock Switch Unlock Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 1350	(4) Ground	(4) I	(4) —
5 - 6	—	—	—	Not Occupied	—	—

S13P Door Lock Switch - Passenger - Regular Cab (AU3)



4650256

Connector Part Information

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Passenger
- OEM Connector: 13597262
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 HCM Series(BK)

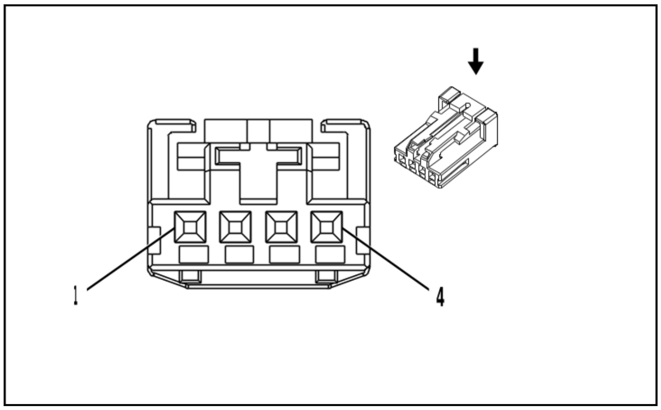
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S13P Door Lock Switch - Passenger - Regular Cab (AU3)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / VT	(1) 4638	(1) LED Backlight Dimming Control Right Front Door	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / VT	(2) 2773	(2) Right Front Door Lock Switch Lock Control	(2) I	(2) —
(3) 3	(3) 0.5	(3) BN / VT	(3) 2774	(3) Right Front Door Lock Switch Unlock Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 1350	(4) Ground	(4) I	(4) —
5 - 6	—	—	—	Not Occupied	—	—

S27 Head-Up Display Switch (UV6)



2717162

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: 19367524
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

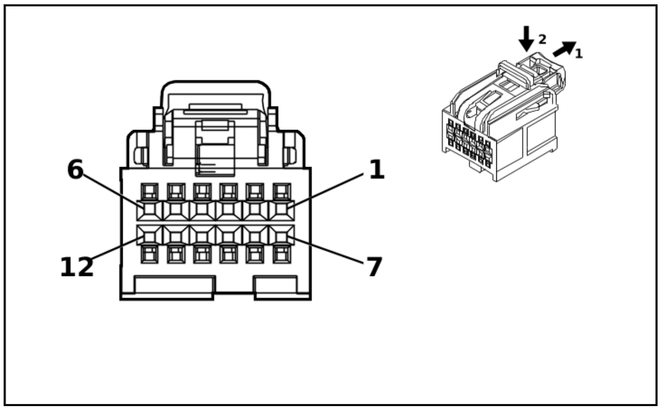
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S27 Head-Up Display Switch (UV6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) YE	(1) 6817	(1) LED Backlight Dimming Control 1	(1) I	(1) —
(2) 2	(2) 0.35	(2) BK / WH	(2) 851	(2) Signal Ground	(2) I	(2) —
(3) 3	(3) 0.35	(3) BK / GN	(3) 5699	(3) Head-Up Display Switch Low Reference	(3) I	(3) —
(4) 4	(4) 0.35	(4) YE / WH	(4) 622	(4) Head-Up Display Switch Signal	(4) I	(4) —

S30 Headlamp Switch



4975223

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35016616
- Service Connector: 13519750
- Description: 12-Way F 0.64 OCS Series(BK)

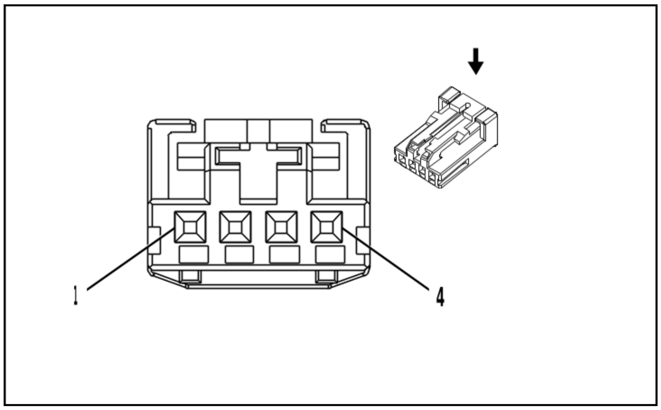
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19354230	J-35616-64B (L-BU)	J-38125-215A

S30 Headlamp Switch

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) WH / VT	(1) 103	(1) Headlamp Switch On Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) YE	(2) 6817	(2) LED Backlight Dimming Control 1	(2) I	(2) —
(3) 3	(3) 0.35	(3) GN / BN	(3) 306	(3) Headlamp Switch Off Signal	(3) I	(3) —
(4) 4	(4) 0.35	(4) GY	(4) 158	(4) Cargo Lamp Switch Signal	(4) I	(4) —
(5) 5	(5) 0.35	(5) GN / GY	(5) 13	(5) Headlamp Switch Park Lamp Signal	(5) I	(5) —
(6) 6	(6) 0.35	(6) BU / GN	(6) 4248	(6) Cargo Lamp Indicator Control	(6) I	(6) —
(7) 7	(7) 0.35	(7) WH / GY	(7) 2935	(7) Task Lamp Switch Signal	(7) I	(7) —
(8) 8	(8) 0.35	(8) BK / WH	(8) 851	(8) Signal Ground	(8) I	(8) —
9 - 10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.35	(11) WH / BN	(11) 7555	(11) Headlamp Switch Signal	(11) I	(11) —
(12) 12	(12) 0.35	(12) YE	(12) 7556	(12) Headlamp Switch Reference	(12) I	(12) —

S32LR Rear Seat Heater Switch - Left (KA6)



2717162

Connector Part Information

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

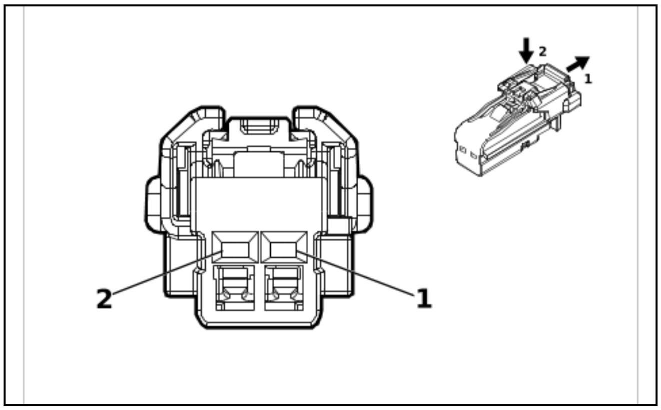
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S32LR Rear Seat Heater Switch - Left (KA6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / BU	(1) 1240	(1) Battery Positive Voltage	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) GN / VT	(3) 2857	(3) Body Control Module LIN Bus 11	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK / WH	(4) 1451	(4) Signal Ground	(4) I	(4) —

S33 Steering Wheel Horn Contact (N57 - D07)



4115691

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

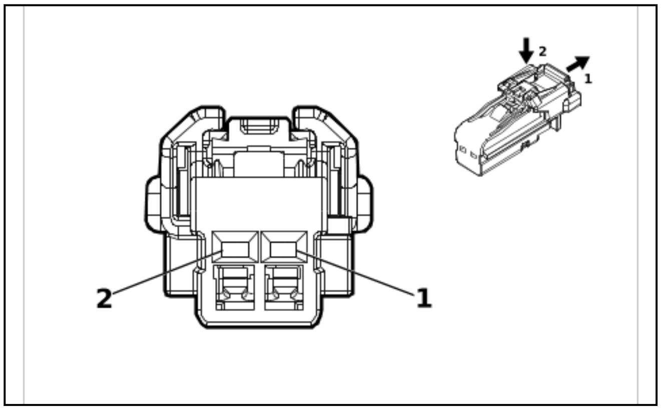
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

S33 Steering Wheel Horn Contact (N57 - D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK	(1) 6051	(1) Steering Wheel Ground	(1) I	(1) N57- D07
(2) 2	(2) 0.35	(2) RD	(2) 3287	(2) Horn Switch Signal	(2) I	(2) N57- D07

S33 Steering Wheel Horn Contact (NK5 & D07)



4115691

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 6098-8431
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 Series(BK)

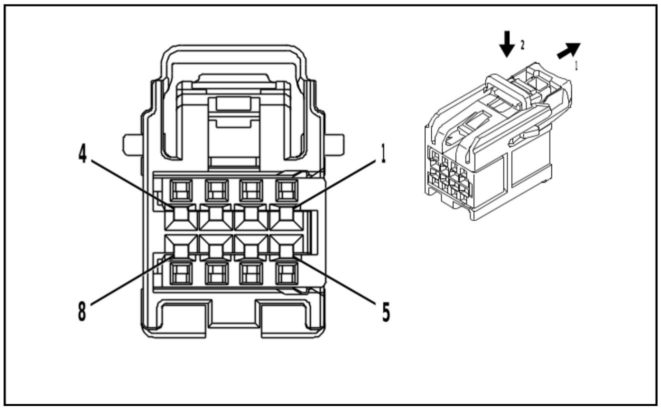
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

S33 Steering Wheel Horn Contact (NK5 & D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK / WH	(1) 6051	(1) Steering Wheel Ground	(1) I	(1) NK5 / D07
(2) 2	(2) 0.35	(2) GN / WH	(2) 3287	(2) Horn Switch Signal	(2) I	(2) NK5 / D07

S38 On/Off Vehicle Switch



4232228

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 15526973
- Service Connector: 19353873
- Description: 8-Way F 0.64 OCS Series(GY)

Terminal Part Information

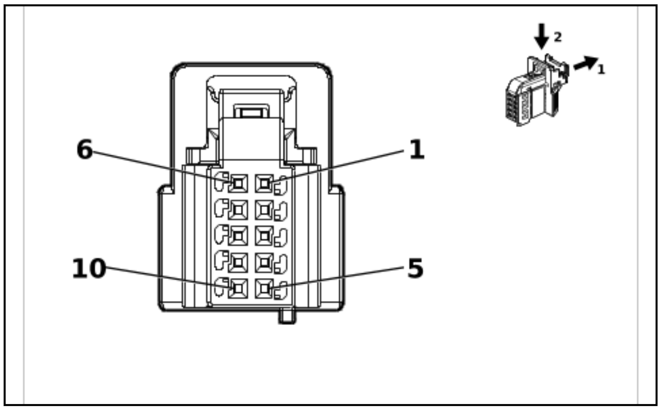
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S38 On/Off Vehicle Switch

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BU / BK	(1) 5719	(1) Ignition Mode Switch Start LED Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) BN / BK	(2) 5720	(2) Ignition Mode Switch Accessory LED Signal	(2) I	(2) —
(3) 3	(3) 0.35	(3) BK / WH	(3) 851	(3) Signal Ground	(3) I	(3) —
(4) 4	(4) 0.35	(4) BU / GN	(4) 5723	(4) Ignition Mode Switch Mode Voltage	(4) I	(4) —
(5) 5	(5) 0.35	(5) YE	(5) 6817	(5) LED Backlight Dimming Control 1	(5) I	(5) —
6	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(7) 7	(7) 0.35	(7) BK / GY	(7) 3559	(7) Passive Start Switch 2 Low Reference	(7) I	(7) —
(8) 8	(8) 0.35	(8) GN / BK	(8) 3558	(8) Passive Start Switch Signal 2	(8) I	(8) —

S47D Front Seat Adjuster Memory Switch - Driver - Double Cab / Crew Cab (A45)



5838155

Connector Part Information

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Driver
- OEM Connector: 2310000-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 MQS Series(BK)

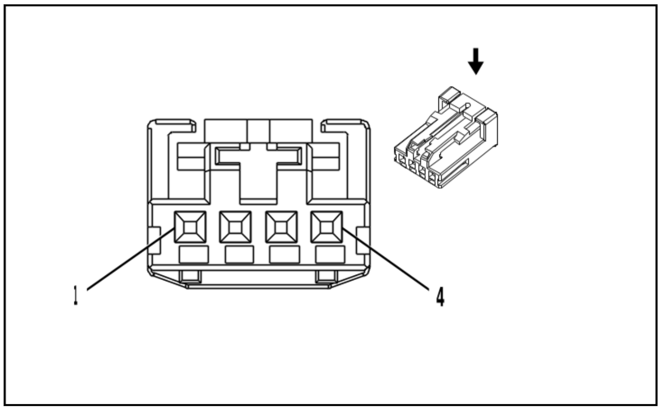
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S47D Front Seat Adjuster Memory Switch - Driver - Double Cab / Crew Cab (A45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / GY	(1) 4784	(1) Left Front Door LED Backlight Dimming Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) BN / YE	(3) 2771	(3) Left Front Door Lock Switch Lock Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) BN / WH	(4) 2772	(4) Left Front Door Lock Switch Unlock Signal	(4) I	(4) —
(5) 5	(5) 0.5	(5) BK / WH	(5) 1551	(5) Signal Ground	(5) I	(5) —
(6) 6	(6) 0.5	(6) BU / GN	(6) 614	(6) Seat Memory Switch Set Signal	(6) I	(6) —
(7) 7	(7) 0.5	(7) WH	(7) 615	(7) Seat Memory Switch Signal 1	(7) I	(7) —
8 - 10	—	—	—	Not Occupied	—	—

S47D Front Seat Adjuster Memory Switch - Driver - Regular Cab (A45)



2717162

Connector Part Information
- Harness Type: Front Side Door Door Lock Door Wiring Harness - Driver
- OEM Connector: 1-936119-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

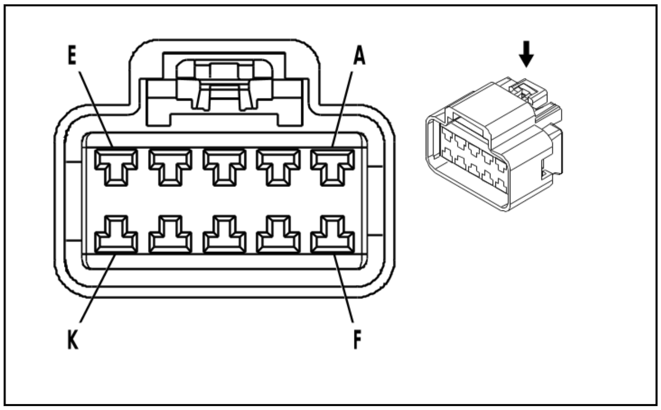
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S47D Front Seat Adjuster Memory Switch - Driver - Regular Cab (A45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / GY	(1) 4784	(1) Left Front Door LED Backlight Dimming Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK / WH	(2) 1551	(2) Signal Ground	(2) I	(2) —
(3) 3	(3) 0.5	(3) WH	(3) 615	(3) Seat Memory Switch Signal 1	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / GN	(4) 614	(4) Seat Memory Switch Set Signal	(4) I	(4) —

S64D Front Seat Adjuster Switch - Driver (A2X - A45)



623046

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 35058909
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 280 GT Series(BK)

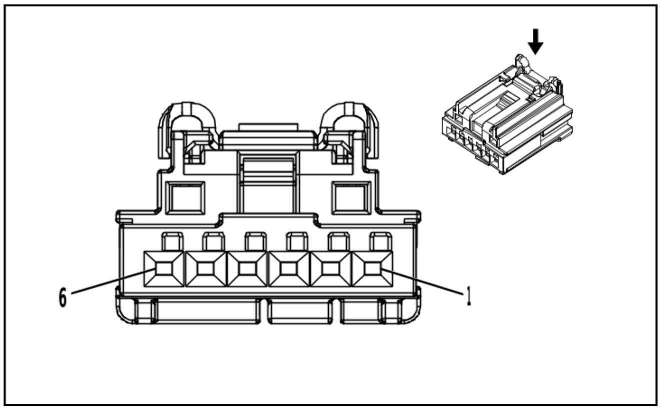
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

S64D Front Seat Adjuster Switch - Driver (A2X - A45)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	2.5	RD / YE	5040	Battery Positive Voltage	I	—
B	1.5	BU / YE	277	Driver Seat Recline Motor Rearward Control	I	—
C	1.5	YE / BU	285	Driver Seat Horizontal Motor Forward Control	I	—
D	1.5	GY / GN	284	Driver Seat Horizontal Motor Rearward Control	I	—
E	1.5	GY / BU	283	Driver Seat Rear Vertical Motor Down Control	I	—
F	1.5	GN / BN	286	Driver Seat Front Vertical Motor Up Control	I	—
G	1.5	YE	282	Driver Seat Rear Vertical Motor Up Control	I	—
H	1.5	GN / YE	276	Driver Seat Recline Motor Forward Control	I	—
J	2.5	BK	1550	Ground	I	—
K	1.5	BU / VT	287	Driver Seat Front Vertical Motor Down Control	I	—

S64D Front Seat Adjuster Switch - Driver (A45 & AVK)



3960313

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

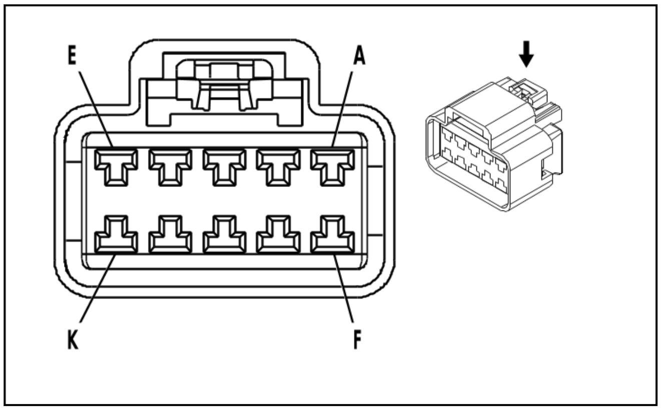
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S64D Front Seat Adjuster Switch - Driver (A45 & AVK)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / BN	(1) 2240	(1) Battery Positive Voltage	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35 (3) 0.5	(3) GN / GY (3) GN / GY	(3) 3758 (3) 3758	(3) Driver Seat Adjuster Memory Module LIN Bus 2 (3) Driver Seat Adjuster Memory Module LIN Bus 2	(3) I (3) I	(3) - A45 (3) A45
(4) 4	(4) 0.5	(4) BK	(4) 1550	(4) Ground	(4) I	(4) —
(5) 5	(5) 0.5	(5) BU / YE	(5) 2818	(5) Driver Seat Auxiliary Adjustment Switch Signal	(5) I	(5) —
(6) 6	(6) 0.5	(6) BK / VT	(6) 2817	(6) Auxiliary Driver Seat Adjustment Switch Low Reference	(6) I	(6) —

S64P Front Seat Adjuster Switch - Passenger (A7K - (AHH / AKE))



623046

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 35058909
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 280 GT Series(BK)

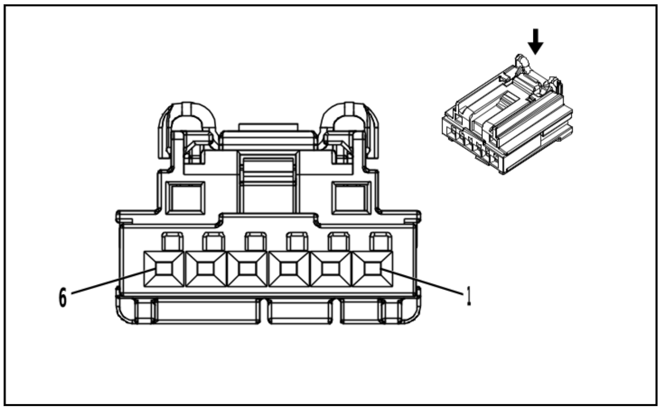
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

S64P Front Seat Adjuster Switch - Passenger (A7K - (AHH / AKE))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	1.5	BU / WH	289	Passenger Seat Rear Vertical Motor Down Control	I	—
B	1.5	YE / BU	290	Passenger Seat Horizontal Motor Rearward Control	I	—
C	1.5	YE / WH	296	Passenger Seat Horizontal Motor Forward Control	I	—
D	1.5	BU / BN	77	Passenger Seat Recline Motor Rearward Control	I	—
E	2.5	BK	1350	Ground	I	—
F	1.5	GN / BU	298	Passenger Seat Front Vertical Motor Down Control	I	—
G	2.5	RD / YE	7440	Battery Positive Voltage	I	—
H	1.5	GN	76	Passenger Seat Recline Motor Forward Control	I	—
J	1.5	GN / WH	288	Passenger Seat Rear Vertical Motor Up Control	I	—
K	1.5	GN / VT	297	Passenger Seat Front Vertical Motor Up Control	I	—

S64P Front Seat Adjuster Switch - Passenger (AVU & (AHH / AKE))



3960313

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

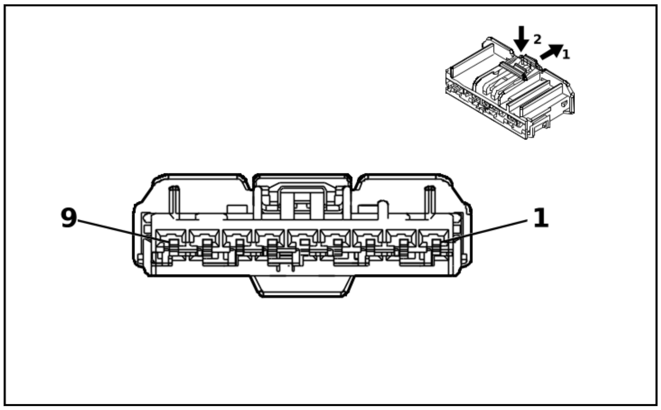
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S64P Front Seat Adjuster Switch - Passenger (AVU & (AHH / AKE))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / BN	(1) 2240	(1) Battery Positive Voltage	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) GN / YE	(3) 4116	(3) Passenger Seat Adjuster Memory Module LIN Bus 2	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 1350	(4) Ground	(4) I	(4) —
(5) 5	(5) 0.5	(5) GN / WH	(5) 2816	(5) Passenger Seat Auxiliary Adjustment Switch Signal	(5) I	(5) —
(6) 6	(6) 0.5	(6) BK / BN	(6) 2815	(6) Auxiliary Passenger Seat Adjustment Switch Low Reference	(6) I	(6) —

S65D Front Seat Lumbar Switch - Driver (A2X - AVK)



5204289

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 7289-6875-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 9-Way F 2.8 YESC Series(GY)

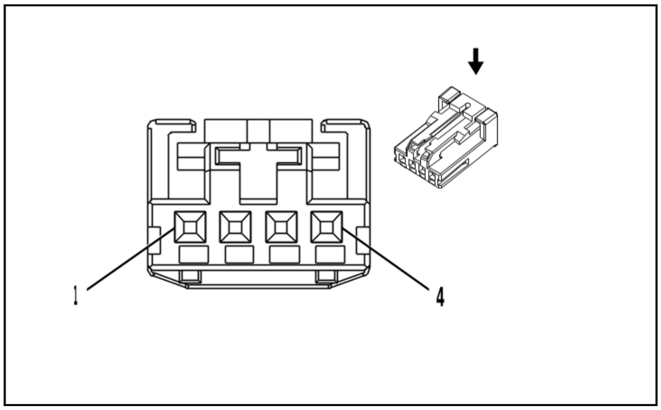
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

S65D Front Seat Lumbar Switch - Driver (A2X - AVK)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 1550	(1) Ground	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.75	(3) RD / BN	(3) 2240	(3) Battery Positive Voltage	(3) I	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.75	(5) BU	(5) 611	(5) Driver Seat Lumbar Support Motor Forward Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.75	(7) VT	(7) 610	(7) Driver Seat Lumbar Support Motor Backward Control	(7) I	(7) —
8 - 9	—	—	—	Not Occupied	—	—

S65D Front Seat Lumbar Switch - Driver (A45 & AVK)



2717162

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 1-936119-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

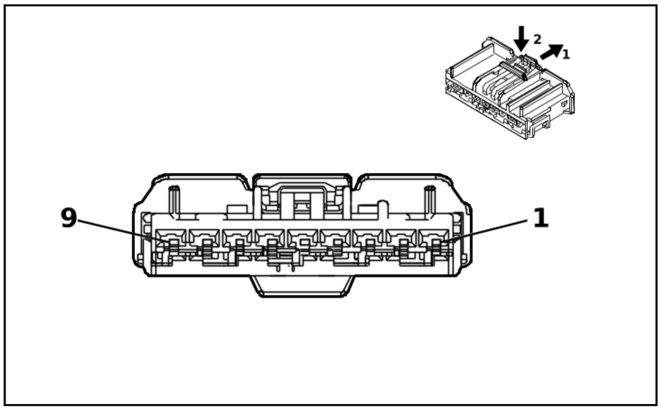
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S65D Front Seat Lumbar Switch - Driver (A45 & AVK)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) BU / YE	(3) 2818	(3) Driver Seat Auxiliary Adjustment Switch Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK / VT	(4) 2817	(4) Auxiliary Driver Seat Adjustment Switch Low Reference	(4) I	(4) —

S65P Front Seat Lumbar Switch - Passenger (A7K - AVU)



5204289

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 7289-6875-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 9-Way F 2.8 YESC Series(GY)

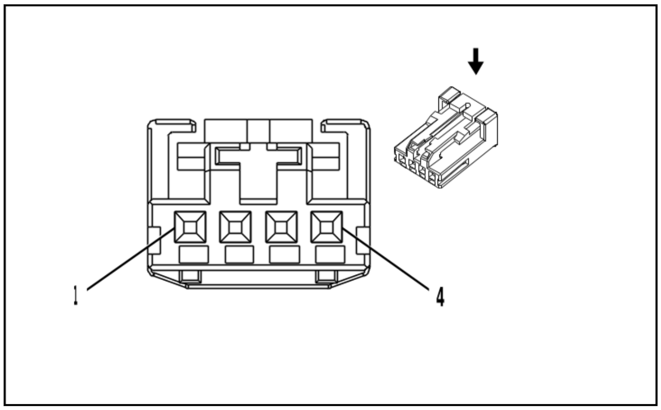
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

S65P Front Seat Lumbar Switch - Passenger (A7K - AVU)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 1350	(1) Ground	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.75	(3) RD / BN	(3) 2240	(3) Battery Positive Voltage	(3) I	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.75	(5) BU	(5) 211	(5) Passenger Seat Lumbar Support Motor Forward Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.75	(7) VT	(7) 210	(7) Passenger Seat Lumbar Support Motor Backward Control	(7) I	(7) —
8 - 9	—	—	—	Not Occupied	—	—

S65P Front Seat Lumbar Switch - Passenger (AVU - (AHH / AKE))



2717162

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 1-936119-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

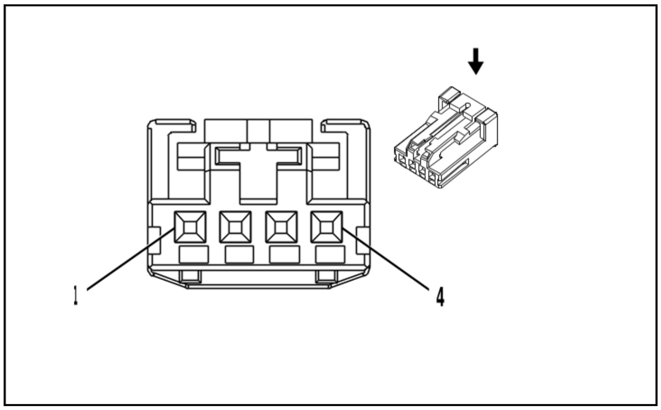
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S65P Front Seat Lumbar Switch - Passenger (AVU - (AHH / AKE))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) YE / GN	(3) 1068	(3) Passenger Seat Lumbar Support Switch Analog Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK / BU	(4) 2194	(4) Passenger Seat Position Switch Low Reference	(4) I	(4) —

S65P Front Seat Lumbar Switch - Passenger (AVU & (AHH / AKE))



2717162

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 1-936119-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

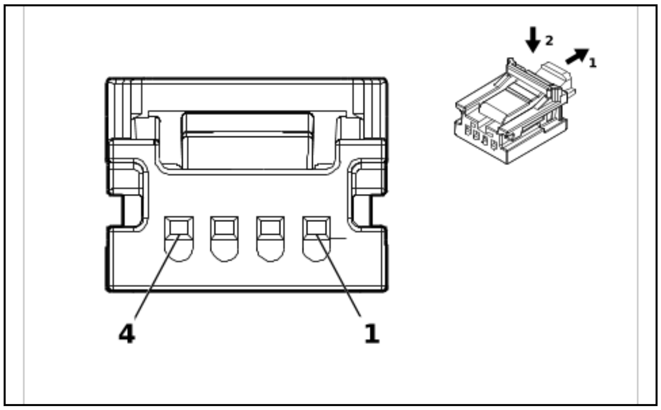
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S65P Front Seat Lumbar Switch - Passenger (AVU & (AHH / AKE))

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) GN / WH	(3) 2816	(3) Passenger Seat Auxiliary Adjustment Switch Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK / BN	(4) 2815	(4) Auxiliary Passenger Seat Adjustment Switch Low Reference	(4) I	(4) —

S70E Radio Favorites Switch - Steering Wheel (N57 - D07)



5493278

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 34791-5140
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F Mini 50 Series(BK)

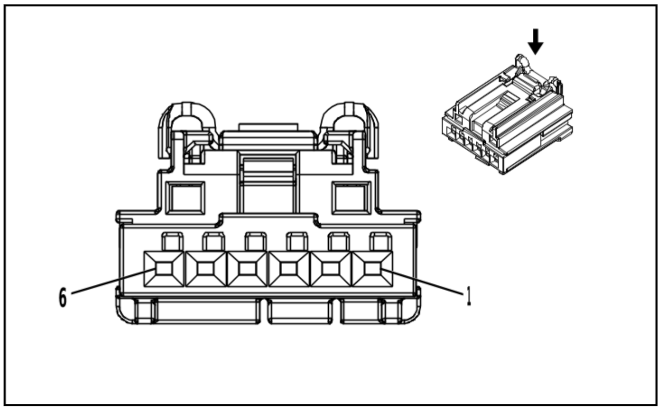
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

S70E Radio Favorites Switch - Steering Wheel (N57 - D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK	(1) 6051	(1) Steering Wheel Ground	(1) I	(1) N57- D07
(2) 2	(2) 0.35	(2) BU / RD	(2) 4313	(2) Radio Favorite Forward Switch Signal	(2) I	(2) N57- D07
(3) 3	(3) 0.35	(3) BU / RD	(3) 4312	(3) Radio Favorite Back Switch Signal	(3) I	(3) N57- D07
4	—	—	—	Not Occupied	—	—

S70E Radio Favorites Switch - Steering Wheel (N57 & D07)



3960313

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

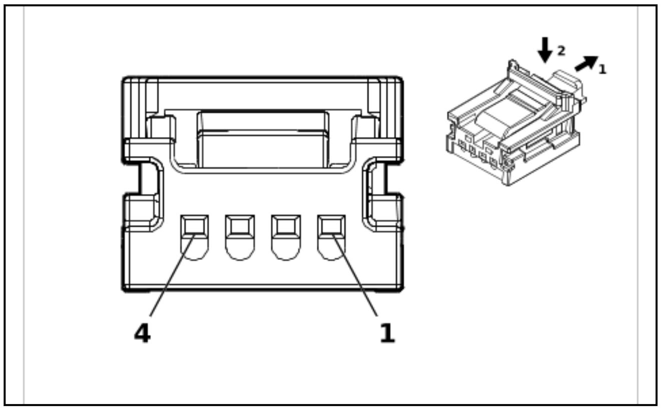
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S70E Radio Favorites Switch - Steering Wheel (N57 & D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK / WH	(1) 6051	(1) Steering Wheel Ground	(1) I	(1) N57+ D07
(2) 2	(2) 0.35	(2) YE / BU	(2) 4312	(2) Radio Favorite Back Switch Signal	(2) I	(2) N57+ D07
(3) 3	(3) 0.35	(3) WH / YE	(3) 4313	(3) Radio Favorite Forward Switch Signal	(3) I	(3) N57+ D07
(4) 4	(4) 0.35	(4) YE / BU	(4) 6855	(4) Transmission Tap Down Switch Signal	(4) I	(4) —
5 - 6	—	—	—	Not Occupied	—	—

S70F Radio Volume Switch - Steering Wheel (N57 - D07)



5493584

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 34791-5141
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F Mini 50 Series(GY)

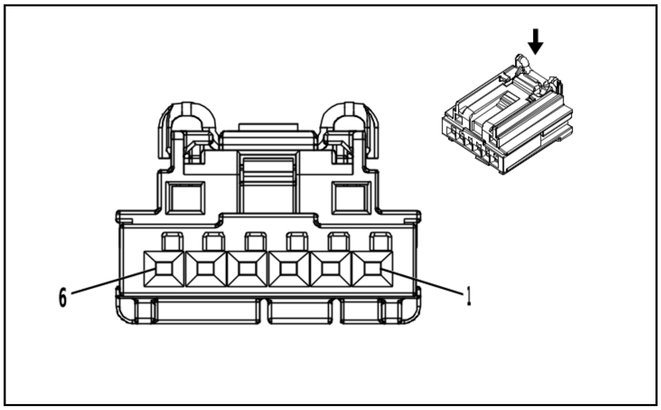
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

S70F Radio Volume Switch - Steering Wheel (N57 - D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK	(1) 6051	(1) Steering Wheel Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN / RD	(2) 4314	(2) Radio Volume Down Switch Signal	(2) I	(2) —
(3) 3	(3) 0.35	(3) OG / RD	(3) 4315	(3) Radio Volume Up Switch Signal	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

S70F Radio Volume Switch - Steering Wheel (N57 & D07)



3960313

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

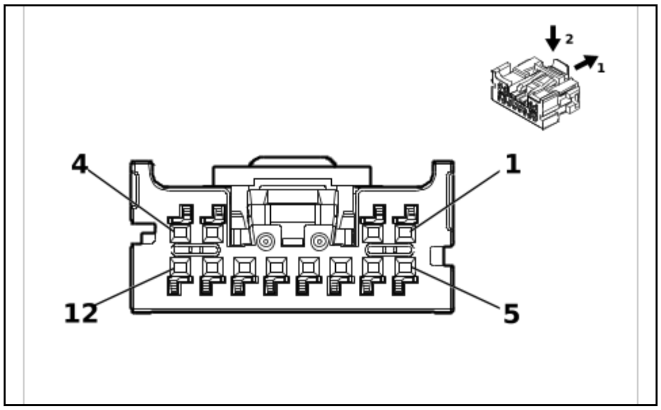
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S70F Radio Volume Switch - Steering Wheel (N57 & D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK / WH	(1) 6051	(1) Steering Wheel Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) GY / BN	(2) 4314	(2) Radio Volume Down Switch Signal	(2) I	(2) —
(3) 3	(3) 0.35	(3) BU	(3) 4315	(3) Radio Volume Up Switch Signal	(3) I	(3) —
(4) 4	(4) 0.35	(4) YE / BU	(4) 6855	(4) Transmission Tap Down Switch Signal	(4) I	(4) —
(5) 5	(5) 0.35	(5) VT / YE	(5) 5526	(5) Tap Up/Tap Down Switch Signal	(5) I	(5) —
6	—	—	—	Not Occupied	—	—

S70L Cruise Control Switch (N57 - D07)



5823893

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 206523-2122
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way F Mini 50 Series(GY)

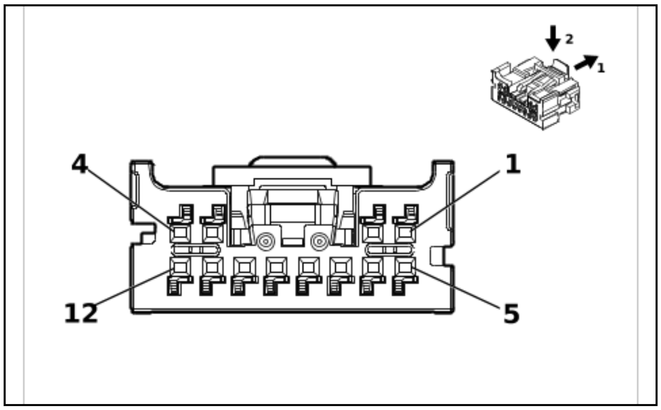
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

S70L Cruise Control Switch (N57 - D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GN	(1) 5140	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) PK	(2) 3893	(2) Steering Wheel LED Backlight Dimming Control	(2) I	(2) —
(3) 3	(3) 0.35	(3) GN / OG	(3) 1884	(3) Cruise Control Set/Coast/Resume/Accelerate Switch Signal	(3) I	(3) —
(4) 4	(4) 0.35	(4) VT	(4) 5737	(4) Distance Sensing Cruise Control Gap Up/ Down Switch Signal	(4) I	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.35	(6) BK	(6) 6051	(6) Steering Wheel Ground	(6) I	(6) —
(7) 7	(7) 0.35	(7) GY / OG	(7) 5884	(7) Steering Wheel Heating Switch LED Control	(7) I	(7) —
(8) 8	(8) 0.35	(8) GN	(8) 5883	(8) Steering Wheel Heating Switch Signal	(8) I	(8) —
(9) 9	(9) 0.35	(9) BK / RD	(9) 3892	(9) Indicator Dimming Control 2	(9) I	(9) —
(10) 10	(10) 0.35	(10) BU	(10) 1449	(10) Steering Wheel Resistor Ladder Low Reference	(10) I	(10) —
11 - 12	—	—	—	Not Occupied	—	—

S70L Cruise Control Switch (N57 & D07)



5823893

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 206523-2122
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way F Mini 50 Series(GY)

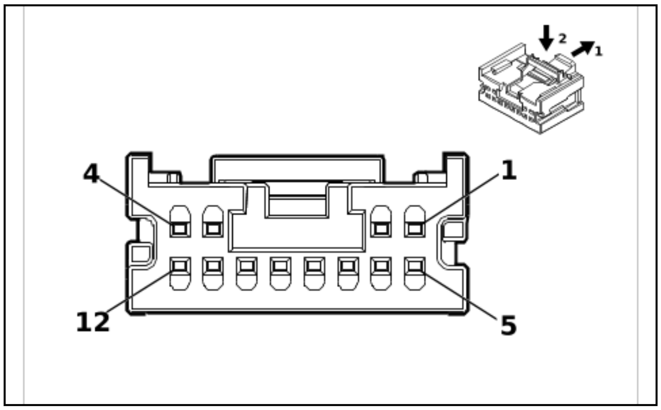
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

S70L Cruise Control Switch (N57 & D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / GN	(1) 5140	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) YE / BK	(2) 3893	(2) Steering Wheel LED Backlight Dimming Control	(2) I	(2) —
(3) 3	(3) 0.35	(3) BN / GN	(3) 1884	(3) Cruise Control Set/Coast/Resume/Accelerate Switch Signal	(3) I	(3) —
(4) 4	(4) 0.35	(4) GY / GN	(4) 5737	(4) Distance Sensing Cruise Control Gap Up/ Down Switch Signal	(4) I	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.35	(6) BK / WH	(6) 6051	(6) Steering Wheel Ground	(6) I	(6) —
(7) 7	(7) 0.35	(7) BN / WH	(7) 5884	(7) Steering Wheel Heating Switch LED Control	(7) I	(7) —
(8) 8	(8) 0.35	(8) YE / GY	(8) 5883	(8) Steering Wheel Heating Switch Signal	(8) I	(8) —
(9) 9	(9) 0.35	(9) VT	(9) 3892	(9) Indicator Dimming Control 2	(9) I	(9) —
(10) 10	(10) 0.35	(10) BK / VT	(10) 1449	(10) Steering Wheel Resistor Ladder Low Reference	(10) I	(10) —
11 - 12	—	—	—	Not Occupied	—	—

S70L Cruise Control Switch (NK5 / D07)



4539608

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 34824-5125
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way F Mini 50 Series(GY)

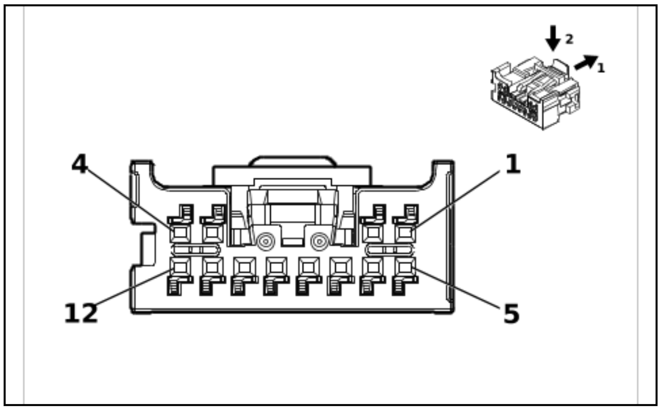
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

S70L Cruise Control Switch (NK5 / D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / GN	(1) 5140	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) PK	(2) 3893	(2) Steering Wheel LED Backlight Dimming Control	(2) I	(2) —
(3) 3	(3) 0.35	(3) BN / GN	(3) 1884	(3) Cruise Control Set/Coast/Resume/Accelerate Switch Signal	(3) I	(3) —
(4) 4	(4) 0.35	(4) GY / GN	(4) 5737	(4) Distance Sensing Cruise Control Gap Up/ Down Switch Signal	(4) I	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.35	(6) BK / WH	(6) 6051	(6) Steering Wheel Ground	(6) I	(6) —
7 - 9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.35	(10) BK / VT	(10) 1449	(10) Steering Wheel Resistor Ladder Low Reference	(10) I	(10) —
11 - 12	—	—	—	Not Occupied	—	—

S70R Radio Control Switch - Steering Wheel (N57 - D07)



5911307

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 206523-2123
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way F Mini 50 Series(GY)

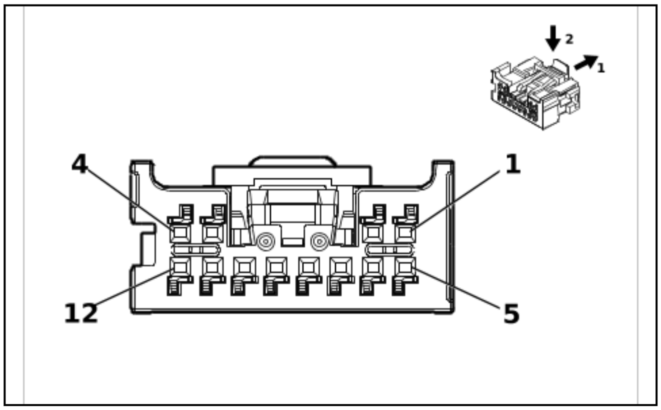
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

S70R Radio Control Switch - Steering Wheel (N57 - D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GN	(1) 5140	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) PK	(2) 3893	(2) Steering Wheel LED Backlight Dimming Control	(2) I	(2) —
(3) 3	(3) 0.35	(3) BK / BU	(3) 3894	(3) Instrument Panel Cluster Control Module LIN Bus 1	(3) I	(3) —
4 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.35	(6) BK	(6) 6051	(6) Steering Wheel Ground	(6) I	(6) —
(7) 7	(7) 0.35	(7) BU / RD	(7) 4313	(7) Radio Favorite Forward Switch Signal	(7) I	(7) —
(8) 8	(8) 0.35	(8) BU / RD	(8) 4312	(8) Radio Favorite Back Switch Signal	(8) I	(8) —
(9) 9	(9) 0.35	(9) BK / RD	(9) 3892	(9) Indicator Dimming Control 2	(9) I	(9) —
(10) 10	(10) 0.35	(10) OG / RD	(10) 4315	(10) Radio Volume Up Switch Signal	(10) I	(10) —
(11) 11	(11) 0.35	(11) GN / RD	(11) 4314	(11) Radio Volume Down Switch Signal	(11) I	(11) —
12	—	—	—	Not Occupied	—	—

S70R Radio Control Switch - Steering Wheel (N57 & D07)



5911307

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 206523-2123
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way F Mini 50 Series(GY)

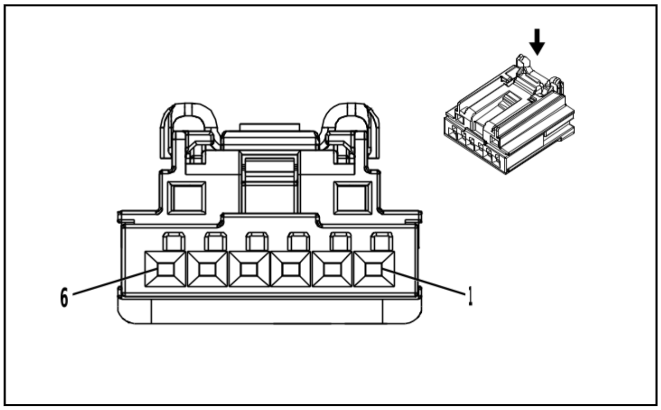
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

S70R Radio Control Switch - Steering Wheel (N57 & D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / GN	(1) 5140	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) YE / BK	(2) 3893	(2) Steering Wheel LED Backlight Dimming Control	(2) I	(2) —
(3) 3	(3) 0.35	(3) GN / BK	(3) 3894	(3) Instrument Panel Cluster Control Module LIN Bus 1	(3) I	(3) —
4 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.35	(6) BK / WH	(6) 6051	(6) Steering Wheel Ground	(6) I	(6) —
(7) 7	(7) 0.35	(7) WH / YE	(7) 4313	(7) Radio Favorite Forward Switch Signal	(7) I	(7) —
(8) 8	(8) 0.35	(8) YE / BU	(8) 4312	(8) Radio Favorite Back Switch Signal	(8) I	(8) —
(9) 9	(9) 0.35	(9) VT	(9) 3892	(9) Indicator Dimming Control 2	(9) I	(9) —
(10) 10	(10) 0.35	(10) BU	(10) 4315	(10) Radio Volume Up Switch Signal	(10) I	(10) —
(11) 11	(11) 0.35	(11) GY / BN	(11) 4314	(11) Radio Volume Down Switch Signal	(11) I	(11) —
12	—	—	—	Not Occupied	—	—

S71 Steering Column Tilt Wheel and Telescope Switch (N38)



4145138

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2035363-2
- Service Connector: 19356359
- Description: 6-Way F 0.64 Generation Y Series(BK)

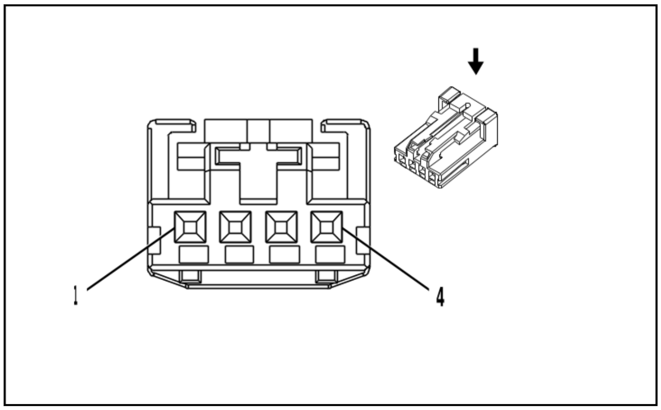
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S71 Steering Column Tilt Wheel and Telescope Switch (N38)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU / YE	(1) 2094	(1) Steering Column Tilt and Telescope Switch Forward Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / BN	(2) 2097	(2) Steering Column Tilt and Telescope Switch Down Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BN / GY	(3) 2096	(3) Steering Column Tilt and Telescope Switch Up Signal	(3) I	(3) —
4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) GN / BN	(5) 2095	(5) Steering Column Tilt and Telescope Switch Rearward Signal	(5) I	(5) —
(6) 6	(6) 0.5	(6) VT / BK	(6) 2020	(6) Steering Column Tilt and Telescope Switch Feedback Signal	(6) I	(6) —

S76 Trailer Brake Control Switch (- D07)



2717162

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: 19367524
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

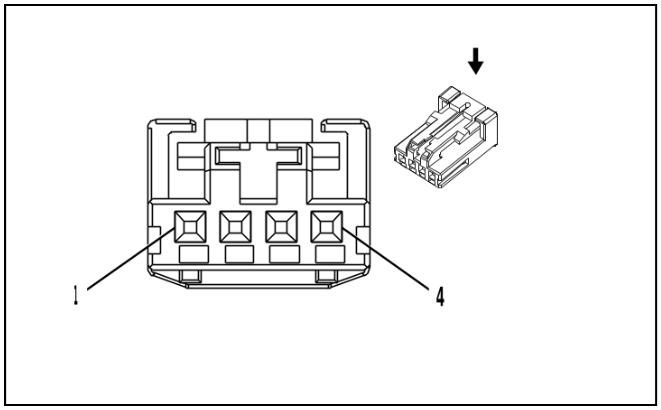
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S76 Trailer Brake Control Switch (- D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / YE	(1) 2340	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN / BU	(2) 2733	(2) Brake System Control Module LIN Bus 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK	(3) 1050	(3) Ground	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

S76 Trailer Brake Control Switch (D07)



2717162

Connector Part Information

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

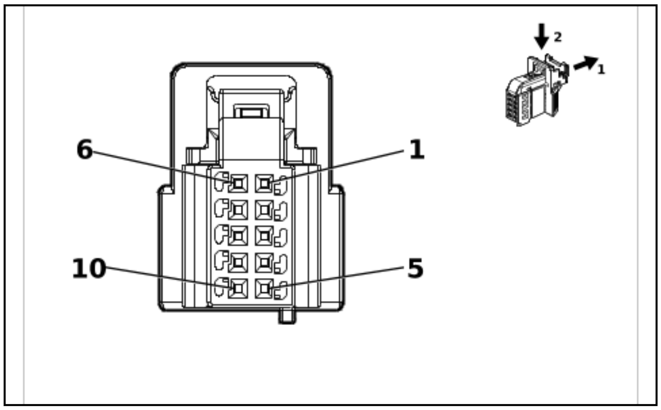
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S76 Trailer Brake Control Switch (D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / YE	(1) 2340	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN / BU	(2) 2733	(2) Brake System Control Module LIN Bus 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK	(3) 1350	(3) Ground	(3) I	(3) —
4	—	—	—	Not Occupied	—	—

S78 Turn Signal Switch



5838155

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2310000-1
- Service Connector: 13518417
- Description: 10-Way F 0.64 MQS Series(BK)

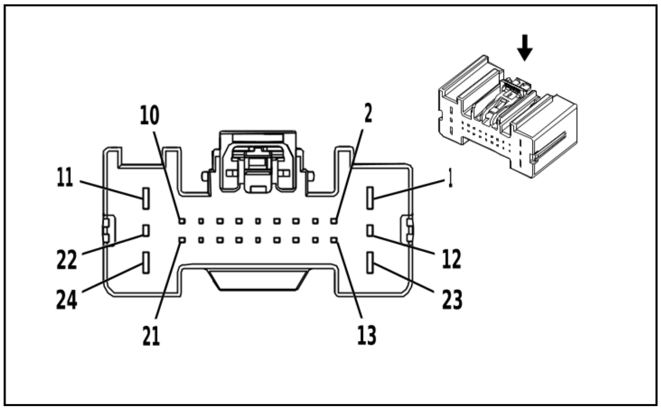
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19300632	J-35616-64B (L-BU)	J-38125-215A

S78 Turn Signal Switch

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) WH / GN	(1) 2915	(1) Left Turn Signal Switch Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) VT / BU	(2) 2916	(2) Right Turn Signal Switch Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / WH	(3) 851	(3) Signal Ground	(3) I	(3) —
(4) 4	(4) 0.35	(4) GY / BN	(4) 3904	(4) Auto High Beam Assist Switch Signal	(4) I	(4) —
(5) 5	(5) 0.35	(5) WH / BK	(5) 94	(5) Windshield Washer Switch Signal	(5) I	(5) —
(6) 6	(6) 0.35	(6) YE / BN	(6) 307	(6) Headlamp Switch Flash Signal	(6) I	(6) —
(7) 7	(7) 0.35	(7) WH	(7) 524	(7) High Beam Select Switch High Beam Signal	(7) I	(7) —
(8) 8	(8) 0.35	(8) BK / GY	(8) 6009	(8) Windshield Wiper Switch Low Reference	(8) I	(8) —
(9) 9	(9) 0.5	(9) GY	(9) 1715	(9) Windshield Wiper Switch High Signal	(9) I	(9) —
(10) 10	(10) 0.35	(10) YE / BU	(10) 1714	(10) Windshield Wiper Switch Low Signal	(10) I	(10) —

S79D Front Side Door Window Control Switch - Driver X1



2871905

Connector Part Information

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Driver
- OEM Connector: 7287-3260-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 24-Way F 0.64 GEN-Y, 1.5, 2.8 YESC Series(BK)

Terminal Part Information

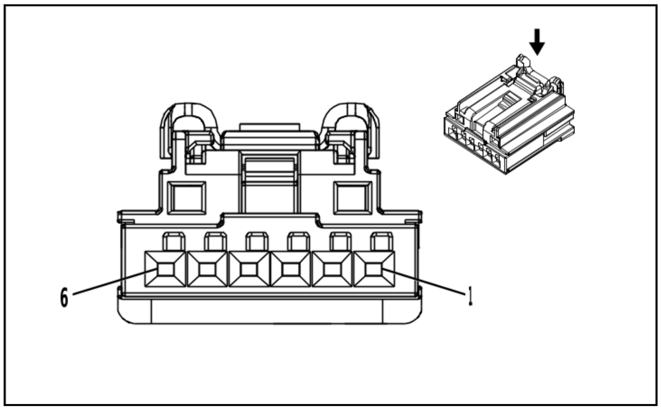
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-2A (GY)	No Tool Required
III	Not required	J-35616-4A (PU)	No Tool Required
IV	Not required	J-35616-64B (L-BU)	No Tool Required

S79D Front Side Door Window Control Switch - Driver X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / BN	(1) 2764	(1) Window Switch Left Front Down Signal	(1) III	(1) —
(2) 2	(2) 0.5	(2) GN	(2) 2766	(2) Power Window Switch Left Front Express Signal	(2) IV	(2) —
(3) 3	(3) 0.5	(3) BN / YE	(3) 2771	(3) Left Front Door Lock Switch Lock Signal	(3) IV	(3) —
(4) 4	(4) 0.5	(4) BN / WH	(4) 2772	(4) Left Front Door Lock Switch Unlock Signal	(4) IV	(4) —
(5) 5	(5) 0.5	(5) GY / VT	(5) 2767	(5) LED Ambient Lighting Control Left Front Door	(5) IV	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) BN / GY	(7) 4784	(7) Left Front Door LED Backlight Dimming Control	(7) IV	(7) —
(8) 8	(8) 0.35	(8) GY / YE	(8) 1760	(8) Left Side Object Detection LED Control	(8) IV	(8) —
(9) 9	(9) 0.5	(9) WH / GN	(9) 2786	(9) Left Front Mirror Motor Fold In Control	(9) IV	(9) —
(10) 10	(10) 0.5	(10) YE / BN	(10) 2789	(10) Left Front Mirror Motor Common Control	(10) IV	(10) —
(11) 11	(11) 0.5	(11) BK	(11) 1550	(11) Ground	(11) III	(11) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(12) 12	(12) 0.5	(12) GY / WH	(12) 2785	(12) Left Front Mirror Motor Fold Out Control	(12) I	(12) —
13 - 16	—	—	—	Not Occupied	—	—
(17) 17	(17) 0.5	(17) WH / VT	(17) 4258	(17) Left Front Door Lock Status Signal	(17) IV	(17) —
(18) 18	(18) 0.5	(18) VT / BU	(18) 2788	(18) Left Front Mirror Motor Up [+] Down [-] Control	(18) IV	(18) —
(19) 19	(19) 0.5	(19) BN / BK	(19) 2790	(19) Left Front Mirror Motor Right [+] Left [-] Control	(19) IV	(19) —
20	—	—	—	Not Occupied	—	—
(21) 21	(21) 0.5	(21) GN / YE	(21) 6134	(21) Body Control Module LIN Bus 3	(21) IV	(21) —
(22) 22	(22) 0.5	(22) WH	(22) 606	(22) Left Outside Rearview Mirror Heater Control	(22) II	(22) —
(23) 23	(23) 0.5	(23) GY / GN	(23) 2763	(23) Window Switch Left Front Up Signal	(23) III	(23) —
(24) 24	(24) 0.5	(24) RD / BU	(24) 1240	(24) Battery Positive Voltage	(24) III	(24) —

S79D Front Side Door Window Control Switch - Driver X2



4145138

Connector Part Information

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Driver
- OEM Connector: 2035363-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

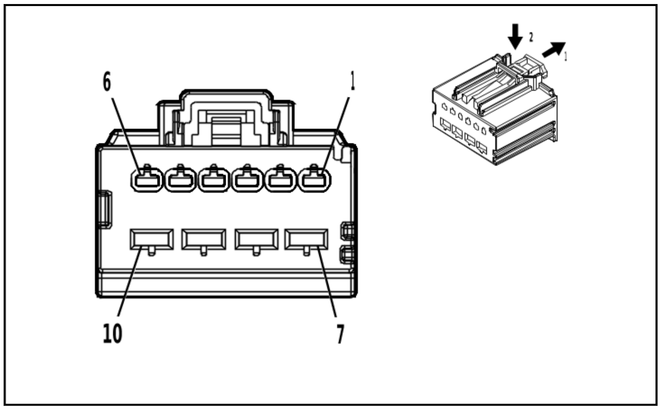
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S79D Front Side Door Window Control Switch - Driver X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / YE	(1) 2792	(1) Left Front Mirror Position Sensor Left [-] Right [+] Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY / BN	(2) 2787	(2) Left Front Mirror Position Sensor Up [+] Down [-] Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) VT / RD	(3) 2791	(3) Left Front Mirror Position Sensor High Reference	(3) I	(3) —
(4) 4	(4) 0.5	(4) BK / BN	(4) 673	(4) Left Outside Rearview Mirror Position Sensor Low Reference	(4) I	(4) —
5 - 6	—	—	—	Not Occupied	—	—

S79LR Rear Side Door Window Switch - Left (AEQ & AXG)



5035058

Connector Part Information

- Harness Type: Rear Side Door Door Wiring Harness - Left Rear
- OEM Connector: 31372-1600
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 MX Series(BK)

Terminal Part Information

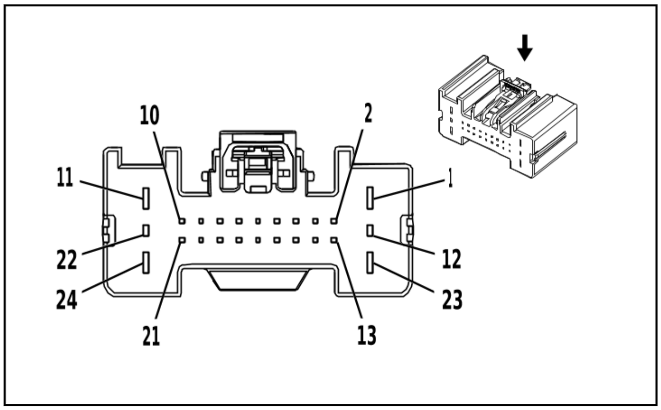
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-4A (PU)	No Tool Required

S79LR Rear Side Door Window Switch - Left (AEQ & AXG)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / GY	(1) 6135	(1) Body Control Module LIN Bus 4	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY	(2) 747	(2) Left Rear Door Ajar Switch Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK	(3) 1550	(3) Ground	(3) I	(3) —
4 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 2.5	(7) BK	(7) 1550	(7) Ground	(7) II	(7) —
(8) 8	(8) 2.5	(8) RD / BU	(8) 3240	(8) Battery Positive Voltage	(8) II	(8) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(9) 9	(9) 2	(9) BU / VT	(9) 668	(9) Left Rear Window Motor Up Control	(9) II	(9) —
(10) 10	(10) 2	(10) YE / BU	(10) 669	(10) Left Rear Window Motor Down Control	(10) II	(10) —

S79P Front Side Door Window Switch - Passenger



2871905

Connector Part Information

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Passenger
- OEM Connector: 7287-3260-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 24-Way F 0.64 GEN-Y, 1.5, 2.8 YESC Series(BK)

Terminal Part Information

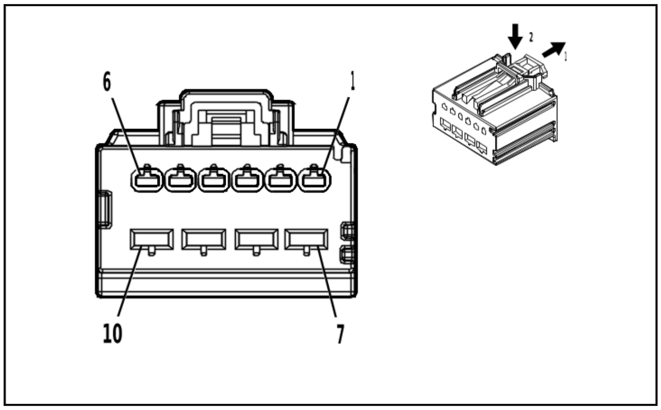
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-4A (PU)	No Tool Required
III	Not required	J-35616-64B (L-BU)	No Tool Required

S79P Front Side Door Window Switch - Passenger

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) BK	(1) 1350	(1) Ground	(1) II	(1) —
(2) 2	(2) 0.5	(2) YE / RD	(2) 2799	(2) Right Front Mirror Position Sensor High Reference	(2) III	(2) —
(3) 3	(3) 0.5	(3) GN / BK	(3) 2798	(3) Right Front Mirror Motor Right [+] Left [-] Control	(3) III	(3) —
(4) 4	(4) 0.5	(4) YE / VT	(4) 2796	(4) Right Front Mirror Motor Up [+] Down [-] Control	(4) III	(4) —
(5) 5	(5) 0.5	(5) WH / BN	(5) 2768	(5) LED Ambient Lighting Control Right Front Door	(5) III	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) GY / VT	(7) 4638	(7) LED Backlight Dimming Control Right Front Door	(7) III	(7) —
(8) 8	(8) 0.35	(8) GY	(8) 1761	(8) Right Side Object Detection LED Control	(8) III	(8) —
(9) 9	(9) 0.5	(9) BU / GY	(9) 2794	(9) Right Front Mirror Motor Fold In Control	(9) III	(9) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(10) 10	(10) 0.5	(10) YE / WH	(10) 2793	(10) Right Front Mirror Motor Fold Out Control	(10) III	(10) —
(11) 11	(11) 2.5 (11) 0.5	(11) GN / GY (11) GN	(11) 666 (11) 1184	(11) Right Front Window Motor Up Control (11) Window Switch Right Front Up Signal	(11) II (11) II	(11) AED+ AXG (11) AEF+ AXG
(12) 12	(12) 0.5	(12) BN / VT	(12) 607	(12) Right Outside Rearview Mirror Heater Control	(12) I	(12) —
13	—	—	—	Not Occupied	—	—
(14) 14	(14) 0.5	(14) GN / YE	(14) 6134	(14) Body Control Module LIN Bus 3	(14) III	(14) —
(15) 15	(15) 0.5	(15) VT / WH	(15) 2800	(15) Right Front Mirror Position Sensor Left [-] Right [+] Signal	(15) III	(15) —
(16) 16	(16) 0.5	(16) BU / YE	(16) 2795	(16) Right Front Mirror Position Sensor Up [+] Down [-] Signal	(16) III	(16) —
(17) 17	(17) 0.5	(17) YE / VT	(17) 2773	(17) Right Front Door Lock Switch Lock Control	(17) III	(17) —
(18) 18	(18) 0.5	(18) BN / VT	(18) 2774	(18) Right Front Door Lock Switch Unlock Control	(18) III	(18) —
19	—	—	—	Not Occupied	—	—
(20) 20	(20) 0.5 (20) 0.5	(20) GY (20) VT / GY	(20) 746 (20) 2765	(20) Right Front Door Ajar Switch Signal (20) Window Switch Right Front Express Signal	(20) III (20) III	(20) AEF+ AXG (20) AXG+ AEF
(21) 21	(21) 0.5	(21) WH	(21) 2797	(21) Right Front Mirror Motor Common Control	(21) III	(21) —
(22) 22	(22) 0.5	(22) BK / GN	(22) 675	(22) Right Outside Rearview Mirror Position Sensor Low Reference	(22) I	(22) —
(23) 23	(23) 2.5	(23) RD / BN	(23) 4240	(23) Battery Positive Voltage	(23) II	(23) —
(24) 24	(24) 0.5 (24) 2.5	(24) BN (24) YE / BU	(24) 5295 (24) 667	(24) Window Switch Right Front Down Signal (24) Right Front Window Motor Down Control	(24) II (24) II	(24) AEF+ AXG (24) AXG+ AEF

S79RR Rear Side Door Window Switch - Right (AEQ & AXG)



5035058

Connector Part Information

- Harness Type: Rear Side Door Door Wiring Harness - Right Rear
- OEM Connector: 31372-1600
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 MX Series(BK)

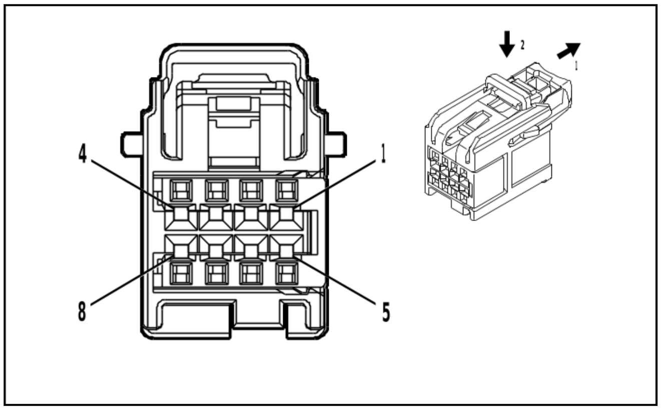
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-4A (PU)	No Tool Required

S79RR Rear Side Door Window Switch - Right (AEQ & AXG)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / GY	(1) 6135	(1) Body Control Module LIN Bus 4	(1) I	(1) —
(2) 2	(2) 0.5	(2) GY	(2) 748	(2) Right Rear Door Ajar Switch Signal	(2) I	(2) —
3 - 6	—	—	—	Not Occupied	—	—
(7) 7	(7) 2.5	(7) BK	(7) 1350	(7) Ground	(7) II	(7) —
(8) 8	(8) 2.5	(8) YE / BK	(8) 4840	(8) Battery Positive Voltage	(8) II	(8) —
(9) 9	(9) 2	(9) BU / GY	(9) 670	(9) Right Rear Window Motor Up Control	(9) II	(9) —
(10) 10	(10) 2	(10) GN / BK	(10) 671	(10) Right Rear Window Motor Down Control	(10) II	(10) —

S86 Vehicle Stability Control System Switch (IOK)



4935776

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 15526972
- Service Connector: 19370429
- Description: 8-Way F 0.64 OCS Series(BK)

Terminal Part Information

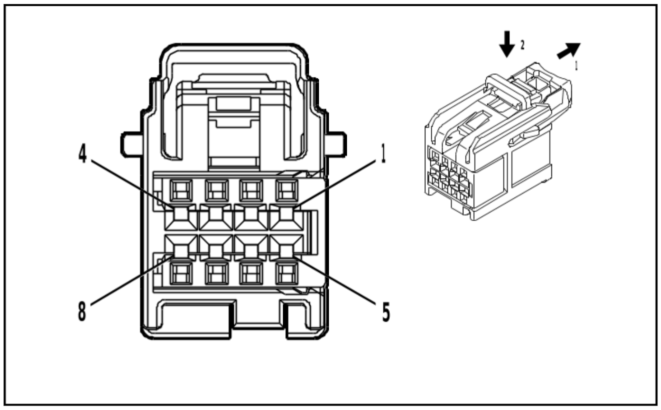
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S86 Vehicle Stability Control System Switch (IOK)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BU / VT	(1) 1788	(1) Traction Control Switch Signal 1	(1) I	(1) —
(2) 2	(2) 0.35	(2) YE	(2) 6817	(2) LED Backlight Dimming Control 1	(2) I	(2) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(3) 3	(3) 0.35	(3) BN	(3) 7291	(3) Major Endgate Release Switch Signal Interior	(3) I	(3) —
(4) 4	(4) 0.35	(4) BU / YE	(4) 6844	(4) ABS/Traction Control Hill Descent Control Switch Signal	(4) I	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.35	(6) BK / WH	(6) 851	(6) Signal Ground	(6) I	(6) —
(7) 7	(7) 0.35	(7) GN / WH	(7) 111	(7) Hazard Warning Switch Signal	(7) I	(7) —
(8) 8	(8) 0.35	(8) GY	(8) 1198	(8) Endgate Release Switch Analog Signal Interior	(8) I	(8) —

S86 Vehicle Stability Control System Switch (IOR)



4935776

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 15526972
- Service Connector: 19370429
- Description: 8-Way F 0.64 OCS Series(BK)

Terminal Part Information

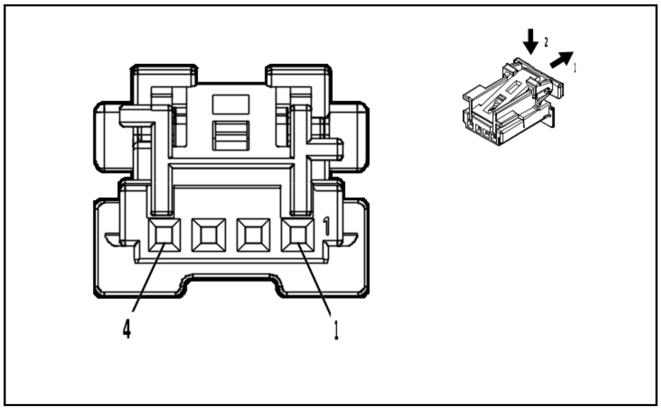
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S86 Vehicle Stability Control System Switch (IOR)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BU / VT	(1) 1788	(1) Traction Control Switch Signal 1	(1) I	(1) —
(2) 2	(2) 0.35	(2) YE	(2) 6817	(2) LED Backlight Dimming Control 1	(2) I	(2) —
(3) 3	(3) 0.35	(3) BN	(3) 7291	(3) Major Endgate Release Switch Signal Interior	(3) I	(3) —
(4) 4	(4) 0.35	(4) BU / YE	(4) 6844	(4) ABS/Traction Control Hill Descent Control Switch Signal	(4) I	(4) —
5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.35	(6) BK / WH	(6) 851	(6) Signal Ground	(6) I	(6) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(7) 7	(7) 0.35	(7) GN / WH	(7) 111	(7) Hazard Warning Switch Signal	(7) I	(7) —
(8) 8	(8) 0.35	(8) GY	(8) 1198	(8) Endgate Release Switch Analog Signal Interior	(8) I	(8) —

S91 Parking Brake Control Switch



4997407

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: 19371192
- Description: 4-Way F 0.64 Micro-Quadlock Series(BK)

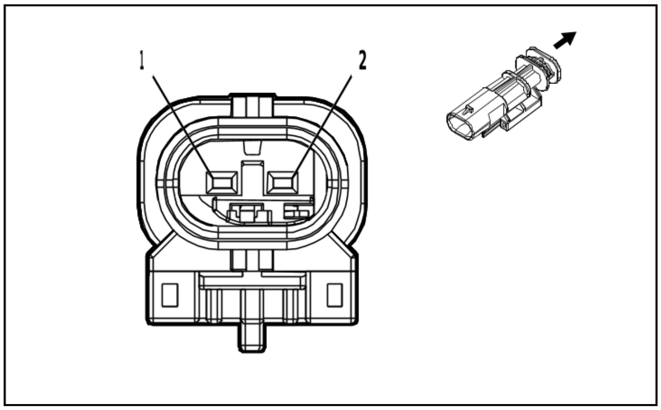
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S91 Parking Brake Control Switch

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / YE	(1) 4340	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / YE	(2) 2731	(2) Brake System Control Module LIN Bus 1	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.35	(4) BK / WH	(4) 851	(4) Signal Ground	(4) I	(4) —

S158 Liftgate Exterior Release Switch - Auxiliary Endgate (QT5)



4994410

Connector Part Information

- Harness Type: Endgate Wiring Harness
- OEM Connector: 34899-2081
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed(GY)

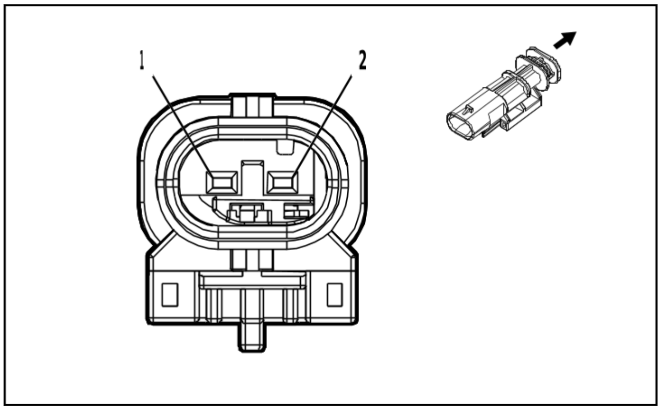
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

S158 Liftgate Exterior Release Switch - Auxiliary Endgate (QT5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE	(1) 7294	(1) Minor Endgate Release Switch Discrete Signal Exterior	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 1850	(2) Ground	(2) I	(2) —

S159E Liftgate Exterior Release Switch - Endgate (QT5)



4994411

Connector Part Information

- Harness Type: Endgate Wiring Harness
- OEM Connector: 34899-2082
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed(GY)

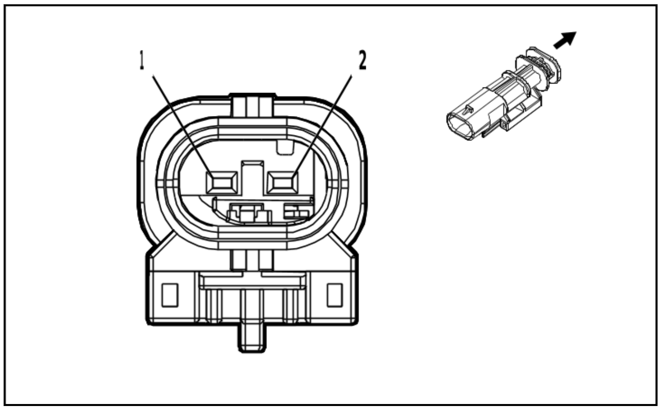
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

S159E Liftgate Exterior Release Switch - Endgate (QT5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY	(1) 7292	(1) Major Endgate Release Switch Signal Exterior	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 1850	(2) Ground	(2) I	(2) —

S159E Liftgate Exterior Release Switch - Endgate (QT6)



4994411

Connector Part Information
- Harness Type: Endgate Wiring Harness
- OEM Connector: 34899-2082
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed(GY)

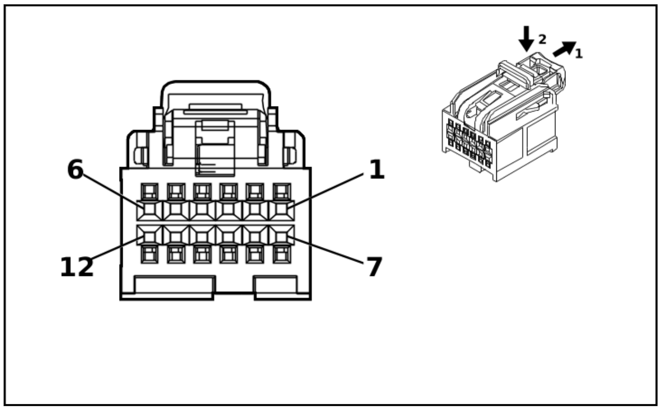
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-13 (BU)	No Tool Required

S159E Liftgate Exterior Release Switch - Endgate (QT6)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE	(1) 1144	(1) Endgate Release Switch Discrete Signal Exterior	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 1850	(2) Ground	(2) I	(2) —

S171L Instrument Panel Center Accessory Function Switch - Left



4975223

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35016616
- Service Connector: 13519750
- Description: 12-Way F 0.64 OCS Series(BK)

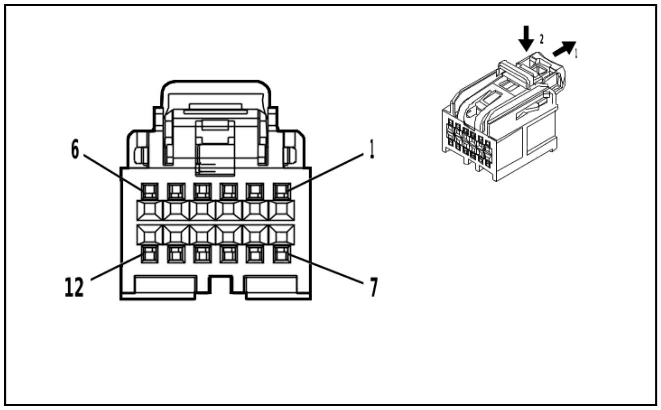
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19354230	J-35616-64B (L-BU)	J-38125-215A

S171L Instrument Panel Center Accessory Function Switch - Left

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GY / GN	(1) 2555	(1) Rear Parking Assist Disable Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) YE	(2) 6817	(2) LED Backlight Dimming Control 1	(2) I	(2) —
(3) 3	(3) 0.35	(3) BU / WH	(3) 3119	(3) Roof Rail Air Bag Disable Switch Signal	(3) I	(3) —
(4) 4	(4) 0.35	(4) GY / WH	(4) 3153	(4) Lane Departure Warning Disable Switch Signal	(4) I	(4) —
(5) 5	(5) 0.35	(5) WH	(5) 3152	(5) Lane Departure Warning Indicator Control	(5) I	(5) —
(6) 6	(6) 0.35	(6) BU / YE	(6) 6844	(6) ABS/Traction Control Hill Descent Control Switch Signal	(6) I	(6) —
7	—	—	—	Not Occupied	—	—
(8) 8	(8) 0.35	(8) GN / BN	(8) 5852	(8) Rear Parking Assist Disable LED Signal	(8) I	(8) —
(9) 9	(9) 0.35	(9) BK / WH	(9) 851	(9) Signal Ground	(9) I	(9) —
(10) 10	(10) 0.35	(10) BN / WH	(10) 3895	(10) Roof Rail Air Bag Disable Switch Low Reference	(10) I	(10) —
(11) 11	(11) 0.35	(11) GN	(11) 1110	(11) Stop/Start Indicator Control	(11) I	(11) —
(12) 12	(12) 0.35	(12) BU	(12) 1111	(12) Stop/Start Switch Signal	(12) I	(12) —

S171R Instrument Panel Center Accessory Function Switch - Right (- URC)



4997362

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35016613
- Service Connector: 13519752
- Description: 12-Way F 0.64 OCS Series(BN)

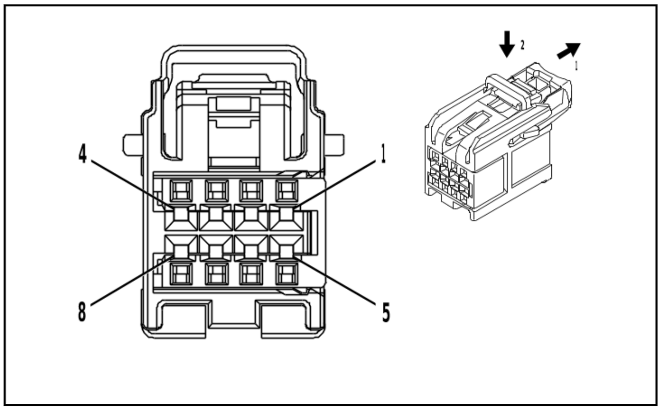
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19300660	J-35616-64B (L-BU)	J-38125-215A

S171R Instrument Panel Center Accessory Function Switch - Right (- URC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.35	(2) YE	(2) 6817	(2) LED Backlight Dimming Control 1	(2) I	(2) —
(3) 3	(3) 0.35	(3) BU / YE	(3) 6844	(3) ABS/Traction Control Hill Descent Control Switch Signal	(3) I	(3) —
(4) 4	(4) 0.35	(4) YE / GN	(4) 7122	(4) Axle Differential Lock Switch Signal	(4) I	(4) —
(5) 5	(5) 0.35	(5) YE	(5) 7115	(5) Rear Axle Differential Lock Indicator Control	(5) I	(5) —
(6) 6	(6) 0.35	(6) GN	(6) 1110	(6) Stop/Start Indicator Control	(6) I	(6) —
(7) 7	(7) 0.35	(7) VT / GY	(7) 7117	(7) Front Axle Differential Lock Indicator Control	(7) I	(7) —
(8) 8	(8) 0.35	(8) BU / YE	(8) 7176	(8) All Windows Open Switch Signal	(8) I	(8) —
(9) 9	(9) 0.35	(9) BK / WH	(9) 851	(9) Signal Ground	(9) I	(9) —
(10) 10	(10) 0.35	(10) WH	(10) 6816	(10) Indicator Dimming Control	(10) I	(10) —
11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0.35 (12) 0.35	(12) BU / GY (12) BU	(12) 4990 (12) 1111	(12) Driver Mode 1 Switch Signal (12) Stop/Start Switch Signal	(12) I (12) I	(12) - URC (12) URC

S171R Instrument Panel Center Accessory Function Switch - Right (URC)



4232228

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 15526973
- Service Connector: 19353873
- Description: 8-Way F 0.64 OCS Series(GY)

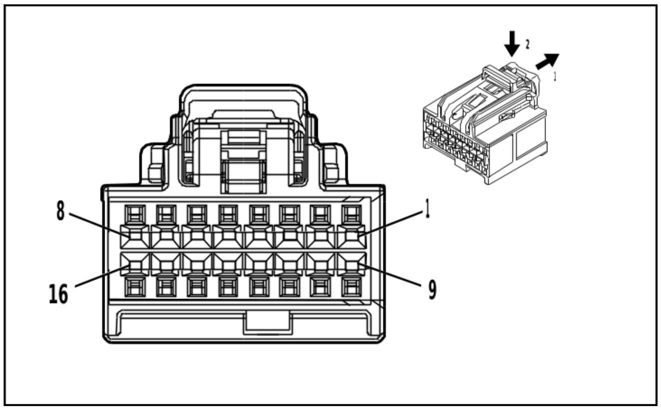
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S171R Instrument Panel Center Accessory Function Switch - Right (URC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) WH / BN	(1) 2203	(1) Enhanced Driver Mode 2 Switch Signal	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.35	(3) BK / VT	(3) 1449	(3) Steering Wheel Resistor Ladder Low Reference	(3) I	(3) —
(4) 4	(4) 0.35	(4) YE	(4) 6817	(4) LED Backlight Dimming Control 1	(4) I	(4) —
(5) 5	(5) 0.35	(5) BK / WH	(5) 851	(5) Signal Ground	(5) I	(5) —
6 - 8	—	—	—	Not Occupied	—	—

S172 Auxiliary Multifunction Switch (9L7)



4873243

Connector Part Information
- Harness Type: Auxiliary Fuse Block Wiring Harness
- OEM Connector: 35016343
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 0.64 OCS Series(BK)

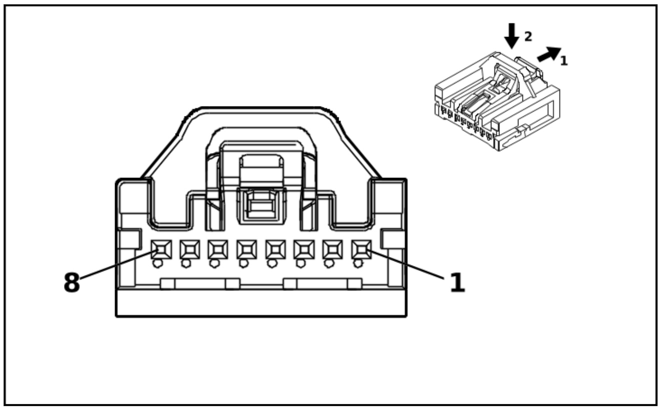
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

S172 Auxiliary Multifunction Switch (9L7)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.35	(2) YE	(2) 6817	(2) LED Backlight Dimming Control 1	(2) I	(2) —
(3) 3	(3) 0.35	(3) WH	(3) 6816	(3) Indicator Dimming Control	(3) I	(3) —
4 - 5	—	—	—	Not Occupied	—	—
(6) 6	(6) 0.35	(6) BU / WH	(6) 10716	(6) Upfitter Accessory Relay 1 Coil Control	(6) I	(6) —
(7) 7	(7) 0.35	(7) VT / GY	(7) 10717	(7) Upfitter Accessory Relay 2 Coil Control	(7) I	(7) —
(8) 8	(8) 0.35	(8) GN / BN	(8) 10718	(8) Upfitter Accessory Relay 3 Coil Control	(8) I	(8) —
(9) 9	(9) 0.35	(9) WH / YE	(9) 10719	(9) Upfitter Accessory Relay 4 Coil Control	(9) I	(9) —
(10) 10	(10) 0.35	(10) GY / VT	(10) 10720	(10) Upfitter Accessory Relay 5 Coil Control	(10) I	(10) —
11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0.75	(12) BK / WH	(12) 851	(12) Signal Ground	(12) I	(12) —
13 - 16	—	—	—	Not Occupied	—	—

S192 Radio Function Switch (IOR)



5200269

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35068228
- Service Connector: 84769201
- Description: 8-Way F Mini 50 Series(BK)

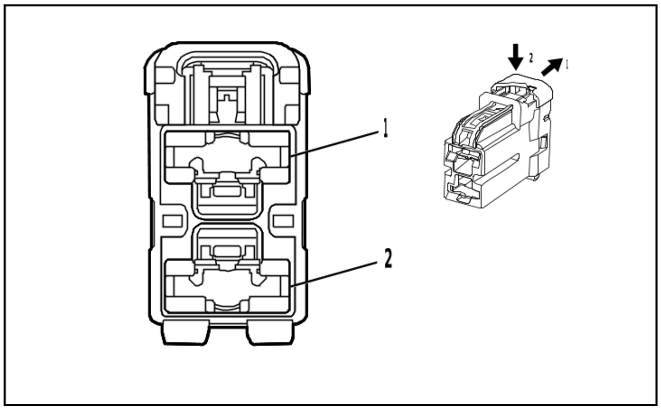
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	EL-35616-58 (BK)	No Tool Required

S192 Radio Function Switch (IOR)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) YE / RD	(1) 11236	(1) Radio Switch 5 Volt Reference	(1) I	(1) —
(2) 2	(2) 0.35	(2) BK / BU	(2) 11237	(2) Radio Switch Low Reference 1	(2) I	(2) —
(3) 3	(3) 0.35	(3) BN / WH	(3) 11233	(3) Radio Switch Power ON/OFF Switch Signal	(3) I	(3) —
(4) 4	(4) 0.35	(4) BK / GN	(4) 11238	(4) Radio Switch Low Reference 2	(4) I	(4) —
(5) 5	(5) 0.35	(5) BU / GY	(5) 11244	(5) Radio Switch Dimming Control	(5) I	(5) —
(6) 6	(6) 0.35	(6) VT / WH	(6) 11245	(6) Radio Switch Buttons Signal	(6) I	(6) —
(7) 7	(7) 0.35	(7) BU	(7) 11235	(7) Radio Switch Volume Up Signal	(7) I	(7) —
(8) 8	(8) 0.35	(8) GY / BN	(8) 11234	(8) Radio Switch Volume Down Signal	(8) I	(8) —

T1 DC/AC Converter Control Module X1 (KI4 / KI5)



2453116

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 7283-0724-30
- Service Connector: 85011842
- Description: 2-Way F 9.5 Series(BK)

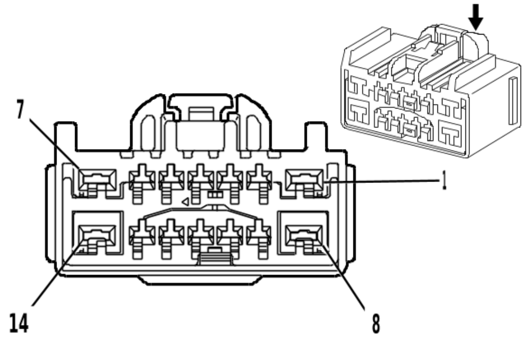
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-22 (RD)	No Tool Required

T1 DC/AC Converter Control Module X1 (KI4 / KI5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 5	(1) BN / BK	(1) 4629	(1) DC/AC Inverter Control	(1) I	(1) —
(2) 2	(2) 5	(2) BK	(2) 1550	(2) Ground	(2) I	(2) —

T1 DC/AC Converter Control Module X2 (KI4 / KI5)



1540775

Connector Part Information

- Harness Type: Body Rear Wiring Harness Extension Harness
- OEM Connector: 7289-7631-90
- Service Connector: Service by Harness - See Part Catalog
- Description: 14-Way F 1.5, 2.8 YESC Series(BU)

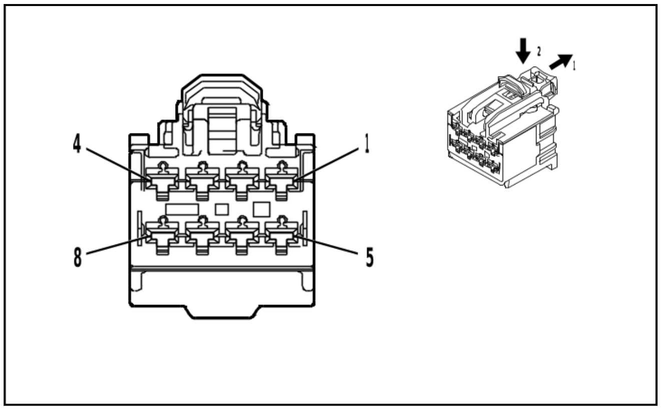
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-4A (PU)	No Tool Required

T1 DC/AC Converter Control Module X2 (KI4 / KI5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 10117	(1) AC Outlet Phase A Control	(1) II	(1) —
(2) 2	(2) 0.5	(2) VT / RD	(2) 4049	(2) AC Power Outlet Sensor High Reference	(2) I	(2) —
(3) 3	(3) 0.35	(3) VT / WH	(3) 239	(3) Run/Crank Ignition 1 Voltage	(3) I	(3) —
(4) 4	(4) 0.5	(4) WH / GN	(4) 4628	(4) DC/AC Inverter Relay Control	(4) I	(4) —
(5) 5	(5) 0.5	(5) BU / BN	(5) 6807	(5) DC/AC Inverter Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.75	(7) BK / WH	(7) 10120	(7) AC Outlet 2 Phase A Control	(7) II	(7) —
(8) 8	(8) 0.75	(8) RD	(8) 10118	(8) AC Outlet Phase B Control	(8) II	(8) —
(9) 9	(9) 0.35	(9) BARE	(9) 10116	(9) AC Outlet Low Reference	(9) I	(9) —
(10) 10	(10) 0.5	(10) GN / BU	(10) 6133	(10) Body Control Module LIN Bus 2	(10) I	(10) —
11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0.5	(12) GN / BN	(12) 2266	(12) DC/AC Inverter Control 2	(12) I	(12) —
(13) 13	(13) 0.35	(13) BARE	(13) 10119	(13) AC Outlet 2 Low Reference	(13) I	(13) —
(14) 14	(14) 0.75	(14) RD / WH	(14) 10121	(14) AC Outlet 2 Phase B Control	(14) II	(14) —

T3 Audio Amplifier X1 (UQA / UQF / UQS)



4875738

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 33223792
- Service Connector: 19369366
- Description: 8-Way F 2.8 OCS Series(BK)

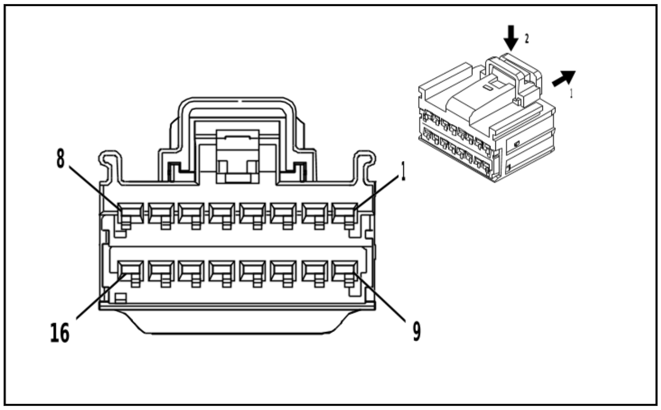
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required

T3 Audio Amplifier X1 (UQA / UQF / UQS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) BU / GY	(1) 346	(1) Left/Rear Subwoofer [+] Control	(1) I	(1) —
(2) 2	(2) 0.75	(2) YE	(2) 200	(2) Right Front Speaker 1 [+] Control	(2) I	(2) —
(3) 3	(3) 0.75	(3) BU	(3) 201	(3) Left Front Speaker 1 [+] Control	(3) I	(3) —
(4) 4	(4) 2.5	(4) RD / YE	(4) 3740	(4) Battery Positive Voltage	(4) I	(4) —
(5) 5	(5) 2.5	(5) GN / BK	(5) 1794	(5) Left/Rear Subwoofer [-] Control	(5) I	(5) —
(6) 6	(6) 0.75	(6) YE / BK	(6) 117	(6) Right Front Speaker [-] Control 1	(6) I	(6) —
(7) 7	(7) 0.75	(7) BN / BU	(7) 118	(7) Left Front Speaker [-] Control 1	(7) I	(7) —
(8) 8	(8) 2.5	(8) BK / WH	(8) 1051	(8) Signal Ground	(8) I	(8) —

T3 Audio Amplifier X2 (UQA / UQF / UQS)



4332214

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 15512506
- Service Connector: 13591061
- Description: 16-Way F 1.5 OCS Series(BK)

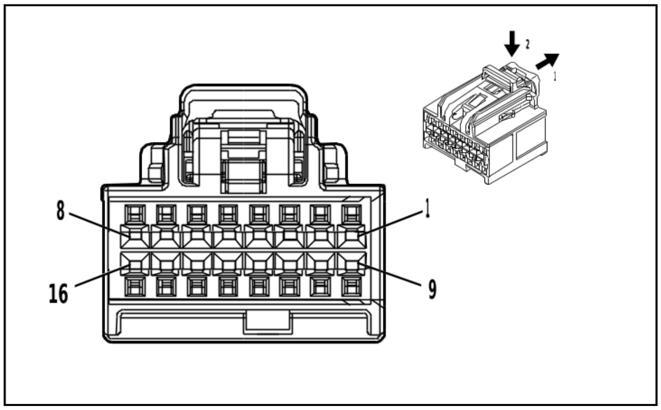
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84757974	J-35616-2A (GY)	J-38125-215A

T3 Audio Amplifier X2 (UQA / UQF / UQS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	—	—	—	Not Occupied	—	—
(2) 2	(2) 0.75	(2) BN / BK	(2) 1953	(2) Right Front Midrange Speaker [-] Control	(2) I	(2) —
(3) 3	(3) 0.75	(3) BU / VT	(3) 1857	(3) Left Front Midrange Speaker [+] Control	(3) I	(3) —
(4) 4	(4) 1.5	(4) WH	(4) 46	(4) Right Rear Speaker [+] Control	(4) I	(4) —
(5) 5	(5) 1.5	(5) GN	(5) 199	(5) Left Rear Speaker [+] Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.75	(7) YE / WH	(7) 1860	(7) Front Center Speaker [+] Control	(7) I	(7) —
8 - 9	—	—	—	Not Occupied	—	—
(10) 10	(10) 0.75	(10) WH / YE	(10) 1853	(10) Right Front Midrange Speaker [+] Control	(10) I	(10) —
(11) 11	(11) 0.75	(11) BU / BN	(11) 1957	(11) Left Front Midrange Speaker [-] Control	(11) I	(11) —
(12) 12	(12) 1.5	(12) BU / BK	(12) 115	(12) Right Rear Speaker [-] Control	(12) I	(12) —
(13) 13	(13) 1.5	(13) GN / BK	(13) 116	(13) Left Rear Speaker [-] Control	(13) I	(13) —
14	—	—	—	Not Occupied	—	—
(15) 15	(15) 0.75	(15) BU / YE	(15) 1960	(15) Front Center Speaker [-] Control	(15) I	(15) —
16	—	—	—	Not Occupied	—	—

T3 Audio Amplifier X3 (UQA / UQF / UQS)



4873243

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 35016343
- Service Connector: 13519738
- Description: 16-Way F 0.64 OCS Series(BK)

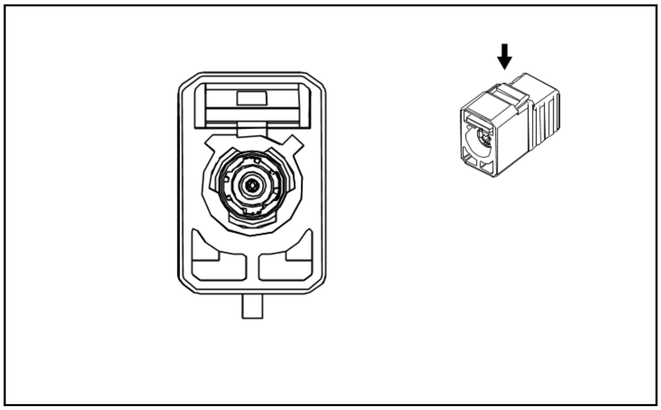
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84619127	J-35616-64B (L-BU)	J-38125-215A
II	Service by Cable	J-35616-64B (L-BU)	J-35616-215A

T3 Audio Amplifier X3 (UQA / UQF / UQS)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) YE	(1) 7215	(1) Ethernet Bus 6 [+]	(1) II	(1) —
(2) 2	(2) 0.35	(2) GN	(2) 7214	(2) Ethernet Bus 6 [-]	(2) II	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.35	(5) GN / WH	(5) 3005	(5) Active Noise Cancellation Microphone 1 Signal	(5) I	(5) —
6 - 10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.5	(11) BU / WH	(11) 4985	(11) AUTOSAR CAN Bus [+] 5 Serial Data	(11) I	(11) —
(12) 12	(12) 0.5	(12) BU / YE	(12) 4984	(12) AUTOSAR CAN Bus [-] 5 Serial Data	(12) I	(12) —
(13) 13	(13) 0.35	(13) GN / BK	(13) 3008	(13) Active Noise Cancellation Microphone 1 Feedback Signal	(13) I	(13) —
14 - 16	—	—	—	Not Occupied	—	—

T4M Radio Antenna ((IOK / IOR) - U2Q / (IOK / IOR) & U2Q)



2893647

Connector Part Information

- Harness Type: Radio Antenna Cable Extension Cable COAX
- OEM Connector: 13581687
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BK)

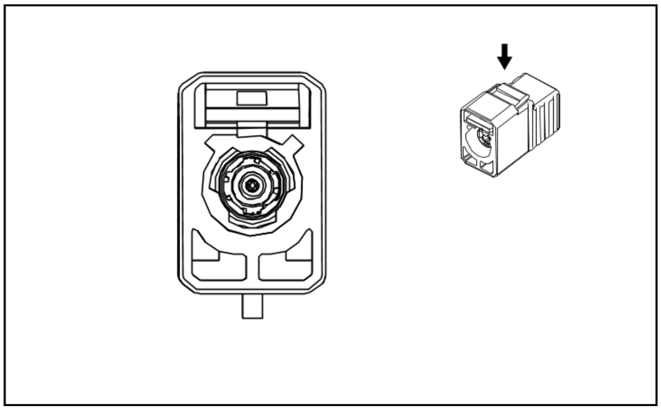
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

T4M Radio Antenna ((IOK / IOR) - U2Q / (IOK / IOR) & U2Q)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	(AM/FM) Antenna RF Signal	I	—

T4M Radio Antenna (IOK & U2Q)



2893647

Connector Part Information

- Harness Type: Radio Antenna Cable Extension Cable COAX
- OEM Connector: 13581683
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BK)

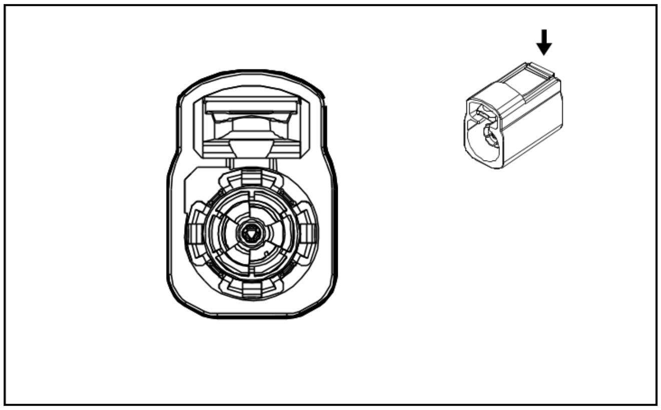
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

T4M Radio Antenna (IOK & U2Q)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	(AM/FM) Antenna RF Signal	I	—

T4M Radio Antenna (IOR & U2Q)



4622382

Connector Part Information

- Harness Type: Radio Antenna Cable Extension Cable COAX
- OEM Connector: 13596709
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(GN)

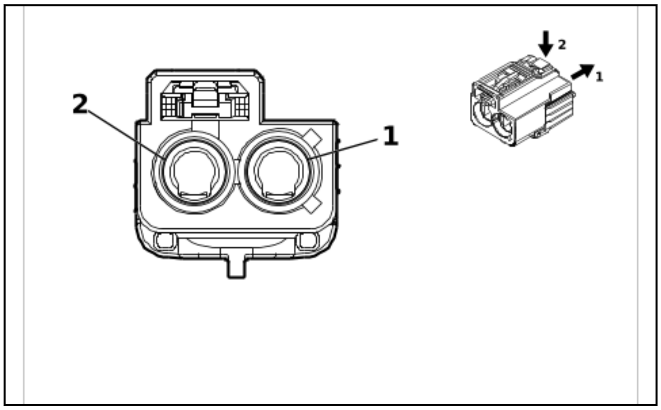
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

T4M Radio Antenna (IOR & U2Q)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	(AM/FM) Antenna RF Signal	I	—

T4P High Frequency Antenna X1 (UDA / UE1)



5661671

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33351060
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type(VT)

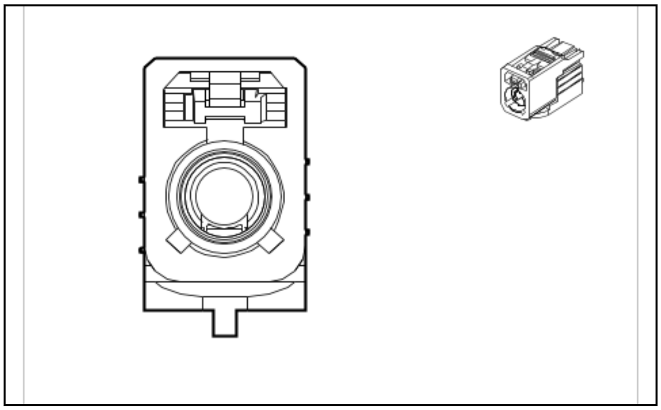
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

T4P High Frequency Antenna X1 (UDA / UE1)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	(GPS/Cell) Coaxial Antenna Cell/GPS combined Signal	I	—

T4P High Frequency Antenna X2 (U2K)



5661657

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33351022
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(YE)

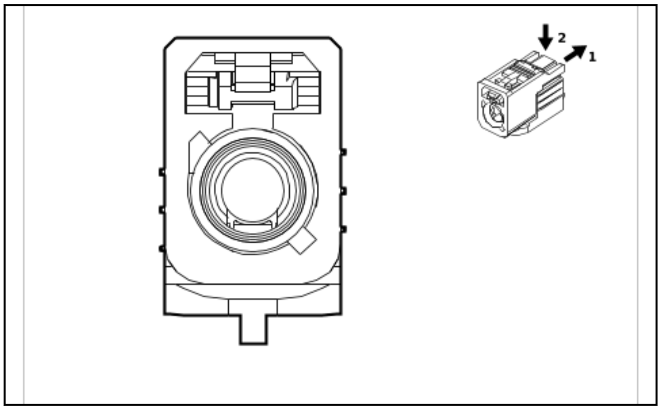
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

T4P High Frequency Antenna X2 (U2K)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	(XM +/-HD) Coaxial Antenna XM Signal	I	—

T4TA Auxiliary Wireless Communication Interface Antenna



5518436

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33351021
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BG)

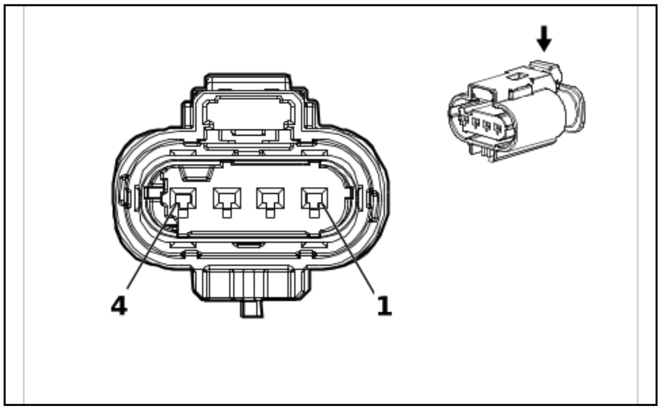
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

T4TA Auxiliary Wireless Communication Interface Antenna

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	WiFi Antenna Coaxial Signal	I	—

T8A Ignition Coil 1 (L3B)



5402120

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10092979
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 Multilock Series, Sealed(BK)

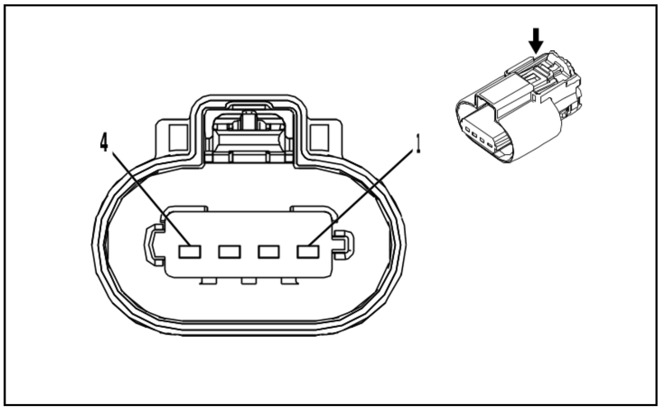
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

T8A Ignition Coil 1 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) BK	(1) 6450	(1) Engine Even Bank Ground	(1) I	(1) —
(2) 2	(2) 0.75	(2) BK / BU	(2) 2129	(2) Ignition Control Low Reference Bank 1	(2) I	(2) —
(3) 3	(3) 0.75	(3) BU / VT	(3) 2121	(3) Ignition Control 1	(3) I	(3) —
(4) 4	(4) 1	(4) VT / BU	(4) 5291	(4) Powertrain Main Relay Fused Supply Voltage 2	(4) I	(4) —

T8A Ignition Coil 1 (L84 / L87)



3240115

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed(BK)

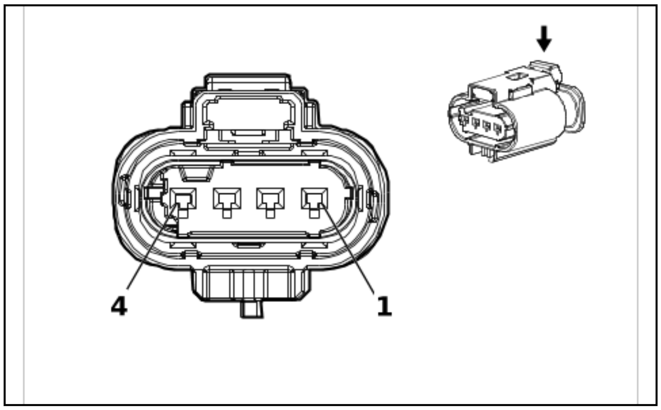
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-2A (GY)	No Tool Required

T8A Ignition Coil 1 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) BK	(1) 6150	(1) Engine Odd Bank Ground	(1) II	(1) —
(2) 2	(2) 0.5	(2) BK / BU	(2) 2129	(2) Ignition Control Low Reference Bank 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / VT	(3) 2121	(3) Ignition Control 1	(3) I	(3) —
(4) 4	(4) 1	(4) VT / BU	(4) 5291	(4) Powertrain Main Relay Fused Supply Voltage 2	(4) II	(4) —

T8B Ignition Coil 2 (L3B)



5402120

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10092979
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 Multilock Series, Sealed(BK)

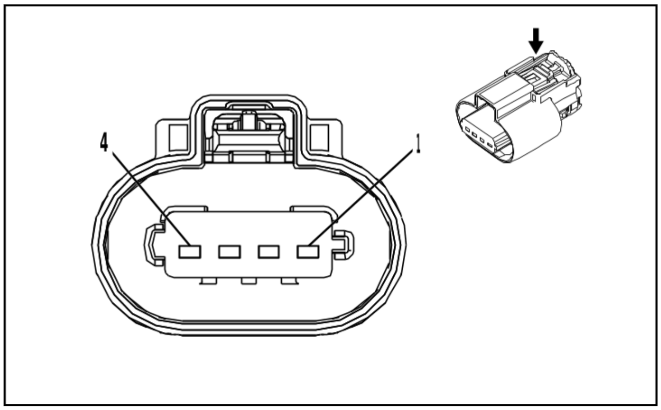
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

T8B Ignition Coil 2 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) BK	(1) 6450	(1) Engine Even Bank Ground	(1) I	(1) —
(2) 2	(2) 0.75	(2) BK / BU	(2) 2129	(2) Ignition Control Low Reference Bank 1	(2) I	(2) —
(3) 3	(3) 0.75	(3) BU / WH	(3) 2122	(3) Ignition Control 2	(3) I	(3) —
(4) 4	(4) 1	(4) VT / BU	(4) 5291	(4) Powertrain Main Relay Fused Supply Voltage 2	(4) I	(4) —

T8B Ignition Coil 2 (L84 / L87)



3240115

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed(BK)

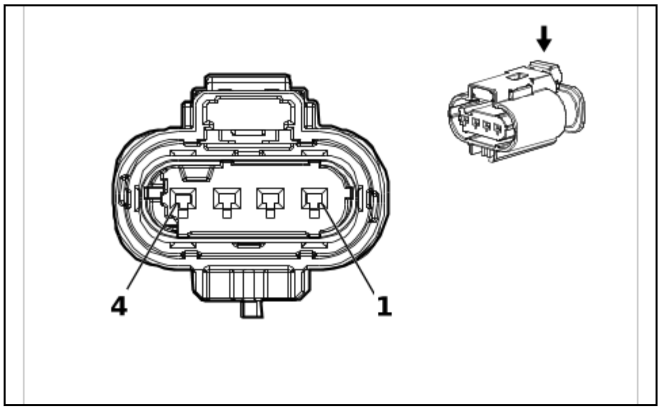
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-2A (GY)	No Tool Required

T8B Ignition Coil 2 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) BK	(1) 6450	(1) Engine Even Bank Ground	(1) II	(1) —
(2) 2	(2) 0.5	(2) BK / GY	(2) 2130	(2) Ignition Control Low Reference Bank 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / WH	(3) 2122	(3) Ignition Control 2	(3) I	(3) —
(4) 4	(4) 1	(4) VT / BU	(4) 5292	(4) Powertrain Main Relay Fused Supply Voltage 3	(4) II	(4) —

T8C Ignition Coil 3 (L3B)



5402120

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 10092979
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 Multilock Series, Sealed(BK)

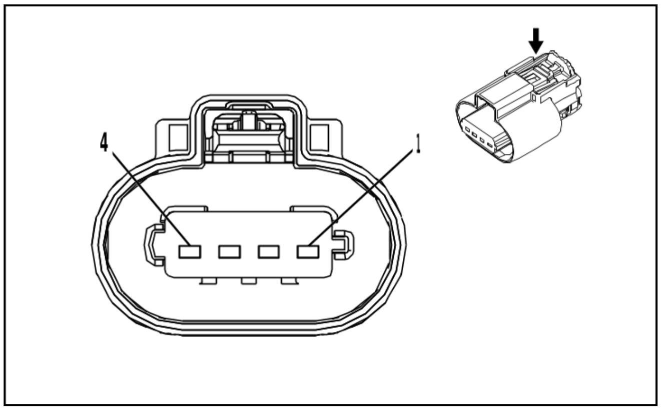
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

T8C Ignition Coil 3 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) BK	(1) 6450	(1) Engine Even Bank Ground	(1) I	(1) —
(2) 2	(2) 0.75	(2) BK / BU	(2) 2129	(2) Ignition Control Low Reference Bank 1	(2) I	(2) —
(3) 3	(3) 0.75	(3) GN / BU	(3) 2123	(3) Ignition Control 3	(3) I	(3) —
(4) 4	(4) 1	(4) VT / BU	(4) 5291	(4) Powertrain Main Relay Fused Supply Voltage 2	(4) I	(4) —

T8C Ignition Coil 3 (L84 / L87)



3240115

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed(BK)

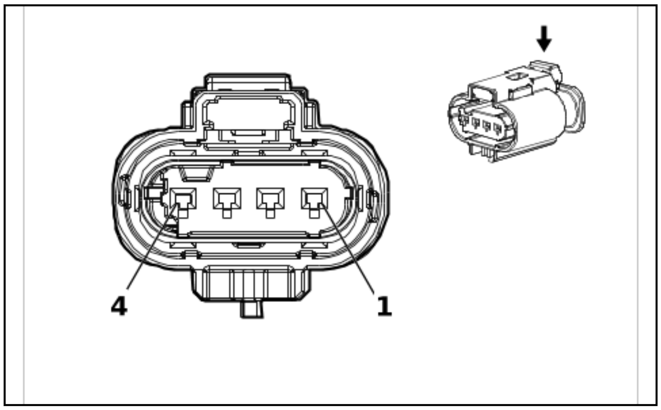
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-2A (GY)	No Tool Required

T8C Ignition Coil 3 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) BK	(1) 6150	(1) Engine Odd Bank Ground	(1) II	(1) —
(2) 2	(2) 0.5	(2) BK / BU	(2) 2129	(2) Ignition Control Low Reference Bank 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) GN / BU	(3) 2123	(3) Ignition Control 3	(3) I	(3) —
(4) 4	(4) 1	(4) VT / BU	(4) 5291	(4) Powertrain Main Relay Fused Supply Voltage 2	(4) II	(4) —

T8D Ignition Coil 4 (L3B)



5402120

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10092979
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 Multilock Series, Sealed(BK)

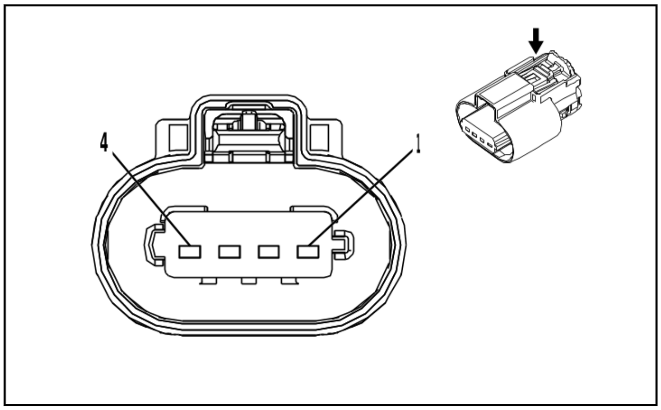
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

T8D Ignition Coil 4 (L3B)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) BK	(1) 6450	(1) Engine Even Bank Ground	(1) I	(1) —
(2) 2	(2) 0.75	(2) BK / BU	(2) 2129	(2) Ignition Control Low Reference Bank 1	(2) I	(2) —
(3) 3	(3) 0.75	(3) YE / BU	(3) 2124	(3) Ignition Control 4	(3) I	(3) —
(4) 4	(4) 1	(4) VT / BU	(4) 5291	(4) Powertrain Main Relay Fused Supply Voltage 2	(4) I	(4) —

T8D Ignition Coil 4 (L84 / L87)



3240115

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed(BK)

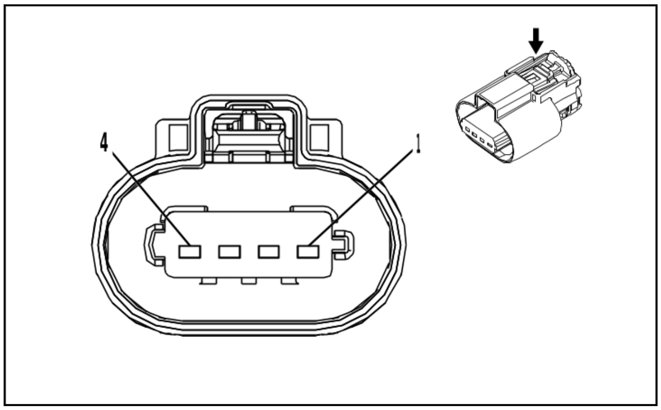
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-2A (GY)	No Tool Required

T8D Ignition Coil 4 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) BK	(1) 6450	(1) Engine Even Bank Ground	(1) II	(1) —
(2) 2	(2) 0.5	(2) BK / GY	(2) 2130	(2) Ignition Control Low Reference Bank 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / BU	(3) 2124	(3) Ignition Control 4	(3) I	(3) —
(4) 4	(4) 1	(4) VT / BU	(4) 5292	(4) Powertrain Main Relay Fused Supply Voltage 3	(4) II	(4) —

T8E Ignition Coil 5 (L84 / L87)



3240115

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed(BK)

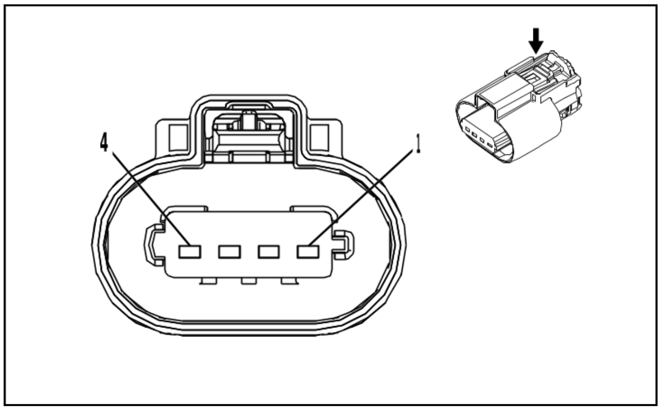
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-2A (GY)	No Tool Required

T8E Ignition Coil 5 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) BK	(1) 6150	(1) Engine Odd Bank Ground	(1) II	(1) —
(2) 2	(2) 0.5	(2) BK / BU	(2) 2129	(2) Ignition Control Low Reference Bank 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / GY	(3) 2125	(3) Ignition Control 5	(3) I	(3) —
(4) 4	(4) 1	(4) VT / BU	(4) 5291	(4) Powertrain Main Relay Fused Supply Voltage 2	(4) II	(4) —

T8F Ignition Coil 6 (L84 / L87)



3240115

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed(BK)

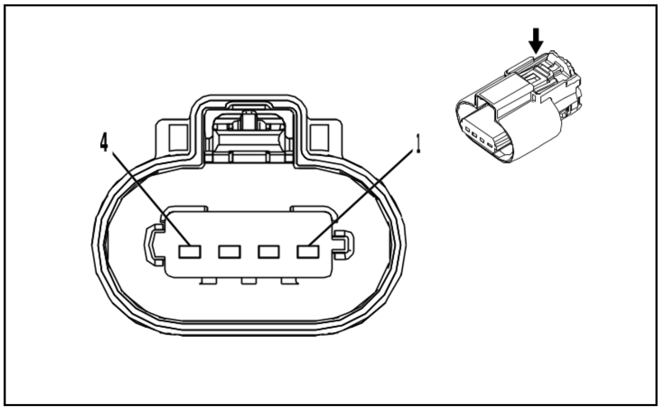
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-2A (GY)	No Tool Required

T8F Ignition Coil 6 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) BK	(1) 6450	(1) Engine Even Bank Ground	(1) II	(1) —
(2) 2	(2) 0.5	(2) BK / GY	(2) 2130	(2) Ignition Control Low Reference Bank 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) BN / BU	(3) 2126	(3) Ignition Control 6	(3) I	(3) —
(4) 4	(4) 1	(4) VT / BU	(4) 5292	(4) Powertrain Main Relay Fused Supply Voltage 3	(4) II	(4) —

T8G Ignition Coil 7 (L84 / L87)



3240115

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed(BK)

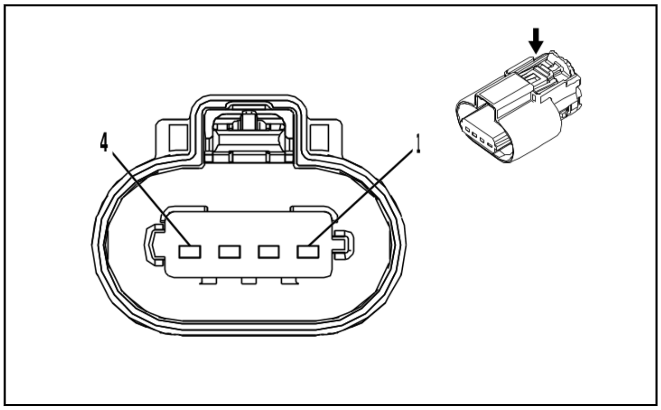
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-2A (GY)	No Tool Required

T8G Ignition Coil 7 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) BK	(1) 6150	(1) Engine Odd Bank Ground	(1) II	(1) —
(2) 2	(2) 0.5	(2) BK / BU	(2) 2129	(2) Ignition Control Low Reference Bank 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) GN / GY	(3) 2127	(3) Ignition Control 7	(3) I	(3) —
(4) 4	(4) 1	(4) VT / BU	(4) 5291	(4) Powertrain Main Relay Fused Supply Voltage 2	(4) II	(4) —

T8H Ignition Coil 8 (L84 / L87)



3240115

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed(BK)

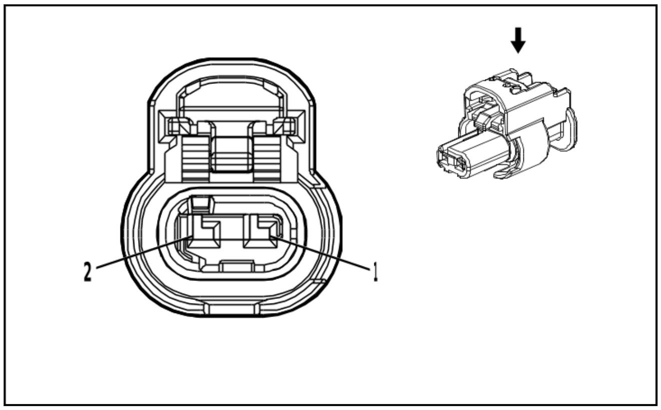
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-2A (GY)	No Tool Required

T8H Ignition Coil 8 (L84 / L87)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 1	(1) BK	(1) 6450	(1) Engine Even Bank Ground	(1) II	(1) —
(2) 2	(2) 0.5	(2) BK / GY	(2) 2130	(2) Ignition Control Low Reference Bank 2	(2) I	(2) —
(3) 3	(3) 0.5	(3) VT / WH	(3) 2128	(3) Ignition Control 8	(3) I	(3) —
(4) 4	(4) 1	(4) VT / BU	(4) 5292	(4) Powertrain Main Relay Fused Supply Voltage 3	(4) II	(4) —

T10G Low Frequency Rear Bumper Antenna (AVJ)



4690744

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296694-3
- Service Connector: 19366871
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

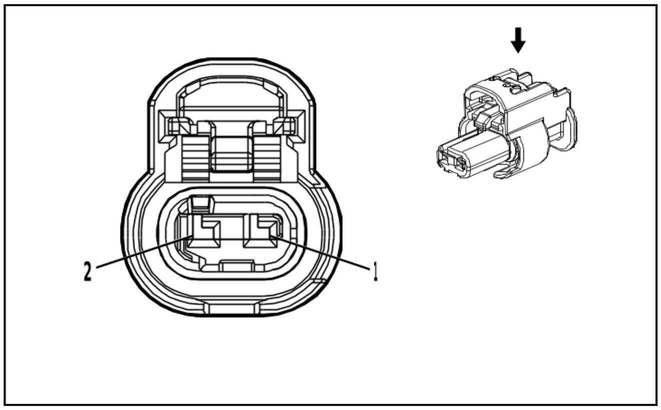
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

T10G Low Frequency Rear Bumper Antenna (AVJ)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / GN	(1) 3568	(1) Rear Closure Passive Entry Antenna High Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / GY	(2) 3569	(2) Rear Closure Passive Entry Antenna Low Signal	(2) I	(2) —

T10J Low Frequency Instrument Panel Antenna (- D07)



4690744

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 1-2296694-3
- Service Connector: 19366871
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

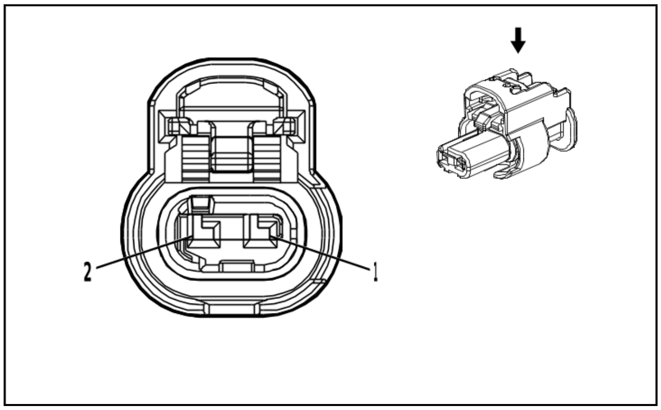
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

T10J Low Frequency Instrument Panel Antenna (- D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BN / BK	(1) 3552	(1) Interior Passive Entry Antenna 1 High Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) WH	(2) 3553	(2) Interior Passive Entry Antenna 1 Low Signal	(2) I	(2) —

T10KA Low Frequency Console Number 2 Antenna (D07)



4690744

Connector Part Information

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 1-2296694-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

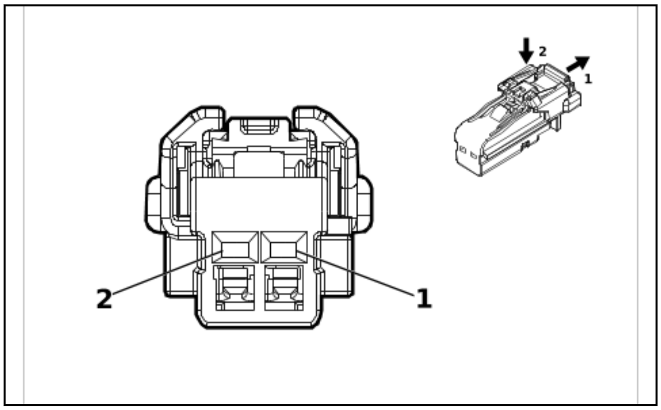
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

T10KA Low Frequency Console Number 2 Antenna (D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BN / BK	(1) 3552	(1) Interior Passive Entry Antenna 1 High Signal	(1) I	(1) —
(2) 2	(2) 0.35	(2) WH	(2) 3553	(2) Interior Passive Entry Antenna 1 Low Signal	(2) I	(2) —

T10UA Low Frequency Console Antenna (- D07)



4115691

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

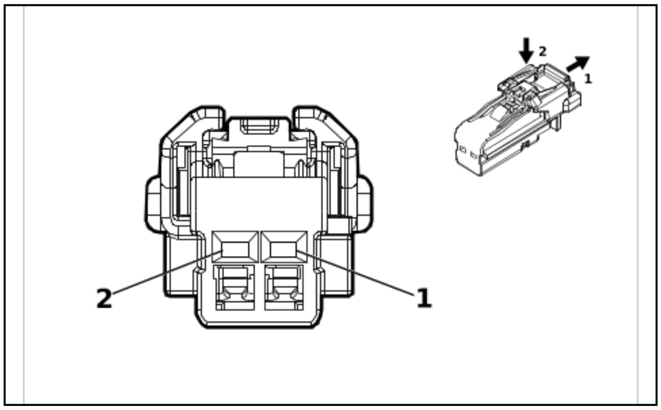
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

T10UA Low Frequency Console Antenna (- D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BN / BK	(1) 4996	(1) Immobilizer Antenna Signal [+]	(1) I	(1) —
(2) 2	(2) 0.35	(2) WH / GY	(2) 4997	(2) Immobilizer Antenna Low Signal	(2) I	(2) —

T10UA Low Frequency Console Antenna (D07)



4115691

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(BK)

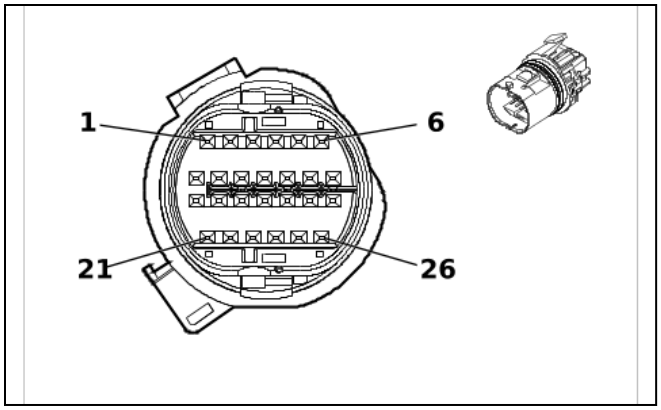
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

T10UA Low Frequency Console Antenna (D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BN / BK	(1) 4996	(1) Immobilizer Antenna Signal [+]	(1) I	(1) —
(2) 2	(2) 0.35	(2) WH / GY	(2) 4997	(2) Immobilizer Antenna Low Signal	(2) I	(2) —

T12 Automatic Transmission X1 (M12 / MHT / MQB)



6757451

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 5-2297721-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 26-Way M 1.2 MCON Series, Sealed(BN)

Terminal Part Information

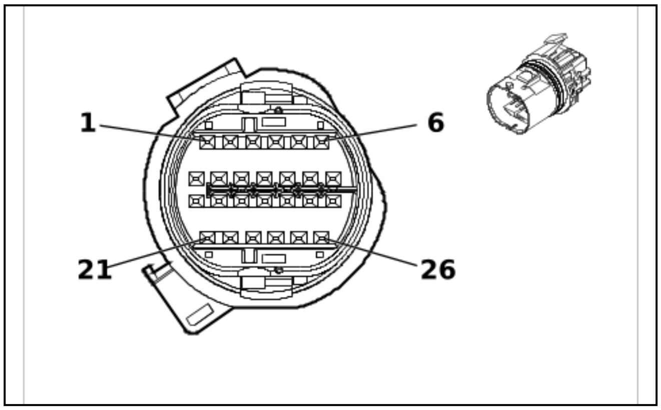
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

T12 Automatic Transmission X1 (M12 / MHT / MQB)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / YE	(1) 6353	(1) Input Speed Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) VT / GN	(2) 4510	(2) Transmission Intermediate Speed Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) WH / BU	(3) 6254	(3) Transmission Input Speed Sensor Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) YE / OG	(4) 6358	(4) Output Speed Signal	(4) I	(4) —
(5) 5	(5) 0.5	(5) YE / WH	(5) 3338	(5) Transmission Internal Mode Switch Mode Control X	(5) I	(5) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(6) 6	(6) 0.5	(6) YE / GY	(6) 3337	(6) Transmission Internal Mode Switch Mode Control Y	(6) I	(6) —
(7) 7	(7) 0.5	(7) YE / GN	(7) 4170	(7) Transmission Output Shaft Speed Sensor Circuit 9V Reference	(7) I	(7) —
(8) 8	(8) 0.5	(8) YE / BU	(8) 4171	(8) Transmission Input Shaft Speed Sensor Circuit 9V Reference	(8) I	(8) —
(9) 9	(9) 0.5	(9) WH / BN	(9) 6388	(9) Transmission High Side Driver 2 Control	(9) I	(9) —
(10) 10	(10) 1.5	(10) GN / VT	(10) 8540	(10) Battery Positive Voltage	(10) I	(10) —
(11) 11	(11) 0.5	(11) BN	(11) 6387	(11) Transmission High Side Driver 1 Control	(11) I	(11) —
(12) 12	(12) 0.5	(12) WH / RD	(12) 480	(12) Engine Control Vehicle Sensors 5 Volt Reference 1	(12) I	(12) —
(13) 13	(13) 0.5	(13) BN / YE	(13) 585	(13) Transmission Fluid Temperature Sensor Signal	(13) I	(13) —
(14) 14	(14) 0.5	(14) YE / BN	(14) 6404	(14) Clutch Solenoid Valve E Control	(14) I	(14) —
(15) 15	(15) 0.5	(15) GY / BN	(15) 6403	(15) Clutch Solenoid Valve D Control	(15) I	(15) —
(16) 16	(16) 0.5	(16) GY	(16) 6402	(16) Clutch Solenoid Valve C Control	(16) I	(16) —
(17) 17	(17) 1.5	(17) BK / YE	(17) 450	(17) Ground	(17) I	(17) —
(18) 18	(18) 0.5	(18) GY / WH	(18) 2968	(18) Transmission Auxiliary Fluid Pump Control	(18) I	(18) —
(19) 19	(19) 0.5	(19) GN / BK	(19) 7819	(19) Default Disable Solenoid Control	(19) I	(19) —
(20) 20	(20) 0.5	(20) BK / GY	(20) 626	(20) Engine Control Vehicle Sensors Low Reference 1	(20) I	(20) —
(21) 21	(21) 0.5	(21) BN / WH	(21) 4509	(21) Transmission Clutch F Control	(21) I	(21) —
(22) 22	(22) 0.5	(22) YE / BU	(22) 4507	(22) Transmission Clutch H Control	(22) I	(22) —
(23) 23	(23) 0.5	(23) WH / GY	(23) 4508	(23) Transmission Clutch G Control	(23) I	(23) —
(24) 24	(24) 0.5	(24) GN / WH	(24) 1530	(24) Transmission Line Pressure Control Solenoid Valve Control	(24) I	(24) —
(25) 25	(25) 0.5	(25) GY / BN	(25) 422	(25) Torque Converter Clutch Solenoid Valve Control	(25) I	(25) —
(26) 26	(26) 0.5	(26) BU / BN	(26) 586	(26) Transmission Fluid Temperature Sensor Low Reference	(26) I	(26) —

T12 Automatic Transmission X1 (MHS / MQC)



6757451

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 5-2297721-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 26-Way M 1.2 MCON Series, Sealed(BN)

Terminal Part Information

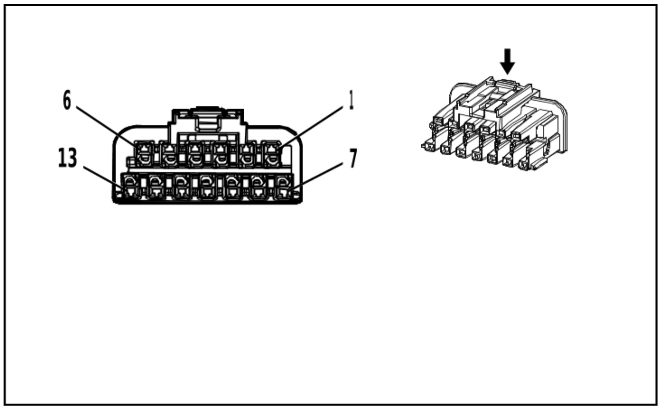
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	No Tool Required	No Tool Required

T12 Automatic Transmission X1 (MHS / MQC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / VT	(1) 6353	(1) Input Speed Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / VT	(2) 4510	(2) Transmission Intermediate Speed Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) WH	(3) 6254	(3) Transmission Input Speed Sensor Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) YE / BU	(4) 6358	(4) Output Speed Signal	(4) I	(4) —
(5) 5	(5) 0.5	(5) YE	(5) 6317	(5) Electronic Transmission Range Select Out of Park Switch Signal	(5) I	(5) —
(6) 6	(6) 0.5	(6) YE / GY	(6) 6319	(6) Electronic Transmission Range Select Out of Park Switch 2 Signal	(6) I	(6) —
(7) 7	(7) 0.5	(7) YE / GN	(7) 4170	(7) Transmission Output Shaft Speed Sensor Circuit 9V Reference	(7) I	(7) —
(8) 8	(8) 0.5	(8) YE / BU	(8) 4171	(8) Transmission Input Shaft Speed Sensor Circuit 9V Reference	(8) I	(8) —
(9) 9	(9) 0.5	(9) WH	(9) 6388	(9) Transmission High Side Driver 2 Control	(9) I	(9) —
(10) 10	(10) 0.5	(10) RD / GY	(10) 8540	(10) Battery Positive Voltage	(10) II	(10) —
(11) 11	(11) 0.5	(11) BN / GY	(11) 6387	(11) Transmission High Side Driver 1 Control	(11) I	(11) —
(12) 12	(12) 0.5	(12) WH / YE	(12) 2159	(12) Park Inhibit Solenoid Assembly Control	(12) I	(12) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(13) 13	(13) 0.5	(13) BN / YE	(13) 585	(13) Transmission Fluid Temperature Sensor Signal	(13) I	(13) —
(14) 14	(14) 0.5	(14) BU / GN	(14) 6404	(14) Clutch Solenoid Valve E Control	(14) I	(14) —
(15) 15	(15) 0.5	(15) GN / BN	(15) 6403	(15) Clutch Solenoid Valve D Control	(15) I	(15) —
(16) 16	(16) 0.5	(16) GY	(16) 6402	(16) Clutch Solenoid Valve C Control	(16) I	(16) —
(17) 17	(17) 0.5	(17) BK	(17) 450	(17) Ground	(17) II	(17) —
18	—	—	—	Not Occupied	—	—
(19) 19	(19) 0.5	(19) VT	(19) 7819	(19) Default Disable Solenoid Control	(19) I	(19) —
(20) 20	(20) 0.5	(20) BK / GY	(20) 3706	(20) Electronic Transmission Range Select Switch Analog Signal 1	(20) I	(20) —
(21) 21	(21) 0.5	(21) BN / WH	(21) 4509	(21) Transmission Clutch F Control	(21) I	(21) —
(22) 22	(22) 0.5	(22) YE / VT	(22) 4507	(22) Transmission Clutch H Control	(22) I	(22) —
(23) 23	(23) 0.5	(23) BU / GY	(23) 4508	(23) Transmission Clutch G Control	(23) I	(23) —
(24) 24	(24) 0.5	(24) GN / OG	(24) 1530	(24) Transmission Line Pressure Control Solenoid Valve Control	(24) I	(24) —
(25) 25	(25) 0.5	(25) GY / BN	(25) 422	(25) Torque Converter Clutch Solenoid Valve Control	(25) I	(25) —
(26) 26	(26) 0.5	(26) BK / BN	(26) 586	(26) Transmission Fluid Temperature Sensor Low Reference	(26) I	(26) —

T12 Automatic Transmission X2 (M12 / MHT / MQB)



4757907

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2203990-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 13-Way F 1.2 MCON Series(BN)

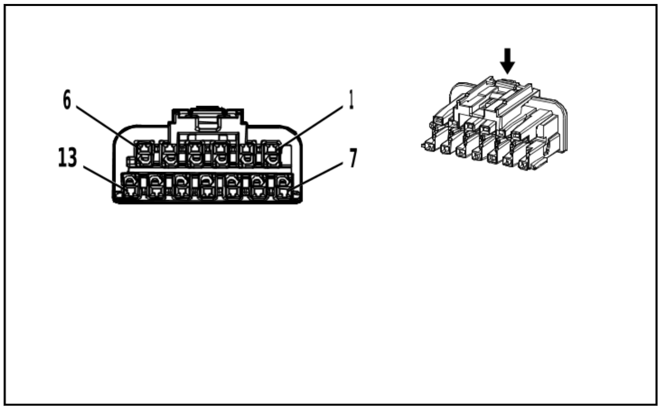
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

T12 Automatic Transmission X2 (M12 / MHT / MQB)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / GY	(1) 3337	(1) Transmission Internal Mode Switch Mode Control Y	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE	(2) 3338	(2) Transmission Internal Mode Switch Mode Control X	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / OG	(3) 6358	(3) Output Speed Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) WH / BU	(4) 6254	(4) Transmission Input Speed Sensor Signal	(4) I	(4) —
(5) 5	(5) 0.5	(5) VT / GN	(5) 4510	(5) Transmission Intermediate Speed Signal	(5) I	(5) —
(6) 6	(6) 0.5	(6) WH / VT	(6) 6353	(6) Input Speed Signal	(6) I	(6) —
(7) 7	(7) 0.5	(7) BN / YE	(7) 585	(7) Transmission Fluid Temperature Sensor Signal	(7) I	(7) —
(8) 8	(8) 0.5	(8) OG	(8) 480	(8) Engine Control Vehicle Sensors 5 Volt Reference 1	(8) I	(8) —
(9) 9	(9) 0.5	(9) BN	(9) 6387	(9) Transmission High Side Driver 1 Control	(9) I	(9) —
(10) 10	(10) 1.5	(10) GN / VT	(10) 8540	(10) Battery Positive Voltage	(10) I	(10) —
(11) 11	(11) 0.5	(11) WH	(11) 6388	(11) Transmission High Side Driver 2 Control	(11) I	(11) —
(12) 12	(12) 0.5	(12) BU	(12) 4171	(12) Transmission Input Shaft Speed Sensor Circuit 9V Reference	(12) I	(12) —
(13) 13	(13) 0.5	(13) GN	(13) 4170	(13) Transmission Output Shaft Speed Sensor Circuit 9V Reference	(13) I	(13) —

T12 Automatic Transmission X2 (MHS / MQC)



4757907

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2203990-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 13-Way F 1.2 MCON Series(BN)

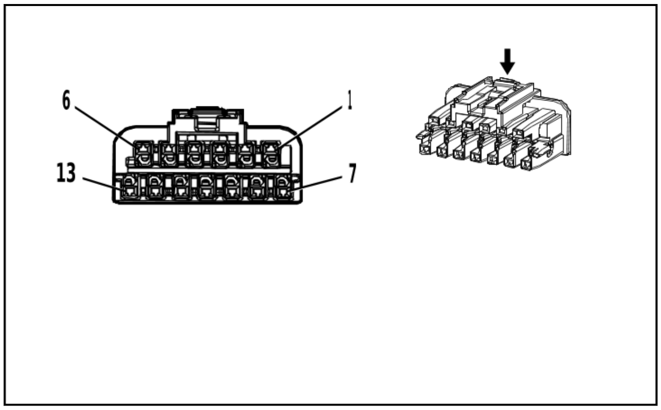
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

T12 Automatic Transmission X2 (MHS / MQC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / GY	(1) 6319	(1) Electronic Transmission Range Select Out of Park Switch 2 Signal	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE	(2) 6317	(2) Electronic Transmission Range Select Out of Park Switch Signal	(2) I	(2) —
(3) 3	(3) 0.5	(3) YE / OG	(3) 6358	(3) Output Speed Signal	(3) I	(3) —
(4) 4	(4) 0.5	(4) WH / BU	(4) 6254	(4) Transmission Input Speed Sensor Signal	(4) I	(4) —
(5) 5	(5) 0.5	(5) VT / GN	(5) 4510	(5) Transmission Intermediate Speed Signal	(5) I	(5) —
(6) 6	(6) 0.5	(6) WH / VT	(6) 6353	(6) Input Speed Signal	(6) I	(6) —
(7) 7	(7) 0.5	(7) BN / YE	(7) 585	(7) Transmission Fluid Temperature Sensor Signal	(7) I	(7) —
(8) 8	(8) 0.5	(8) OG	(8) 2159	(8) Park Inhibit Solenoid Assembly Control	(8) I	(8) —
(9) 9	(9) 0.5	(9) BN	(9) 6387	(9) Transmission High Side Driver 1 Control	(9) I	(9) —
10	—	—	—	Not Occupied	—	—
(11) 11	(11) 0.5	(11) WH	(11) 6388	(11) Transmission High Side Driver 2 Control	(11) I	(11) —
(12) 12	(12) 0.5	(12) BU	(12) 4171	(12) Transmission Input Shaft Speed Sensor Circuit 9V Reference	(12) I	(12) —
(13) 13	(13) 0.5	(13) GN	(13) 4170	(13) Transmission Output Shaft Speed Sensor Circuit 9V Reference	(13) I	(13) —

T12 Automatic Transmission X3 (M12 / MHT / MQB)



4757999

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2203990-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 13-Way F 1.2 MCON Series(BN)

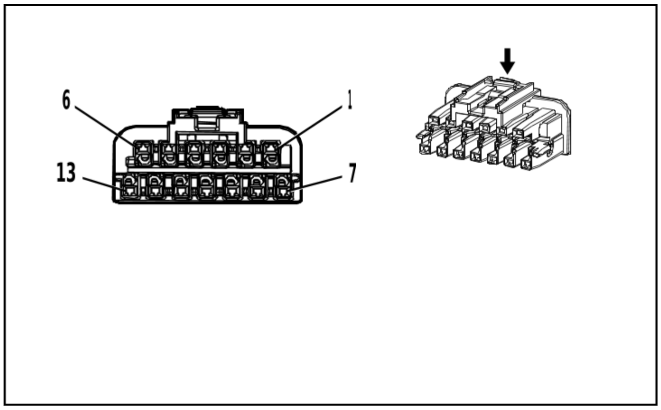
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

T12 Automatic Transmission X3 (M12 / MHT / MQB)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / WH	(1) 4509	(1) Transmission Clutch F Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / VT	(2) 4507	(2) Transmission Clutch H Control	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / GY	(3) 4508	(3) Transmission Clutch G Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) GN / OG	(4) 1530	(4) Transmission Line Pressure Control Solenoid Valve Control	(4) I	(4) —
(5) 5	(5) 0.5	(5) GY / BN	(5) 422	(5) Torque Converter Clutch Solenoid Valve Control	(5) I	(5) —
(6) 6	(6) 0.5	(6) BU / BN	(6) 586	(6) Transmission Fluid Temperature Sensor Low Reference	(6) I	(6) —
(7) 7	(7) 0.5	(7) BU / GN	(7) 6404	(7) Clutch Solenoid Valve E Control	(7) I	(7) —
(8) 8	(8) 0.5	(8) GN / BN	(8) 6403	(8) Clutch Solenoid Valve D Control	(8) I	(8) —
(9) 9	(9) 0.5	(9) GY	(9) 6402	(9) Clutch Solenoid Valve C Control	(9) I	(9) —
(10) 10	(10) 1.5	(10) BK / YE	(10) 450	(10) Ground	(10) I	(10) —
(11) 11	(11) 0.5	(11) GY / OG	(11) 2968	(11) Transmission Auxiliary Fluid Pump Control	(11) I	(11) —
(12) 12	(12) 0.5	(12) VT	(12) 7819	(12) Default Disable Solenoid Control	(12) I	(12) —
(13) 13	(13) 0.5	(13) BK / GY	(13) 626	(13) Engine Control Vehicle Sensors Low Reference 1	(13) I	(13) —

T12 Automatic Transmission X3 (MHS / MQC)



4757999

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2203990-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 13-Way F 1.2 MCON Series(BN)

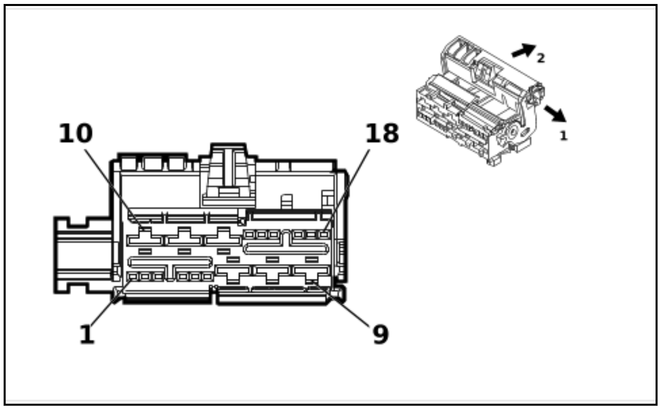
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

T12 Automatic Transmission X3 (MHS / MQC)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN / WH	(1) 4509	(1) Transmission Clutch F Control	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE / VT	(2) 4507	(2) Transmission Clutch H Control	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / GY	(3) 4508	(3) Transmission Clutch G Control	(3) I	(3) —
(4) 4	(4) 0.5	(4) GN / OG	(4) 1530	(4) Transmission Line Pressure Control Solenoid Valve Control	(4) I	(4) —
(5) 5	(5) 0.5	(5) GY / BN	(5) 422	(5) Torque Converter Clutch Solenoid Valve Control	(5) I	(5) —
(6) 6	(6) 0.5	(6) BU / BN	(6) 586	(6) Transmission Fluid Temperature Sensor Low Reference	(6) I	(6) —
(7) 7	(7) 0.5	(7) BU / GN	(7) 6404	(7) Clutch Solenoid Valve E Control	(7) I	(7) —
(8) 8	(8) 0.5	(8) GN / BN	(8) 6403	(8) Clutch Solenoid Valve D Control	(8) I	(8) —
(9) 9	(9) 0.5	(9) GY	(9) 6402	(9) Clutch Solenoid Valve C Control	(9) I	(9) —
10 - 11	—	—	—	Not Occupied	—	—
(12) 12	(12) 0.5	(12) VT	(12) 7819	(12) Default Disable Solenoid Control	(12) I	(12) —
(13) 13	(13) 0.5	(13) BK / GY	(13) 3706	(13) Electronic Transmission Range Select Switch Analog Signal 1	(13) I	(13) —

T19 Multifunction Power Supply Converter



3825662

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 35509388
- Service Connector: 13549243
- Description: 18-Way F 0.64 MTS, 6.3 MCP Series(BK)

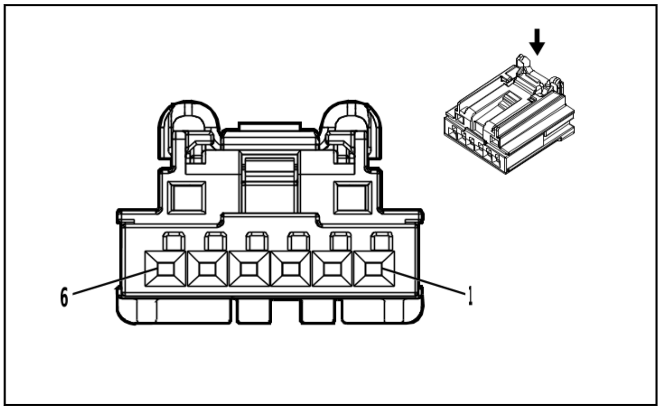
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19300632	J-35616-64B (L-BU)	J-38125-215A
II	19367600	J-35616-42 (RD)	J-38125-556

T19 Multifunction Power Supply Converter

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1 - 3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.35 (4) 0.5	(4) VT / GN (4) VT / GN	(4) 4320 (4) 4320	(4) Powertrain Sensor Bus Enable (4) Powertrain Sensor Bus Enable	(4) I (4) I	(4) (D07+ FHX) + (MQC/ MHS) (4) (D07+ FJW- L3B- L84) + (MQC/ MHS)
(5) 5	(5) 0.5	(5) YE / BK	(5) 625	(5) Starter Enable Relay Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 2.5	(7) BK	(7) 1350	(7) Ground	(7) II	(7) —
(8) 8	(8) 2.5	(8) RD / YE	(8) 8140	(8) Battery Positive Voltage	(8) II	(8) —
(9) 9	(9) 2.5	(9) RD / GN	(9) 2173	(9) 12V Regulated Supply Voltage 2	(9) II	(9) —
(10) 10	(10) 2.5	(10) RD / YE	(10) 2172	(10) 12V Regulated Supply Voltage 1	(10) II	(10) —
(11) 11	(11) 2.5	(11) RD / WH	(11) 8040	(11) Battery Positive Voltage	(11) II	(11) —
(12) 12	(12) 2.5	(12) BK	(12) 1350	(12) Ground	(12) II	(12) —
(13) 13	(13) 0.5	(13) BU / GY	(13) 4054	(13) Private Serial Data Powertrain CAN Bus [-] Serial Data	(13) I	(13) —
(14) 14	(14) 0.5	(14) BU / GY	(14) 4054	(14) Private Serial Data Powertrain CAN Bus [-] Serial Data	(14) I	(14) —
(15) 15	(15) 0.5	(15) WH	(15) 4055	(15) Private Serial Data Powertrain CAN Bus [+] Serial Data	(15) I	(15) —
(16) 16	(16) 0.5	(16) WH	(16) 4055	(16) Private Serial Data Powertrain CAN Bus [+] Serial Data	(16) I	(16) —
17 - 18	—	—	—	Not Occupied	—	—

T22 Wireless Accessory Charging Module (K4C)



5020940

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 2035363-6
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

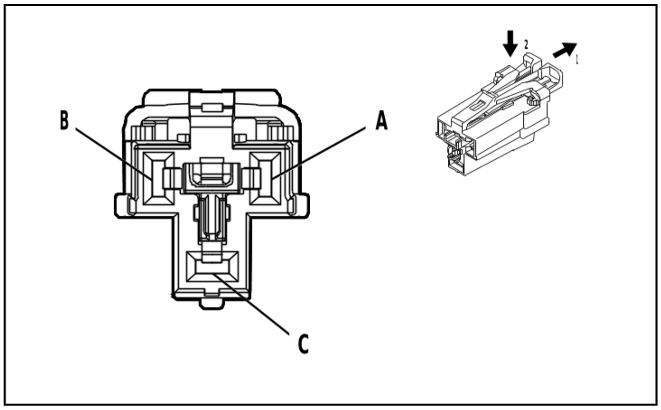
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

T22 Wireless Accessory Charging Module (K4C)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / VT	(1) 2640	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 1350	(2) Ground	(2) I	(2) —
(3) 3	(3) 0.5	(3) BU / YE	(3) 4984	(3) AUTOSAR CAN Bus [-] 5 Serial Data	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / WH	(4) 4985	(4) AUTOSAR CAN Bus [+] 5 Serial Data	(4) I	(4) —
(5) 5	(5) 0.5	(5) BU / YE	(5) 4984	(5) AUTOSAR CAN Bus [-] 5 Serial Data	(5) I	(5) —
(6) 6	(6) 0.5	(6) BU / WH	(6) 4985	(6) AUTOSAR CAN Bus [+] 5 Serial Data	(6) I	(6) —

X80G Accessory Power Receptacle - Instrument Panel (KC5)



4872413

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 33386302
- Service Connector: 19369281
- Description: 3-Way F 2.8 APEX Series(GY)

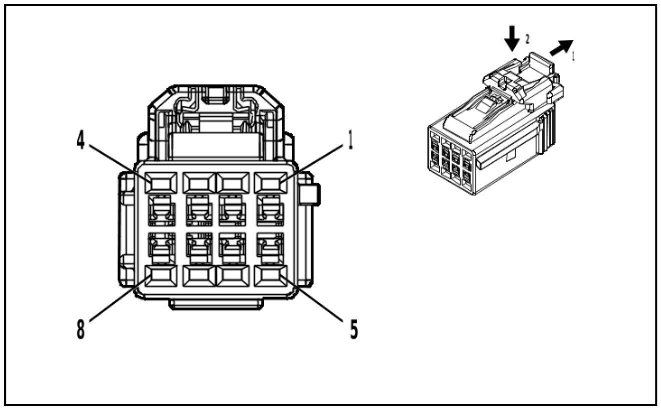
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required

X80G Accessory Power Receptacle - Instrument Panel (KC5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	1.5	VT	1001	Retained Accessory Power Ignition Voltage	I	—
B	—	—	—	Not Occupied	—	—
C	1.5	BK	1050	Ground	I	—

X81ACA Front Floor Console Accessory Power Rear Receptacle - 110V AC (KI4)



5086387

Connector Part Information

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 6098-8443
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.2 Series(BK)

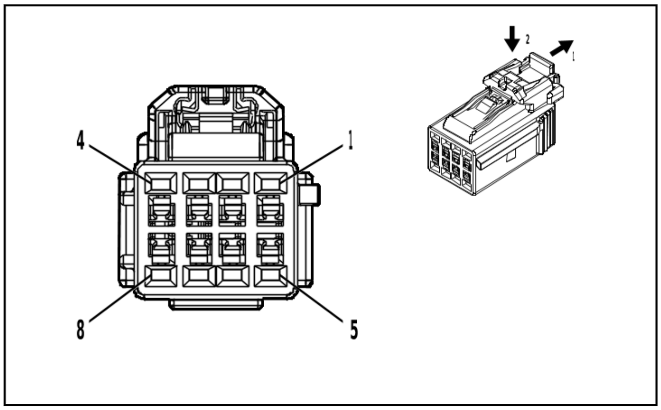
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

X81ACA Front Floor Console Accessory Power Rear Receptacle - 110V AC (KI4)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 10117	(1) AC Outlet Phase A Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) VT / RD	(3) 4049	(3) AC Power Outlet Sensor High Reference	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / BN	(4) 6807	(4) DC/AC Inverter Control	(4) I	(4) —
(5) 5	(5) 0.75	(5) RD	(5) 10118	(5) AC Outlet Phase B Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) BK	(7) 1350	(7) Ground	(7) I	(7) —
(8) 8	(8) 0.35	(8) YE	(8) 6817	(8) LED Backlight Dimming Control 1	(8) I	(8) —

X81AI Accessory Power Receptacle - Instrument Panel 110V AC (KI4)



5086387

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8443
- Service Connector: 84613126
- Description: 8-Way F 1.2 Series(BK)

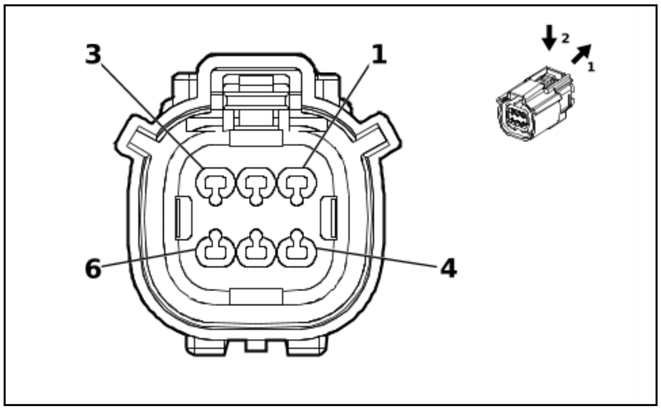
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-16 (L-GN)	No Tool Required

X81AI Accessory Power Receptacle - Instrument Panel 110V AC (KI4)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 10117	(1) AC Outlet Phase A Control	(1) II	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) VT / RD	(3) 4049	(3) AC Power Outlet Sensor High Reference	(3) II	(3) —
(4) 4	(4) 0.5	(4) BU / BN	(4) 6807	(4) DC/AC Inverter Control	(4) II	(4) —
(5) 5	(5) 0.75	(5) RD	(5) 10118	(5) AC Outlet Phase B Control	(5) II	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) BK / WH	(7) 851	(7) Signal Ground	(7) II	(7) —
(8) 8	(8) 0.35	(8) YE	(8) 6817	(8) LED Backlight Dimming Control 1	(8) I	(8) —

X81AP Pickup Box Accessory Power Receptacle - 110V AC (KC9)



5666225

Connector Part Information

- Harness Type: Chassis Rear Wiring Harness
- OEM Connector: 33472-0744
- Service Connector: 86526151
- Description: 6-Way F 1.5 MX Series, Sealed(BK)

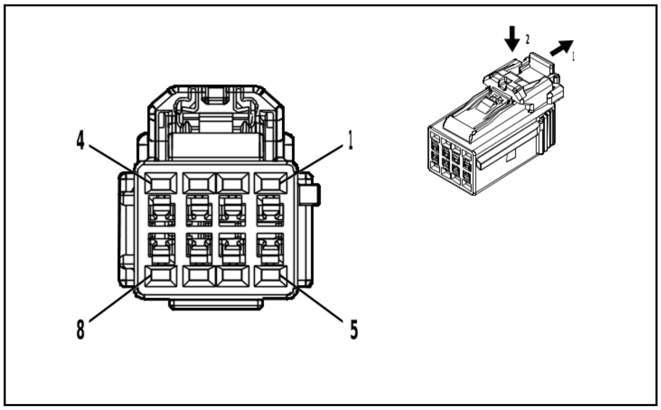
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

X81AP Pickup Box Accessory Power Receptacle - 110V AC (KC9)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / RD	(1) 4049	(1) AC Power Outlet Sensor High Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / BN	(2) 2266	(2) DC/AC Inverter Control 2	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.75	(4) BK / WH	(4) 10120	(4) AC Outlet 2 Phase A Control	(4) I	(4) —
(5) 5	(5) 0.5	(5) BK	(5) 1750	(5) Ground	(5) I	(5) —
(6) 6	(6) 0.75	(6) RD / WH	(6) 10121	(6) AC Outlet 2 Phase B Control	(6) I	(6) —

X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC (KI5)



5086387

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 6098-8443
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.2 Series(BK)

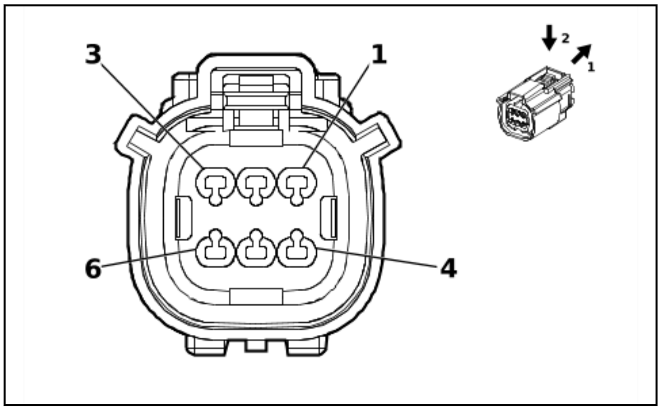
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC (KI5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 10117	(1) AC Outlet Phase A Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.5	(3) VT / RD	(3) 4049	(3) AC Power Outlet Sensor High Reference	(3) I	(3) —
(4) 4	(4) 0.5	(4) BU / BN	(4) 6807	(4) DC/AC Inverter Control	(4) I	(4) —
(5) 5	(5) 0.75	(5) RD	(5) 10118	(5) AC Outlet Phase B Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.5	(7) BK	(7) 1350	(7) Ground	(7) I	(7) —
(8) 8	(8) 0.35	(8) YE	(8) 6817	(8) LED Backlight Dimming Control 1	(8) I	(8) —

X81BP Pickup Box Accessory Power Receptacle - 220V AC (KCA)



5666225

Connector Part Information

- Harness Type: Chassis Rear Wiring Harness
- OEM Connector: 33472-0744
- Service Connector: 86526151
- Description: 6-Way F 1.5 MX Series, Sealed(BK)

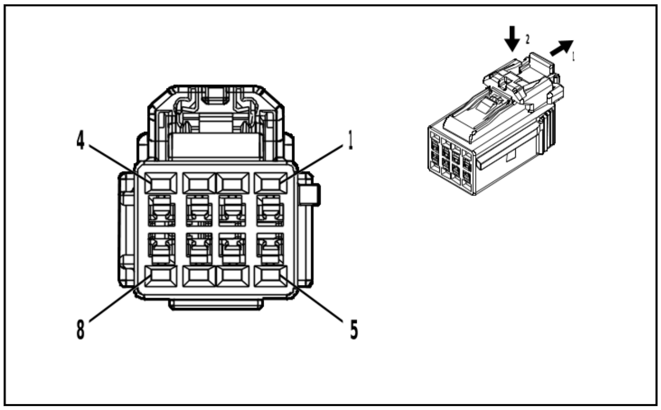
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required

X81BP Pickup Box Accessory Power Receptacle - 220V AC (KCA)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / RD	(1) 4049	(1) AC Power Outlet Sensor High Reference	(1) I	(1) —
(2) 2	(2) 0.5	(2) GN / BN	(2) 2266	(2) DC/AC Inverter Control 2	(2) I	(2) —
3	—	—	—	Not Occupied	—	—
(4) 4	(4) 0.75	(4) BK / WH	(4) 10120	(4) AC Outlet 2 Phase A Control	(4) I	(4) —
(5) 5	(5) 0.5	(5) BK	(5) 1750	(5) Ground	(5) I	(5) —
(6) 6	(6) 0.75	(6) RD / WH	(6) 10121	(6) AC Outlet 2 Phase B Control	(6) I	(6) —

X81FSA Accessory Power Receptacle - Front Center Seat Rear Cover 110V AC (KI4)



5086387

Connector Part Information
- Harness Type: Front Seat Wiring Harness - Center
- OEM Connector: 6098-8443
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.2 Series(BK)

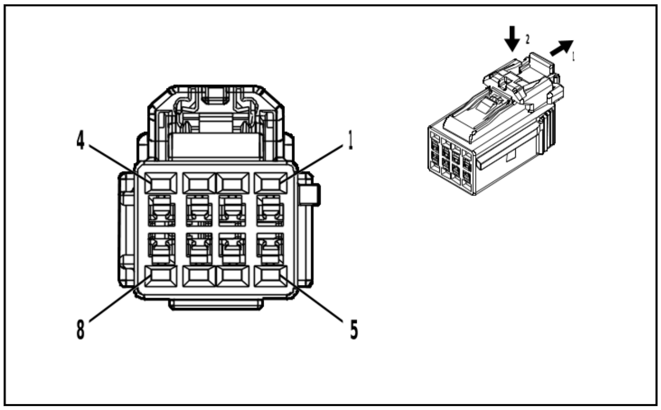
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

X81FSA Accessory Power Receptacle - Front Center Seat Rear Cover 110V AC (KI4)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 10117	(1) AC Outlet Phase A Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.75	(3) VT / RD	(3) 4049	(3) AC Power Outlet Sensor High Reference	(3) I	(3) —
(4) 4	(4) 0.75	(4) BU / BN	(4) 6807	(4) DC/AC Inverter Control	(4) I	(4) —
(5) 5	(5) 0.75	(5) RD	(5) 10118	(5) AC Outlet Phase B Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.75	(7) BK	(7) 1350	(7) Ground	(7) I	(7) —
(8) 8	(8) 0.35	(8) YE	(8) 6817	(8) LED Backlight Dimming Control 1	(8) I	(8) —

X81FSB Accessory Power Receptacle - Front Center Seat Rear Cover 220V AC (KI5)



5086387

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Center
- OEM Connector: 6098-8443
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.2 Series(BK)

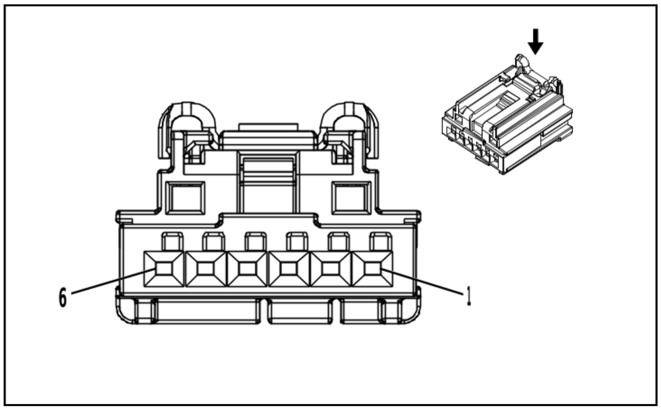
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required

X81FSB Accessory Power Receptacle - Front Center Seat Rear Cover 220V AC (KI5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 10117	(1) AC Outlet Phase A Control	(1) I	(1) —
2	—	—	—	Not Occupied	—	—
(3) 3	(3) 0.75	(3) VT / RD	(3) 4049	(3) AC Power Outlet Sensor High Reference	(3) I	(3) —
(4) 4	(4) 0.75	(4) BU / BN	(4) 6807	(4) DC/AC Inverter Control	(4) I	(4) —
(5) 5	(5) 0.75	(5) RD	(5) 10118	(5) AC Outlet Phase B Control	(5) I	(5) —
6	—	—	—	Not Occupied	—	—
(7) 7	(7) 0.75	(7) BK	(7) 1350	(7) Ground	(7) I	(7) —
(8) 8	(8) 0.35	(8) YE	(8) 6817	(8) LED Backlight Dimming Control 1	(8) I	(8) —

X83B Audio/Video Receptacle X1 (D07 / UBC / UBD)



3960313

Connector Part Information

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

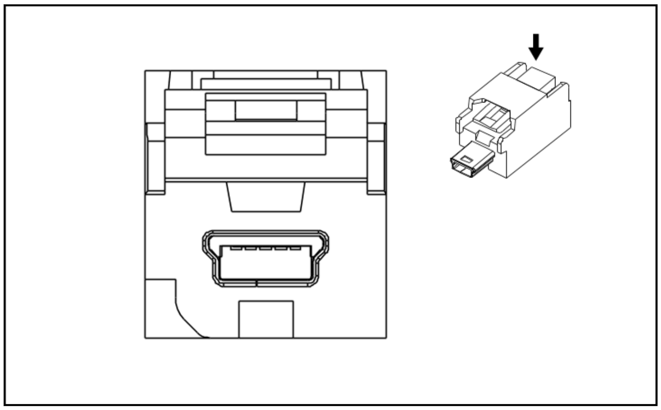
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required
I	Not required	J-35616-64B (L-BU)	No Tool Required

X83B Audio/Video Receptacle X1 (D07 / UBC / UBD)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / VT	(1) 2640	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.35	(2) YE	(2) 6817	(2) LED Backlight Dimming Control 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / WH	(3) 1051	(3) Signal Ground	(3) I	(3) —
4 - 6	—	—	—	Not Occupied	—	—

X83B Audio/Video Receptacle X2 (D07 / UBC / UBD)



3214018

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness USB
- OEM Connector: 13890926
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type(GY)

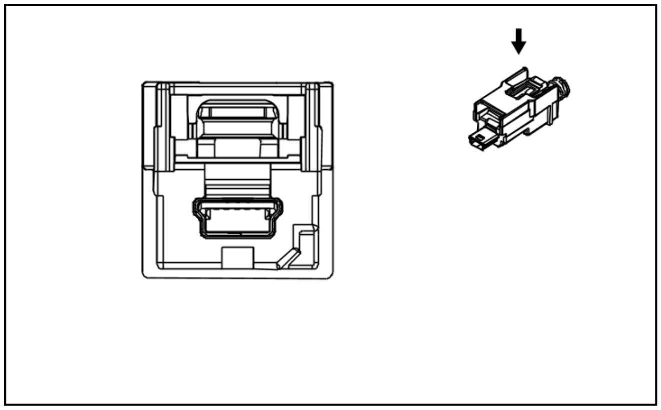
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X83B Audio/Video Receptacle X2 (D07 / UBC / UBD)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	USB	—	USB Serial Data	I	—

X83B Audio/Video Receptacle X3 (D07 / UBC / UBD)



2807425

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness USB
- OEM Connector: 13890925
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type(BK)

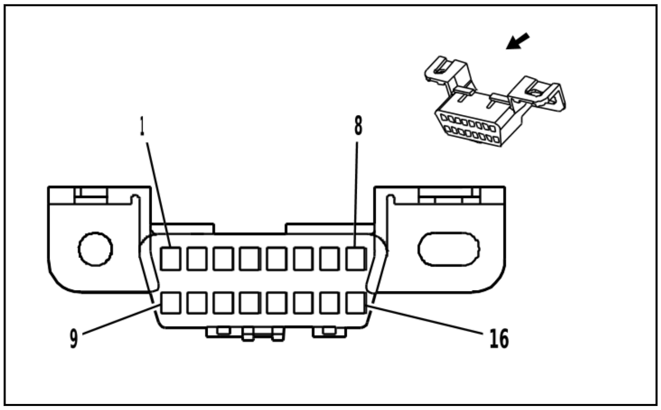
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X83B Audio/Video Receptacle X3 (D07 / UBC / UBD)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	USB	—	USB Serial Data	I	—

X84 Data Link Connector



68793

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 12110250
- Service Connector: 12110250
- Description: 16-Way F 150 Metri-Pack Series(BK)

Terminal Part Information

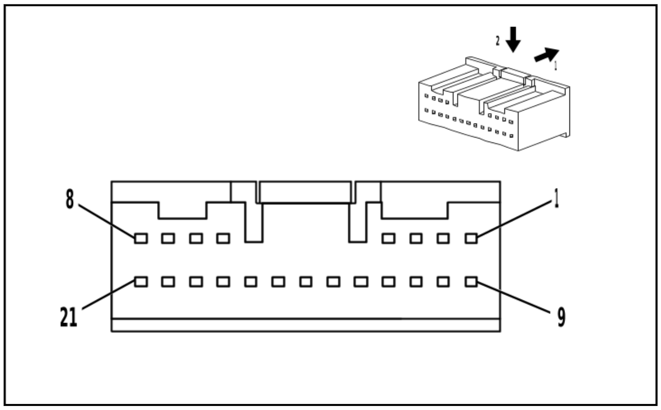
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13580059	J-35616-14 (GN)	J-38125-12A
II	Service by Cable	J-35616-14 (GN)	J-35616-215A

X84 Data Link Connector

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BU / BN	(1) 4983	(1) AUTOSAR CAN Bus [+] 7 Serial Data	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN	(2) 2578	(2) Private Serial Data Presentation CAN Bus [+] 1 Serial Data	(2) I	(2) —
(3) 3	(3) 0.35	(3) BU	(3) 4973	(3) Ethernet Bus 1R [+]	(3) II	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 1050	(4) Ground	(4) I	(4) —
(5) 5	(5) 0.5	(5) BK / WH	(5) 851	(5) Signal Ground	(5) I	(5) —
(6) 6	(6) 0.35	(6) YE	(6) 4981	(6) AUTOSAR CAN Bus [+] 6 Serial Data	(6) I	(6) —
(7) 7	(7) 0.35	(7) VT	(7) 2580	(7) Private Serial Data Presentation CAN Bus [+] 2 Serial Data	(7) I	(7) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(8) 8	(8) 0.35	(8) WH	(8) 7207	(8) Ethernet Bus 1 Enable Signal	(8) I	(8) —
(9) 9	(9) 0.35	(9) WH	(9) 4982	(9) AUTOSAR CAN Bus [-] 7 Serial Data	(9) I	(9) —
(10) 10	(10) 0.35	(10) BN	(10) 2577	(10) Private Serial Data Presentation CAN Bus [-] 1 Serial Data	(10) I	(10) —
(11) 11	(11) 0.35	(11) YE	(11) 4972	(11) Ethernet Bus 1R [-]	(11) II	(11) —
(12) 12	(12) 0.35	(12) WH	(12) 4975	(12) Ethernet Bus 1T [+]	(12) II	(12) —
(13) 13	(13) 0.35	(13) GN	(13) 4974	(13) Ethernet Bus 1T [-]	(13) II	(13) —
(14) 14	(14) 0.35	(14) WH	(14) 4980	(14) AUTOSAR CAN Bus [-] 6 Serial Data	(14) I	(14) —
(15) 15	(15) 0.35	(15) GY	(15) 2579	(15) Private Serial Data Presentation CAN Bus [-] 2 Serial Data	(15) I	(15) —
(16) 16	(16) 0.5	(16) RD / YE	(16) 6540	(16) Battery Positive Voltage	(16) I	(16) —

X85 Steering Wheel Airbag Coil X1 (- UKL)



3960237

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: ATLCPB-21B-2AY
- Service Connector: 13510218
- Description: 21-Way F 0.64 Series(YE)

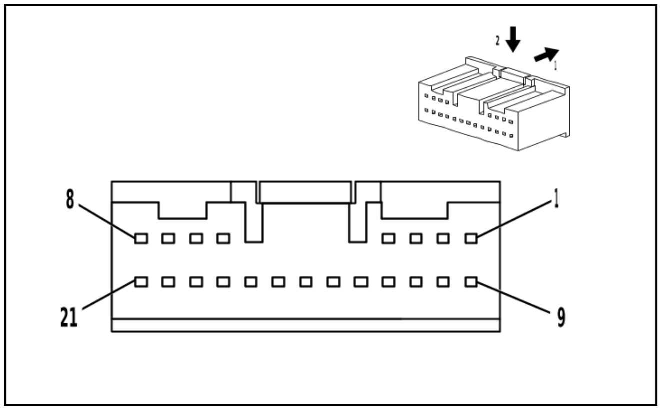
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13575742	J-35616-64B (L-BU)	J-38125-215A
II	13575865	J-35616-64B (L-BU)	J-38125-215A

X85 Steering Wheel Airbag Coil X1 (- UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / WH	(1) 851	(1) Signal Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN / WH	(2) 3287	(2) Horn Switch Signal	(2) I	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) OG / GN	(5) 3023	(5) Steering Wheel Air Bag Stage 2 High Control	(5) II	(5) —
(6) 6	(6) 0.5	(6) WH / OG	(6) 3022	(6) Steering Wheel Air Bag Stage 2 Low Control	(6) II	(6) —
(7) 7	(7) 0.5	(7) BN / OG	(7) 3020	(7) Steering Wheel Air Bag Stage 1 Low Control	(7) II	(7) —
(8) 8	(8) 0.5	(8) OG / VT	(8) 3021	(8) Steering Wheel Air Bag Stage 1 High Control	(8) II	(8) —
(9) 9	(9) 0.5	(9) GN / BK	(9) 3894	(9) Instrument Panel Cluster Control Module LIN Bus 1	(9) I	(9) —
(10) 10	(10) 0.35	(10) GN / BK	(10) 2858	(10) Body Control Module LIN Bus 12	(10) I	(10) —
(11) 11	(11) 0.35	(11) BN / GN	(11) 1884	(11) Cruise Control Set/Coast/Resume/ Accelerate Switch Signal	(11) I	(11) —
(12) 12	(12) 0.5	(12) BK / VT	(12) 1449	(12) Steering Wheel Resistor Ladder Low Reference	(12) I	(12) —
13	—	—	—	Not Occupied	—	—
(14) 14	(14) 0.5	(14) RD / GN	(14) 5140	(14) Battery Positive Voltage	(14) I	(14) —
(15) 15	(15) 0.35	(15) GY / GN	(15) 5737	(15) Distance Sensing Cruise Control Gap Up/ Down Switch Signal	(15) I	(15) —
(16) 16	(16) 0.35	(16) VT / YE	(16) 5526	(16) Tap Up/Tap Down Switch Signal	(16) I	(16) —
(17) 17	(17) 0.35	(17) YE	(17) 6817	(17) LED Backlight Dimming Control 1	(17) I	(17) —
18 - 19	—	—	—	Not Occupied	—	—
(20) 20	(20) 0.5	(20) BK	(20) 1050	(20) Ground	(20) I	(20) —
(21) 21	(21) 0.5	(21) RD / BN	(21) 10040	(21) Battery Positive Voltage	(21) I	(21) —

X85 Steering Wheel Airbag Coil X1 (UKL)



3960237

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: ATLCPB-21B-2AY
- Service Connector: 13510218
- Description: 21-Way F 0.64 Series(YE)

Terminal Part Information

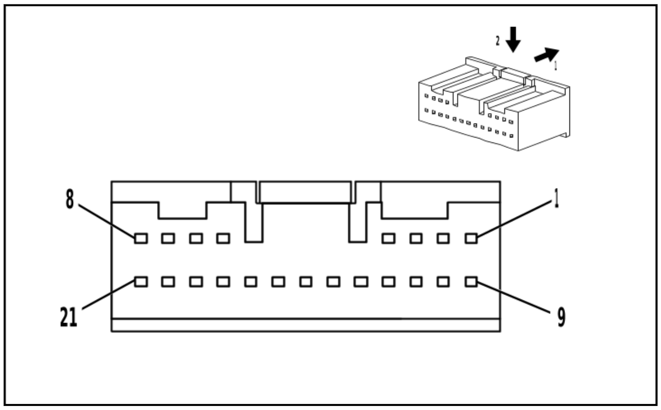
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13575742	J-35616-64B (L-BU)	J-38125-215A
II	13575865	J-35616-64B (L-BU)	J-38125-215A

X85 Steering Wheel Airbag Coil X1 (UKL)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BK / WH	(1) 851	(1) Signal Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN / WH	(2) 3287	(2) Horn Switch Signal	(2) I	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) OG / GN	(5) 3023	(5) Steering Wheel Air Bag Stage 2 High Control	(5) II	(5) —
(6) 6	(6) 0.5	(6) WH / OG	(6) 3022	(6) Steering Wheel Air Bag Stage 2 Low Control	(6) II	(6) —
(7) 7	(7) 0.5	(7) BN / OG	(7) 3020	(7) Steering Wheel Air Bag Stage 1 Low Control	(7) II	(7) —
(8) 8	(8) 0.5	(8) OG / VT	(8) 3021	(8) Steering Wheel Air Bag Stage 1 High Control	(8) II	(8) —
(9) 9	(9) 0.5	(9) GN / BK	(9) 3894	(9) Instrument Panel Cluster Control Module LIN Bus 1	(9) I	(9) —
(10) 10	(10) 0.5 (10) 0.35	(10) GN / GY (10) GN / BK	(10) 4627 (10) 2858	(10) Image Processing Module LIN Bus 1 (10) Body Control Module LIN Bus 12	(10) I (10) I	(10) UKL (10) - UKL
(11) 11	(11) 0.35	(11) BN / GN	(11) 1884	(11) Cruise Control Set/Coast/Resume/ Accelerate Switch Signal	(11) I	(11) —
(12) 12	(12) 0.5	(12) BK / VT	(12) 1449	(12) Steering Wheel Resistor Ladder Low Reference	(12) I	(12) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(13) 13	(13) 0.35	(13) WH / VT	(13) 2246	(13) Driver Illumination Lamp 1 Control	(13) I	(13) —
(14) 14	(14) 0.5	(14) RD / GN	(14) 5140	(14) Battery Positive Voltage	(14) I	(14) —
(15) 15	(15) 0.35	(15) GY / GN	(15) 5737	(15) Distance Sensing Cruise Control Gap Up/ Down Switch Signal	(15) I	(15) —
(16) 16	(16) 0.35	(16) VT / YE	(16) 5526	(16) Tap Up/Tap Down Switch Signal	(16) I	(16) —
(17) 17	(17) 0.35	(17) YE / BU	(17) 2245	(17) Driver Illumination Lamp 2 Control	(17) I	(17) —
(18) 18	(18) 0.35	(18) BU / BN	(18) 7744	(18) Driver Illumination Lamp Ground	(18) I	(18) —
19	—	—	—	Not Occupied	—	—
(20) 20	(20) 0.5	(20) BK	(20) 1050	(20) Ground	(20) I	(20) —
(21) 21	(21) 0.5	(21) RD / BN	(21) 10040	(21) Battery Positive Voltage	(21) I	(21) —

X85 Steering Wheel Airbag Coil X2 (N57 - D07)



3960237

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 13510218
- Service Connector: Service by Harness - See Part Catalog
- Description: 21-Way F 0.64 Series(YE)

Terminal Part Information

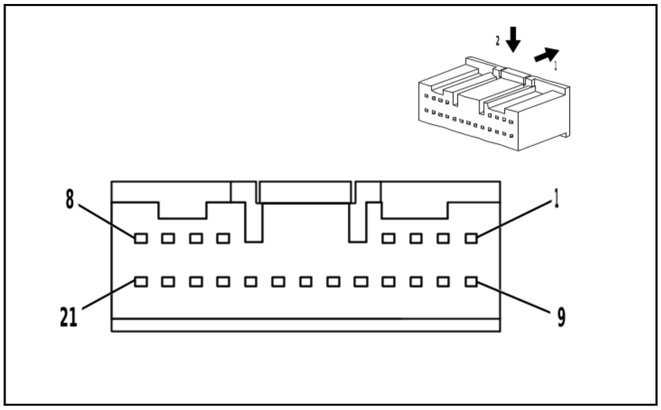
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

X85 Steering Wheel Airbag Coil X2 (N57 - D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK	(1) 6051	(1) Steering Wheel Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) RD	(2) 3287	(2) Horn Switch Signal	(2) I	(2) —
3 - 4	—	—	—	Not Occupied	—	—

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(5) 5	(5) 0.5	(5) GY / OG	(5) 3023	(5) Steering Wheel Air Bag Stage 2 High Control	(5) I	(5) —
(6) 6	(6) 0.5	(6) OG / VT	(6) 3022	(6) Steering Wheel Air Bag Stage 2 Low Control	(6) I	(6) —
(7) 7	(7) 0.5	(7) OG / WH	(7) 3020	(7) Steering Wheel Air Bag Stage 1 Low Control	(7) I	(7) —
(8) 8	(8) 0.5	(8) YE / OG	(8) 3021	(8) Steering Wheel Air Bag Stage 1 High Control	(8) I	(8) —
(9) 9	(9) 0.5	(9) OG	(9) 10040	(9) Battery Positive Voltage	(9) I	(9) —
(10) 10	(10) 0.5	(10) BK	(10) 6050	(10) Steering Wheel Ground	(10) I	(10) —
11 - 14	—	—	—	Not Occupied	—	—
(15) 15	(15) 0.35	(15) VT	(15) 5737	(15) Distance Sensing Cruise Control Gap Up/Down Switch Signal	(15) I	(15) —
(16) 16	(16) 0.35	(16) GN	(16) 5140	(16) Battery Positive Voltage	(16) I	(16) —
17	—	—	—	Not Occupied	—	—
(18) 18	(18) 0.35	(18) BU	(18) 1449	(18) Steering Wheel Resistor Ladder Low Reference	(18) I	(18) —
(19) 19	(19) 0.35	(19) GN / OG	(19) 1884	(19) Cruise Control Set/Coast/Resume/Accelerate Switch Signal	(19) I	(19) —
(20) 20	(20) 0.35	(20) WH	(20) 2858	(20) Body Control Module LIN Bus 12	(20) I	(20) —
(21) 21	(21) 0.35	(21) BK / BU	(21) 3894	(21) Instrument Panel Cluster Control Module LIN Bus 1	(21) I	(21) —

X85 Steering Wheel Airbag Coil X2 (N57 & D07)



3960237

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: ATLCPB-21B-2AY
- Service Connector: Service by Harness - See Part Catalog
- Description: 21-Way F 0.64 Series(YE)

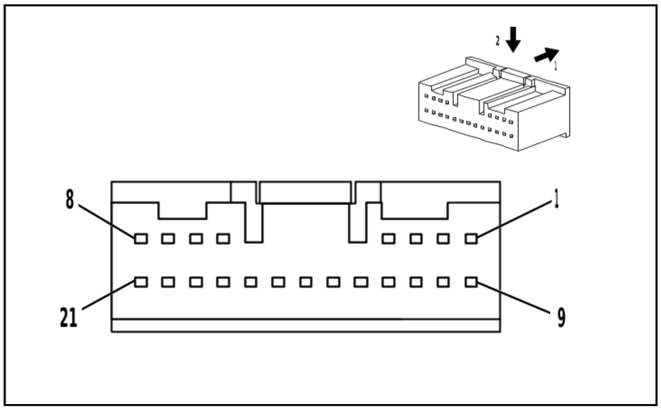
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

X85 Steering Wheel Airbag Coil X2 (N57 & D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK / WH	(1) 6051	(1) Steering Wheel Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN / WH	(2) 3287	(2) Horn Switch Signal	(2) I	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) OG / GN	(5) 3023	(5) Steering Wheel Air Bag Stage 2 High Control	(5) I	(5) —
(6) 6	(6) 0.5	(6) WH / OG	(6) 3022	(6) Steering Wheel Air Bag Stage 2 Low Control	(6) I	(6) —
(7) 7	(7) 0.5	(7) BN / OG	(7) 3020	(7) Steering Wheel Air Bag Stage 1 Low Control	(7) I	(7) —
(8) 8	(8) 0.5	(8) OG / VT	(8) 3021	(8) Steering Wheel Air Bag Stage 1 High Control	(8) I	(8) —
(9) 9	(9) 0.5	(9) RD / GN	(9) 10040	(9) Battery Positive Voltage	(9) I	(9) —
(10) 10	(10) 0.5	(10) BK	(10) 6050	(10) Steering Wheel Ground	(10) I	(10) —
11 - 13	—	—	—	Not Occupied	—	—
(14) 14	(14) 0.35	(14) VT / YE	(14) 5526	(14) Tap Up/Tap Down Switch Signal	(14) I	(14) —
(15) 15	(15) 0.35	(15) GY / GN	(15) 5737	(15) Distance Sensing Cruise Control Gap Up/ Down Switch Signal	(15) I	(15) —
(16) 16	(16) 0.35	(16) RD / GN	(16) 5140	(16) Battery Positive Voltage	(16) I	(16) —
17	—	—	—	Not Occupied	—	—
(18) 18	(18) 0.35	(18) BK / VT	(18) 1449	(18) Steering Wheel Resistor Ladder Low Reference	(18) I	(18) —
(19) 19	(19) 0.35	(19) BN / GN	(19) 1884	(19) Cruise Control Set/Coast/Resume/ Accelerate Switch Signal	(19) I	(19) —
(20) 20	(20) 0.35	(20) GN / BK	(20) 2858	(20) Body Control Module LIN Bus 12	(20) I	(20) —
(21) 21	(21) 0.35	(21) GN / BK	(21) 3894	(21) Instrument Panel Cluster Control Module LIN Bus 1	(21) I	(21) —

X85 Steering Wheel Airbag Coil X2 (NK5)



3960237

Connector Part Information

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 13510218
- Service Connector: Service by Harness - See Part Catalog
- Description: 21-Way F 0.64 Series(YE)

Terminal Part Information

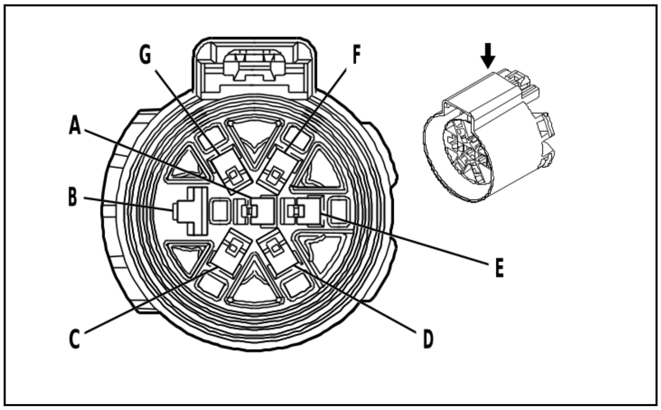
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

X85 Steering Wheel Airbag Coil X2 (NK5)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BK / WH	(1) 6051	(1) Steering Wheel Ground	(1) I	(1) —
(2) 2	(2) 0.35	(2) GN / WH	(2) 3287	(2) Horn Switch Signal	(2) I	(2) —
3 - 4	—	—	—	Not Occupied	—	—
(5) 5	(5) 0.5	(5) OG / GN	(5) 3023	(5) Steering Wheel Air Bag Stage 2 High Control	(5) I	(5) —
(6) 6	(6) 0.5	(6) WH / OG	(6) 3022	(6) Steering Wheel Air Bag Stage 2 Low Control	(6) I	(6) —
(7) 7	(7) 0.5	(7) BN / OG	(7) 3020	(7) Steering Wheel Air Bag Stage 1 Low Control	(7) I	(7) —
(8) 8	(8) 0.5	(8) OG / VT	(8) 3021	(8) Steering Wheel Air Bag Stage 1 High Control	(8) I	(8) —
9 - 12	—	—	—	Not Occupied	—	—
(13) 13	(13) 0.35	(13) PK	(13) 3893	(13) Steering Wheel LED Backlight Dimming Control	(13) I	(13) —
14	—	—	—	Not Occupied	—	—
(15) 15	(15) 0.35	(15) GY / GN	(15) 5737	(15) Distance Sensing Cruise Control Gap Up/ Down Switch Signal	(15) I	(15) —
(16) 16	(16) 0.35	(16) RD / GN	(16) 5140	(16) Battery Positive Voltage	(16) I	(16) —
17	—	—	—	Not Occupied	—	—
(18) 18	(18) 0.35	(18) BK / VT	(18) 1449	(18) Steering Wheel Resistor Ladder Low Reference	(18) I	(18) —

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(19) 19	(19) 0.35	(19) BN / GN	(19) 1884	(19) Cruise Control Set/Coast/Resume/ Accelerate Switch Signal	(19) I	(19) —
20 - 21	—	—	—	Not Occupied	—	—

X88B Tow Vehicle Electrical Receptacle X1



2056936

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 13857223
- Service Connector: 86816072
- Description: 7-Way F 280, 630 Metri-Pack Series, Sealed(BK)

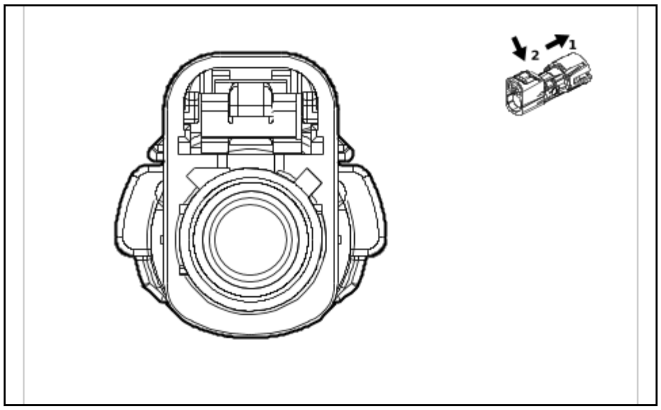
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-42 (RD)	No Tool Required
II	Not required	J-35616-4A (PU)	No Tool Required

X88B Tow Vehicle Electrical Receptacle X1

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
A	1 1	GY GY	5189 1624	Trailer Backup Lamp Control Trailer Backup Lamp Control	II II	UET Z82- UET
B	5	WH	22	Trailer Ground	I	—
C	2.5	BU	47	Trailer Auxiliary Control	II	—
D	1	GN	1619	Right Rear Trailer Stop/Turn Lamp Control	II	—
E	4	OG	3940	Battery Positive Voltage	II	—
F	1 1.5	BN BN	2109 2109	Trailer Park Lamp Control Trailer Park Lamp Control	II II	UET Z82- UET
G	1	YE	1618	Left Rear Trailer Stop/Turn Lamp Control	II	—

X88B Tow Vehicle Electrical Receptacle X2



5758030

Connector Part Information

- Harness Type: Chassis Wiring Harness COAX
- OEM Connector: 35187032
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BK)

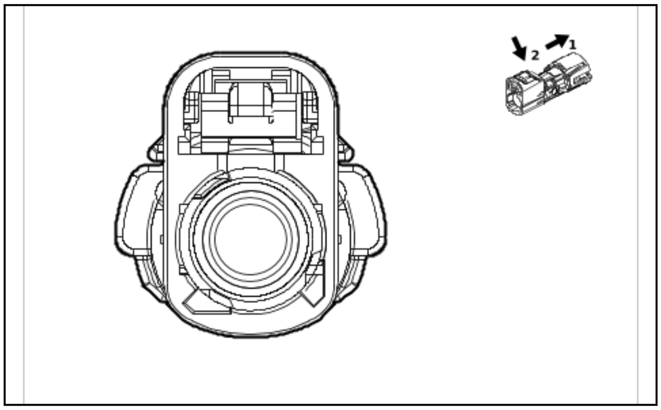
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X88B Tow Vehicle Electrical Receptacle X2

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	Trailer Rear Vision Camera Coaxial Video Signal	I	—

X88B Tow Vehicle Electrical Receptacle X3



5757455

Connector Part Information

- Harness Type: Chassis Wiring Harness COAX
- OEM Connector: 35187043
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(OG)

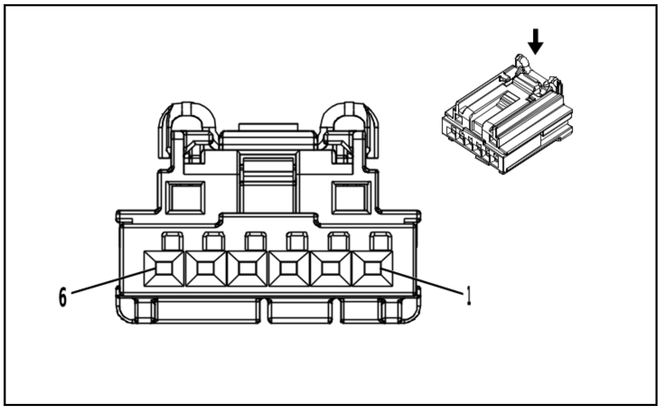
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X88B Tow Vehicle Electrical Receptacle X3

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	Coax Cable	—	Trailer 2 Rear Vision Camera Coaxial Video Signal	I	—

X92CD Dual Charge Only Receptacle - Floor Console Rear (D07 & UBI)



3960313

Connector Part Information

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

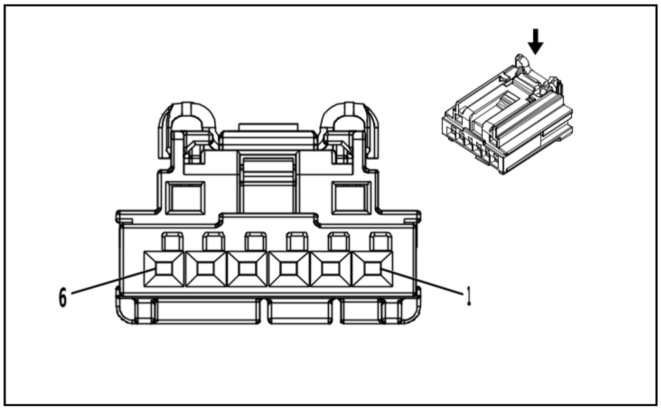
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

X92CD Dual Charge Only Receptacle - Floor Console Rear (D07 & UBI)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) VT	(1) 4701	(1) Retained Accessory Power Control	(1) I	(1) —
(2) 2	(2) 0.35	(2) YE	(2) 6817	(2) LED Backlight Dimming Control 1	(2) I	(2) —
(3) 3	(3) 0.35	(3) BK	(3) 1350	(3) Ground	(3) I	(3) —
4 - 6	—	—	—	Not Occupied	—	—

X92CF USB 2 Port Receptacle - Floor Console Front X1 (UBD)



3960313

Connector Part Information

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

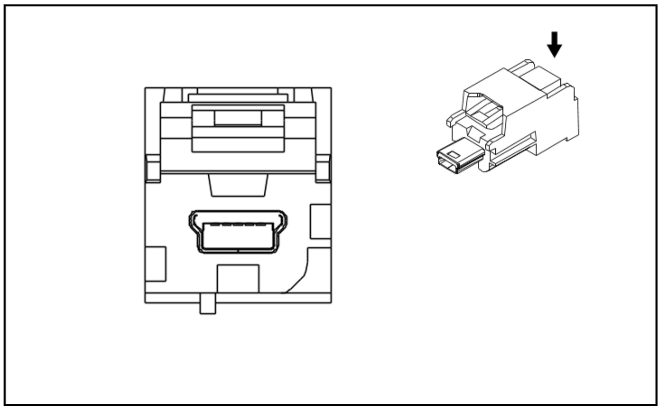
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

X92CF USB 2 Port Receptacle - Floor Console Front X1 (UBD)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / VT	(1) 2640	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE	(2) 6817	(2) LED Backlight Dimming Control 1	(2) I	(2) —
(3) 3	(3) 0.5	(3) BK / WH	(3) 1051	(3) Signal Ground	(3) I	(3) —
4 - 6	—	—	—	Not Occupied	—	—

X92CF USB 2 Port Receptacle - Floor Console Front X2 (UBD)



3028807

Connector Part Information

- Harness Type: Front Floor Console Wiring Harness USB
- OEM Connector: 13921002
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type(GY)

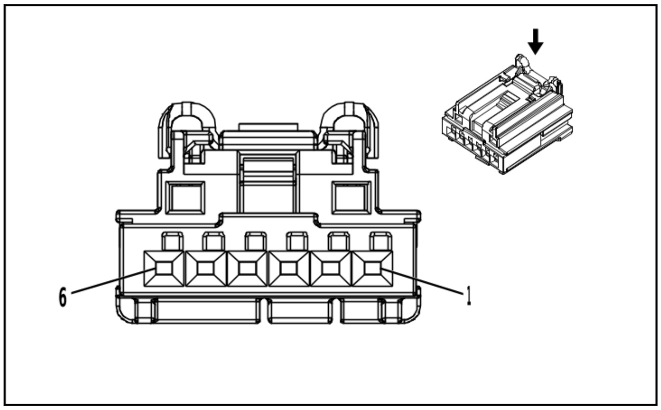
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X92CF USB 2 Port Receptacle - Floor Console Front X2 (UBD)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	USB	—	USB Serial Data	I	—

X92FSR Dual Charge Only Receptacle - Front Center Seat Rear Cover (AZ3 & UBI)



3960313

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Center
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series(BK)

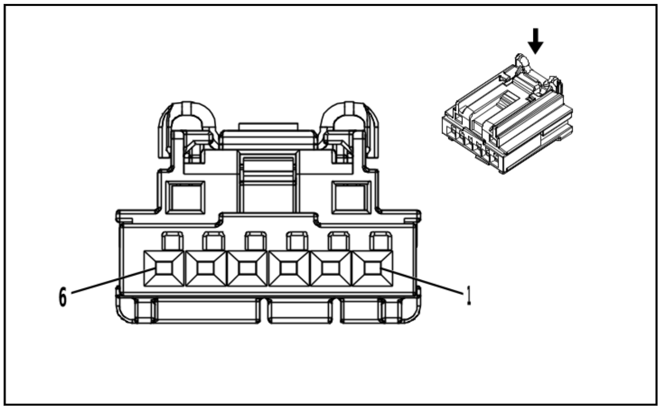
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

X92FSR Dual Charge Only Receptacle - Front Center Seat Rear Cover (AZ3 & UBI)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) VT	(1) 4701	(1) Retained Accessory Power Control	(1) I	(1) —
(2) 2	(2) 0.35	(2) YE	(2) 6817	(2) LED Backlight Dimming Control 1	(2) I	(2) —
(3) 3	(3) 0.35	(3) BK	(3) 1451	(3) Signal Ground	(3) I	(3) —
4 - 6	—	—	—	Not Occupied	—	—

X92IP USB 2 Port Receptacle - Instrument Panel X1 (- D07)



3960313

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2035363-4
- Service Connector: 19332786
- Description: 6-Way F 0.64 Generation Y Series(BK)

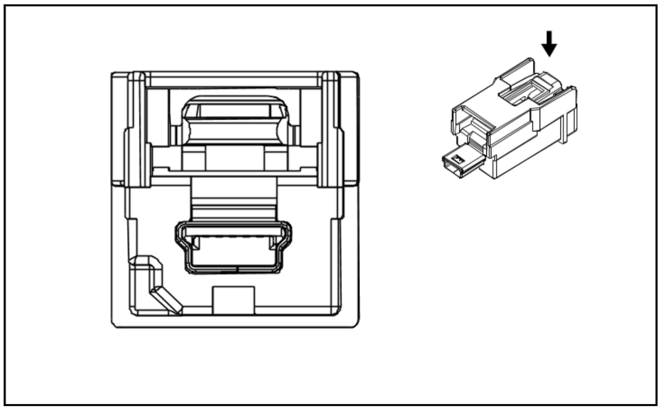
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-64B (L-BU)	No Tool Required

X92IP USB 2 Port Receptacle - Instrument Panel X1 (- D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / VT	(1) 2640	(1) Battery Positive Voltage	(1) I	(1) —
(2) 2	(2) 0.5	(2) YE	(2) 6817	(2) LED Backlight Dimming Control 1	(2) I	(2) —
(3) 3	(3) 0.75	(3) BK / WH	(3) 1051	(3) Signal Ground	(3) I	(3) —
4 - 6	—	—	—	Not Occupied	—	—

X92IP USB 2 Port Receptacle - Instrument Panel X2 (- D07)



2807491

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness USB
- OEM Connector: 111014-9001
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type(GY)

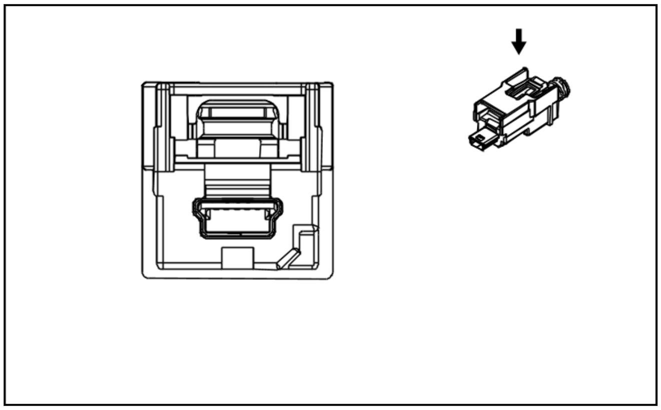
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X92IP USB 2 Port Receptacle - Instrument Panel X2 (- D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	USB	—	USB Serial Data	I	—

X92IP USB 2 Port Receptacle - Instrument Panel X3 (- D07)



2807425

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness USB
- OEM Connector: 13576672
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type(BK)

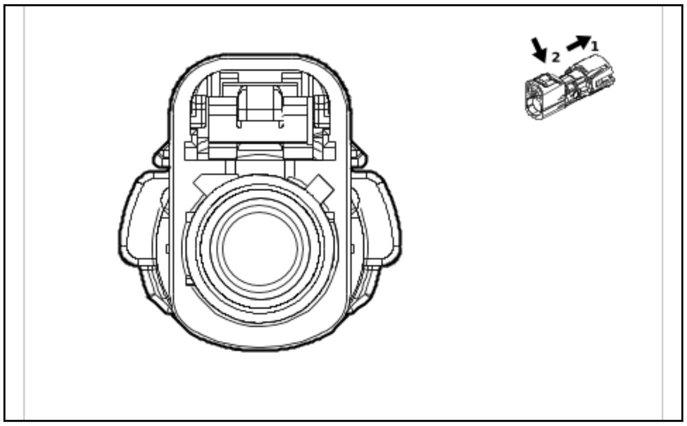
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X92IP USB 2 Port Receptacle - Instrument Panel X3 (- D07)

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
—	—	USB	—	USB Serial Data	I	—

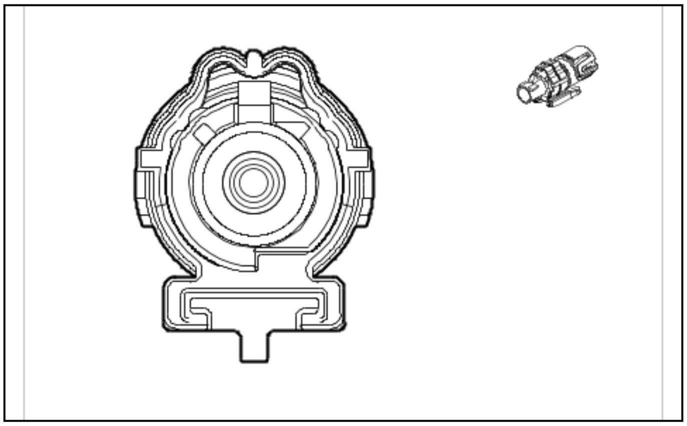
X122 Front View Camera Switch Wiring Harness to Body Wiring Harness



5758030

Connector Part Information

- Harness Type: Front View Camera Switch Wiring Harness COAX
- OEM Connector: 35187032
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BK)



5758019

Connector Part Information

- Harness Type: Body Wiring Harness COAX
- OEM Connector: 33338239
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type, Sealed(BK)

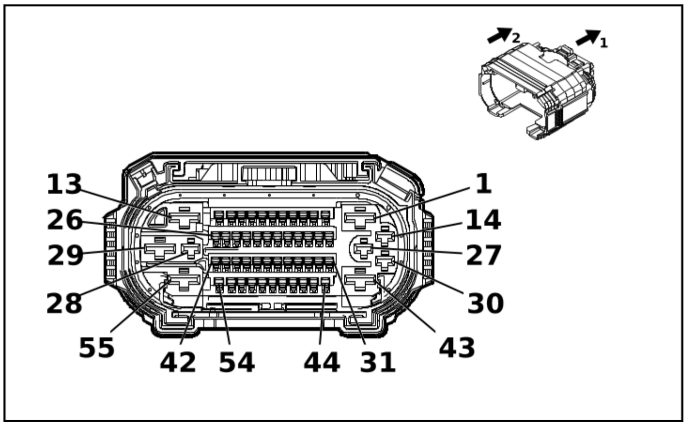
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X122 Front View Camera Switch Wiring Harness to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	Coax Cable	—	I	—	Front Vision Camera 1 Coaxial Video Signal	—	—	Coax Cable	—	I	—

X125 Engine Wiring Harness to Body Wiring Harness



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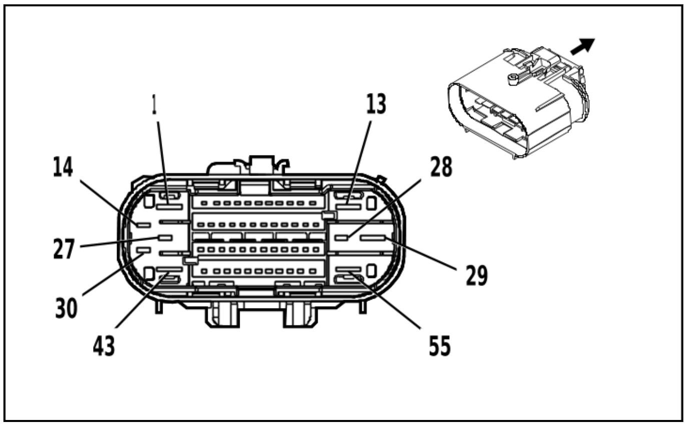


4994369

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 35580811
- Service Connector: 19371184
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(GY)

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 35588062
- Service Connector: 84727363
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(GY)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19332901	J-35616-35 (VT)	J-38125-212
II	19370818	J-35616-12 (BU)	J-38125-553
III	19371217	J-35616-12 (BU)	J-38125-553
IV	84634921	J-35616-42 (RD)	J-38125-212
V	84847992	J-35616-32 (OG)	J-38125-36
VI	84867140	J-35616-13 (BU)	J-38125-553
VII	84867141	J-35616-13 (BU)	J-38125-215A
VIII	84992391	J-35616-5 (PU)	J-38125-36

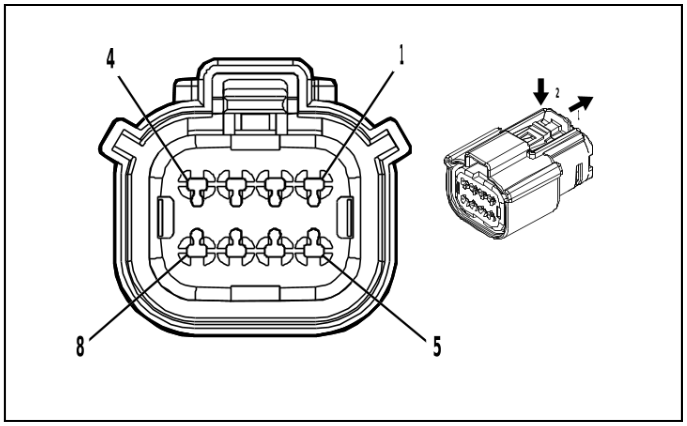
X125 Engine Wiring Harness to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 3	(1) BK / WH	(1) 251	(1) IV	(1) —	(1) Signal Ground	(1) 1	(1) 3	(1) BK / WH	(1) 251	(1) V	(1) —
(2) 2	(2) 1.5	(2) RD / GN	(2) 1840	(2) III	(2) —	(2) Battery Positive Voltage	(2) 2	(2) 1.5	(2) RD / GN	(2) 1840	(2) VII	(2) —
3	—	—	—	—	—	Not Occupied	3	—	—	—	—	—
(4) 4	(4) 0.5	(4) BU / GY	(4) 4054	(4) II	(4) —	(4) Private Serial Data Powertrain CAN Bus [-] Serial Data	(4) 4	(4) 0.5	(4) BU / GY	(4) 4054	(4) VI	(4) —
(5) 5	(5) 0.5	(5) WH	(5) 4055	(5) II	(5) —	(5) Private Serial Data Powertrain CAN Bus [+] Serial Data	(5) 5	(5) 0.5	(5) WH	(5) 4055	(5) VI	(5) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(6) 6	(6) 0.5	(6) WH	(6) 4976	(6) II	(6) —	(6) AUTOSAR CAN Bus [-] 3 Serial Data	(6) 6	(6) 0.5	(6) WH	(6) 4976	(6) VI	(6) —
(7) 7	(7) 0.5	(7) BU / BK	(7) 4977	(7) II	(7) —	(7) AUTOSAR CAN Bus [+] 3 Serial Data	(7) 7	(7) 0.5	(7) BU / BK	(7) 4977	(7) VI	(7) —
(8) 8	(8) 0.5	(8) WH / RD	(8) 1164	(8) II	(8) —	(8) Accelerator Pedal Position 5V Reference 1	(8) 8	(8) 0.35	(8) WH / RD	(8) 1164	(8) VI	(8) —
(9) 9	(9) 0.5	(9) BK / BU	(9) 1271	(9) II	(9) —	(9) Accelerator Pedal Position Low Reference 1	(9) 9	(9) 0.35	(9) BK / BU	(9) 1271	(9) VI	(9) —
(10) 10	(10) 0.5	(10) YE / WH	(10) 1161	(10) II	(10) —	(10) Accelerator Pedal Position Signal 1	(10) 10	(10) 0.35	(10) YE / WH	(10) 1161	(10) VI	(10) —
(11) 11	(11) 0.5	(11) GN / WH	(11) 1162	(11) II	(11) —	(11) Accelerator Pedal Position Signal 2	(11) 11	(11) 0.35	(11) GN / WH	(11) 1162	(11) VI	(11) —
12 - 14	—	—	—	—	—	Not Occupied	12 - 14	—	—	—	—	—
(15) 15	(15) 0.5	(15) BN / RD	(15) 1274	(15) II	(15) —	(15) Accelerator Pedal Position 5V Reference 2	(15) 15	(15) 0.35	(15) BN / RD	(15) 1274	(15) VI	(15) —
(16) 16	(16) 0.5	(16) YE	(16) 4063	(16) II	(16) —	(16) Hood Status A Signal	(16) 16	(16) 0.5	(16) YE	(16) 4063	(16) VI	(16) —
(17) 17	(17) 0.5	(17) VT / GN	(17) 4320	(17) II	(17) —	(17) Powertrain Sensor Bus Enable	(17) 17	(17) 0.5	(17) VT / GN	(17) 4320	(17) VI	(17) —
(18) 18	(18) 0.5	(18) WH / RD	(18) 480	(18) II	(18) —	(18) Engine Control Vehicle Sensors 5 Volt Reference 1	(18) 18	(18) 0.35	(18) WH / RD	(18) 480	(18) VI	(18) —
(19) 19	(19) 0.5	(19) GN / BN	(19) 507	(19) II	(19) —	(19) Wait To Start Indicator Control	(19) 19	(19) 0.35	(19) GN / BN	(19) 507	(19) VI	(19) —
(20) 20	(20) 0.5	(20) WH / GN	(20) 5380	(20) II	(20) —	(20) Brake Position Sensor Signal	(20) 20	(20) 0.35	(20) WH / GN	(20) 5380	(20) VI	(20) —
21	—	—	—	—	—	Not Occupied	21	—	—	—	—	—
(22) 22	(22) 0.5	(22) BK / VT	(22) 1272	(22) II	(22) —	(22) Accelerator Pedal Position Low Reference 2	(22) 22	(22) 0.35	(22) BK / VT	(22) 1272	(22) VI	(22) —
(23) 23	(23) 0.5	(23) BK / GY	(23) 626	(23) II	(23) —	(23) Engine Control Vehicle Sensors Low Reference 1	(23) 23	(23) 0.5	(23) BK / GY	(23) 626	(23) VI	(23) —
(24) 24	(24) 0.5	(24) WH / BU	(24) 6311	(24) II	(24) —	(24) Cruise/ETC/TCC Brake Signal	(24) 24	(24) 0.5	(24) WH / BU	(24) 6311	(24) VI	(24) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(25) 25	(25) 0.5	(25) BU / GY	(25) 636	(25) II	(25) —	(25) Ambient Air Temperature Sensor Signal	(25) 25	(25) 0.5	(25) BU / GY	(25) 636	(25) VI	(25) —
(26) 26	(26) 0.75	(26) BU / BN	(26) 7573	(26) II	(26) —	(26) Air Conditioning Compressor Solenoid Valve Control	(26) 26	(26) 0.5	(26) BU / BN	(26) 7573	(26) VI	(26) —
(27) 27	(27) 0.75	(27) BU / YE	(27) 7574	(27) I	(27) —	(27) Air Conditioning Compressor Solenoid Valve Control	(27) 27	(27) 0.5	(27) BU / YE	(27) 7574	(27) VIII	(27) —
(28) 28	(28) 0.5	(28) VT / GN	(28) 4320	(28) I	(28) —	(28) Powertrain Sensor Bus Enable	(28) 28	(28) 0.5	(28) VT / GN	(28) 4320	(28) VIII	(28) —
29 - 30	—	—	—	—	—	Not Occupied	29 - 30	—	—	—	—	—
(31) 31	(31) 0.5	(31) WH	(31) 4978	(31) II	(31) —	(31) AUTOSAR CAN Bus [-] 2 Serial Data	(31) 31	(31) 0.5	(31) WH	(31) 4978	(31) VI	(31) —
(32) 32	(32) 0.5	(32) BU / YE	(32) 4979	(32) II	(32) —	(32) AUTOSAR CAN Bus [+] 2 Serial Data	(32) 32	(32) 0.5	(32) BU / YE	(32) 4979	(32) VI	(32) —
(33) 33	(33) 0.5	(33) YE / BK	(33) 625	(33) II	(33) —	(33) Starter Enable Relay Control	(33) 33	(33) 0.5	(33) YE / BK	(33) 625	(33) VI	(33) —
34 - 36	—	—	—	—	—	Not Occupied	34 - 36	—	—	—	—	—
(37) 37	(37) 0.5	(37) GN / GY	(37) 465	(37) II	(37) —	(37) Fuel Pump Primary Relay Control	(37) 37	(37) 0.5	(37) GN / GY	(37) 465	(37) VI	(37) —
38	—	—	—	—	—	Not Occupied	38	—	—	—	—	—
(39) 39	(39) 0.5	(39) BU / WH	(39) 4306	(39) II	(39) —	(39) Exhaust Flow Control Valve 1 - Cylinder Deactivation Feedback Signal	(39) 39	(39) 0.5	(39) BU / WH	(39) 4306	(39) VI	(39) —
(40) 40	(40) 0.5	(40) BN / GN	(40) 4305	(40) II	(40) —	(40) Exhaust Flow Control Valve 1	(40) 40	(40) 0.5	(40) BN / GN	(40) 4305	(40) VI	(40) —
41 - 55	—	—	—	—	—	Not Occupied	41 - 55	—	—	—	—	—

X128 Engine Wiring Harness to Camshaft Position Sensor Wire (L84 / L87)



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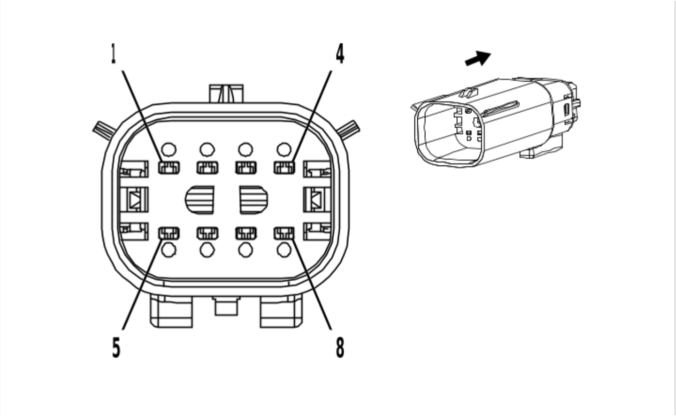


2667653

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 33472-4877
- Service Connector: 84928314
- Description: 8-Way F 1.5 MX Series, Sealed(BK)

Connector Part Information
- Harness Type: Camshaft Position Sensor Wire
- OEM Connector: 33482-4827
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way M 1.5 MX Series, Sealed(BK)

Terminal Part Information

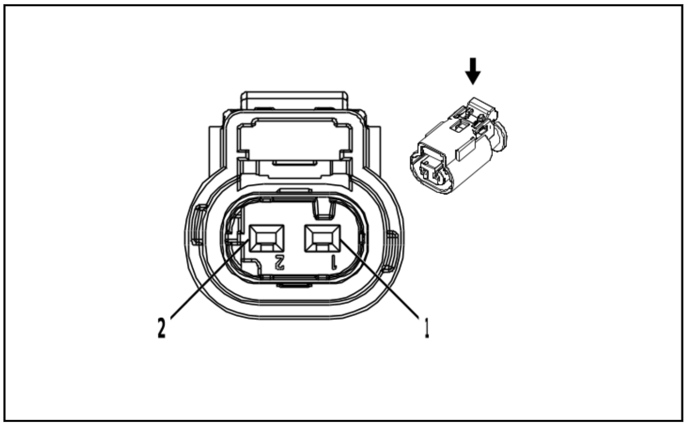
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-3 (GY)	No Tool Required

X128 Engine Wiring Harness to Camshaft Position Sensor Wire (L84 / L87)

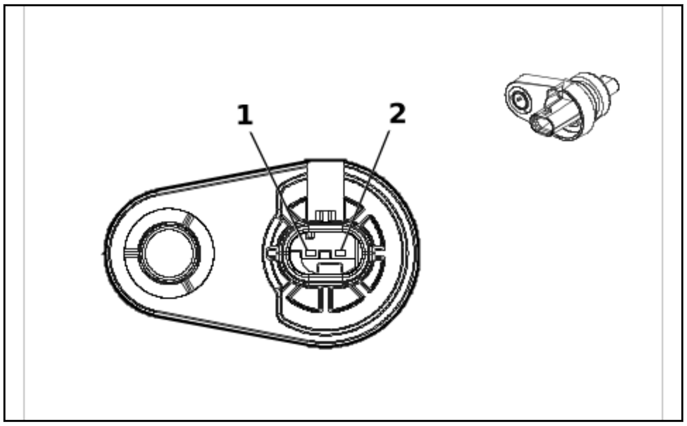
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BU	(1) 5300	(1) I	(1) —	(1) Intake Camshaft Position Sensor 1 Voltage Reference	(1) 1	(1) 0.5	(1) GY / BU	(1) 5300	(1) II	(1) —
(2) 2	(2) 0.5	(2) BK / GN	(2) 5301	(2) I	(2) —	(2) Intake Camshaft Position Sensor Low Reference 1	(2) 2	(2) 0.5	(2) BK / GN	(2) 5301	(2) II	(2) —
(3) 3	(3) 0.5	(3) YE / VT	(3) 5275	(3) I	(3) —	(3) Intake Camshaft Position Sensor 1	(3) 3	(3) 0.5	(3) YE / VT	(3) 5275	(3) II	(3) —
(4) 4	(4) 0.5	(4) BU	(4) 179	(4) I	(4) L87	(4) Engine Oil Pump Control	(4) 4	(4) 0.5	(4) BU	(4) 179	(4) II	(4) L87
(5) 5	(5) 0.5	(5) VT / BN	(5) 5284	(5) I	(5) —	(5) Intake Camshaft Position Actuator Solenoid Valve 1	(5) 5	(5) 0.5	(5) VT / BN	(5) 5284	(5) II	(5) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(6) 6	(6) 0.5	(6) BK / BN	(6) 6753	(6) I	(6) —	(6) Camshaft Position Actuator Solenoid Valve 1 Low Reference	(6) 6	(6) 0.5	(6) BK / BN	(6) 6753	(6) II	(6) —
(7) 7	(7) 0.5	(7) VT / BU	(7) 5293	(7) I	(7) L87	(7) Powertrain Main Relay Fused Supply Voltage 4	(7) 7	(7) 0.5	(7) VT / BU	(7) 5293	(7) II	(7) L87
8	—	—	—	—	—	Not Occupied	8	—	—	—	—	—

X129 Engine Wiring Harness to Oil Pump Flow Control Solenoid Valve Harness (L3B)



2717066



6472905

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10010337
- Service Connector: 13587326
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)

Connector Part Information
- Harness Type: Oil Pump Flow Control Solenoid Valve Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M (BK)

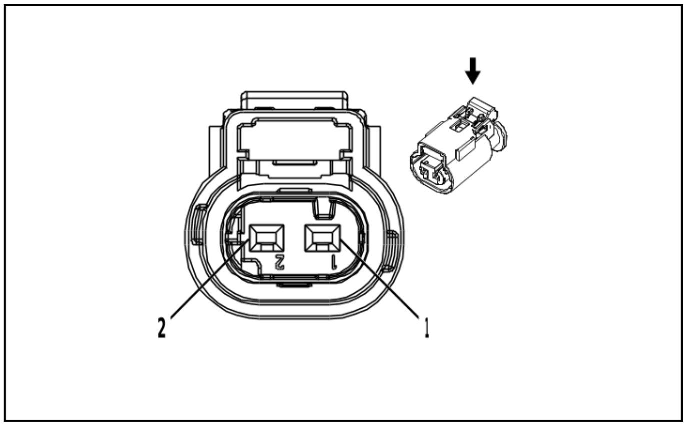
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required
II	Not required	No Tool Required	No Tool Required

X129 Engine Wiring Harness to Oil Pump Flow Control Solenoid Valve Harness (L3B)

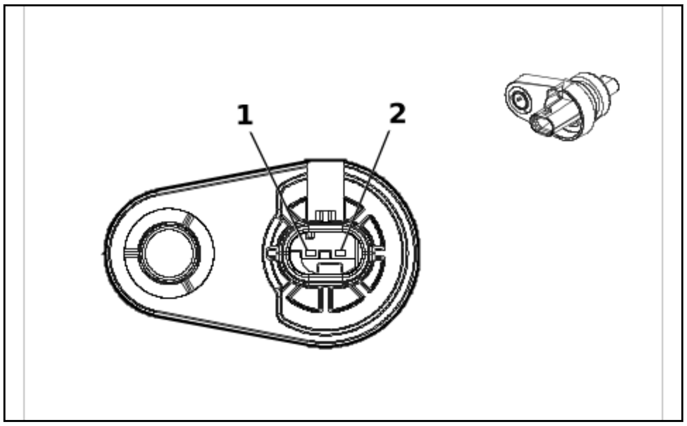
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BN	(1) 106	(1) I	(1) —	(1) Oil Pump Motor Control	(1) 1	(1) 0.5	(1) YE / BN	(1) 106	(1) II	(1) —
(2) 2	(2) 0.5	(2) BU	(2) 179	(2) I	(2) —	(2) Engine Oil Pump Control	(2) 2	(2) 0.5	(2) BU	(2) 179	(2) II	(2) —

X129 Engine Wiring Harness to Oil Pump Flow Control Solenoid Valve Harness (LZ0)



2717066

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10010337
- Service Connector: 13587326
- Description: 2-Way F 1.2 Multilock Series, Sealed(BK)



6472905

Connector Part Information
- Harness Type: Oil Pump Flow Control Solenoid Valve Harness
- OEM Connector: 12698857
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 Multilock Series, Sealed(BK)

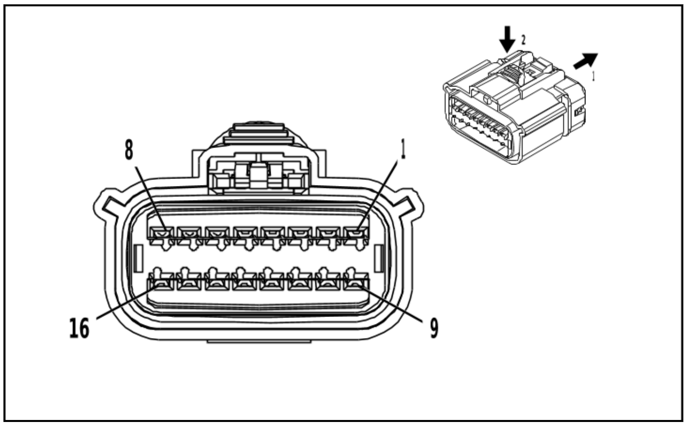
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required
II	Not required	J-35616-13 (BU)	No Tool Required

X129 Engine Wiring Harness to Oil Pump Flow Control Solenoid Valve Harness (LZ0)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) YE / BN	(1) 106	(1) I	(1) —	(1) Oil Pump Motor Control	(1) 1	(1) 0.5	(1) YE / BN	(1) 106	(1) II	(1) —
(2) 2	(2) 0.5	(2) BU	(2) 179	(2) I	(2) —	(2) Engine Oil Pump Control	(2) 2	(2) 0.5	(2) BU	(2) 179	(2) II	(2) —

X150 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness - Double Cab / Crew Cab



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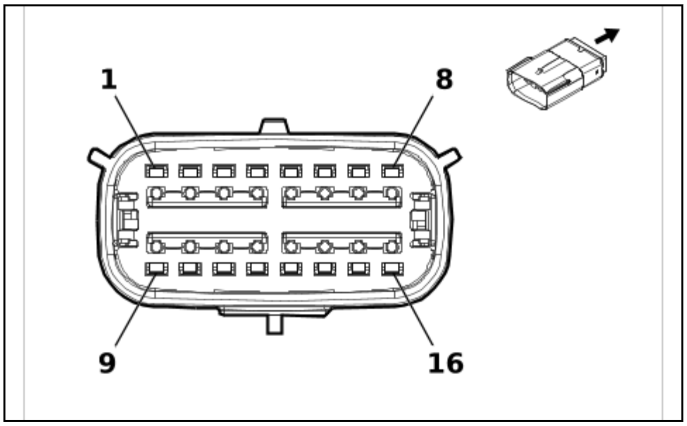


2748079

Connector Part Information

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 35502379
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 1.5 OCS Series, Sealed(BK)

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 35589680
- Service Connector: 26314575
- Description: 16-Way M 1.5 OCS Series, Sealed(BK)

Terminal Part Information

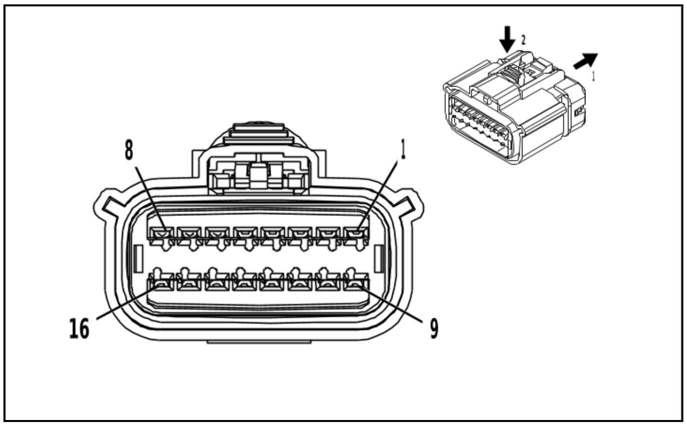
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	19352418	J-35616-3 (GY)	J-38125-215A

X150 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness - Double Cab / Crew Cab

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / GN	(1) 3140	(1) I	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 0.5	(1) RD / GN	(1) 3140	(1) II	(1) —
2	—	—	—	—	—	Not Occupied	2	—	—	—	—	—
(3) 3	(3) 0.5	(3) BK / BU	(3) 5214	(3) I	(3) —	(3) Front Parking Assist Sensor Low Reference	(3) 3	(3) 0.5	(3) BK / BU	(3) 5214	(3) II	(3) —
(4) 4	(4) 0.5	(4) VT / WH	(4) 5215	(4) I	(4) —	(4) Left Front Outer Parking Assist Sensor	(4) 4	(4) 0.5	(4) VT / WH	(4) 5215	(4) II	(4) —
(5) 5	(5) 0.5	(5) YE / GY	(5) 5216	(5) I	(5) —	(5) Left Front Middle Parking Assist Sensor	(5) 5	(5) 0.5	(5) YE / GY	(5) 5216	(5) II	(5) —
(6) 6	(6) 0.5	(6) WH / GY	(6) 5217	(6) I	(6) —	(6) Right Front Outer Parking Assist Sensor	(6) 6	(6) 0.5	(6) WH / GY	(6) 5217	(6) II	(6) —
(7) 7	(7) 0.5	(7) VT / GY	(7) 5218	(7) I	(7) —	(7) Right Front Middle Parking Assist Sensor	(7) 7	(7) 0.5	(7) VT / GY	(7) 5218	(7) II	(7) —
(8) 8	(8) 0.5	(8) BK	(8) 650	(8) I	(8) —	(8) Ground	(8) 8	(8) 0.5	(8) BK	(8) 650	(8) II	(8) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(9) 9	(9) 0.5	(9) BK / WH	(9) 651	(9) I	(9) —	(9) Signal Ground	(9) 9	(9) 0.5	(9) BK / WH	(9) 651	(9) II	(9) —
(10) 10	(10) 0.5	(10) BN / GY	(10) 5061	(10) I	(10) —	(10) Left Front Fog Lamp Control	(10) 10	(10) 0.5	(10) BN / GY	(10) 5061	(10) II	(10) —
(11) 11	(11) 0.5	(11) BN	(11) 6581	(11) I	(11) —	(11) Front Parking Assist Display Control	(11) 11	(11) 0.5	(11) BN	(11) 6581	(11) II	(11) —
12 - 14	—	—	—	—	—	Not Occupied	12 - 14	—	—	—	—	—
(15) 15	(15) 0.5	(15) WH / GY	(15) 4104	(15) I	(15) —	(15) AUTOSAR CAN Bus [-] 8 Serial Data	(15) 15	(15) 0.5	(15) WH / GY	(15) 4104	(15) II	(15) —
(16) 16	(16) 0.5	(16) BU / GY	(16) 4105	(16) I	(16) —	(16) AUTOSAR CAN Bus [+] 8 Serial Data	(16) 16	(16) 0.5	(16) BU / GY	(16) 4105	(16) II	(16) —

X150 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness - Regular Cab



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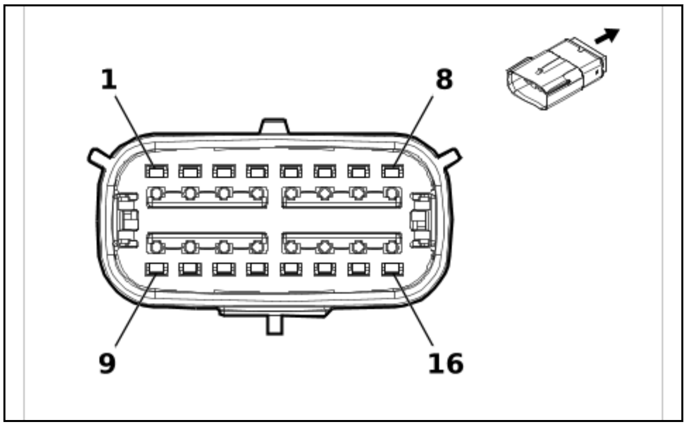


2748079

Connector Part Information
- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 13590423
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 1.5 OCS Series, Sealed(BK)

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 35589680
- Service Connector: 26314575
- Description: 16-Way M 1.5 OCS Series, Sealed(BK)

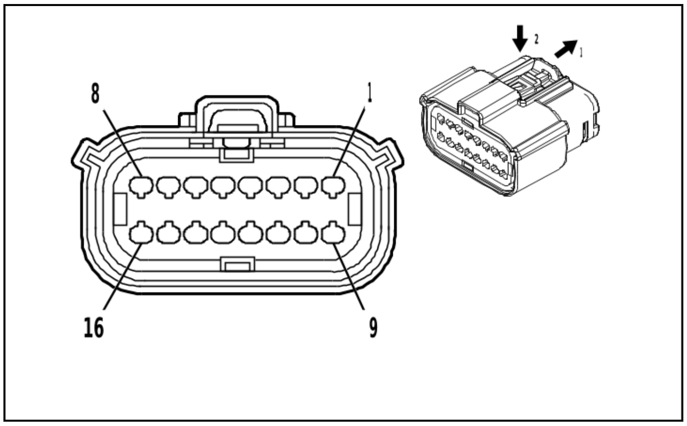
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	19352418	J-35616-3 (GY)	J-38125-215A

X150 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness - Regular Cab

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
1 - 2	—	—	—	—	—	Not Occupied	1 - 2	—	—	—	—	—
(3) 3	(3) 0.5	(3) BK / BU	(3) 5214	(3) I	(3) —	(3) Front Parking Assist Sensor Low Reference	(3) 3	(3) 0.5	(3) BK / BU	(3) 5214	(3) II	(3) —
(4) 4	(4) 0.5	(4) VT / WH	(4) 5215	(4) I	(4) —	(4) Left Front Outer Parking Assist Sensor	(4) 4	(4) 0.5	(4) VT / WH	(4) 5215	(4) II	(4) —
(5) 5	(5) 0.5	(5) YE / GY	(5) 5216	(5) I	(5) —	(5) Left Front Middle Parking Assist Sensor	(5) 5	(5) 0.5	(5) YE / GY	(5) 5216	(5) II	(5) —
(6) 6	(6) 0.5	(6) WH / GY	(6) 5217	(6) I	(6) —	(6) Right Front Outer Parking Assist Sensor	(6) 6	(6) 0.5	(6) WH / GY	(6) 5217	(6) II	(6) —
(7) 7	(7) 0.5	(7) VT / GY	(7) 5218	(7) I	(7) —	(7) Right Front Middle Parking Assist Sensor	(7) 7	(7) 0.5	(7) VT / GY	(7) 5218	(7) II	(7) —
(8) 8	(8) 0.5	(8) BK	(8) 650	(8) I	(8) —	(8) Ground	(8) 8	(8) 0.5	(8) BK	(8) 650	(8) II	(8) —
9	—	—	—	—	—	Not Occupied	9	—	—	—	—	—
(10) 10	(10) 0.5	(10) BN / GY	(10) 5061	(10) I	(10) —	(10) Left Front Fog Lamp Control	(10) 10	(10) 0.5	(10) BN / GY	(10) 5061	(10) II	(10) —
(11) 11	(11) 0.5	(11) BN	(11) 6581	(11) I	(11) —	(11) Front Parking Assist Display Control	(11) 11	(11) 0.5	(11) BN	(11) 6581	(11) II	(11) —
12 - 16	—	—	—	—	—	Not Occupied	12 - 16	—	—	—	—	—

X160 Engine Wiring Harness to Fuel Injector Wiring Harness (L3B)



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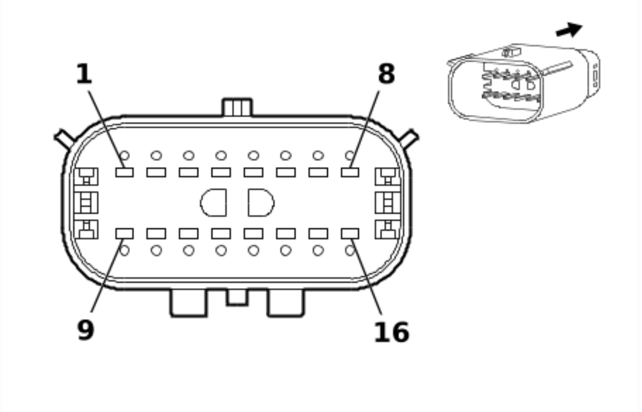


2548390

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 33472-1866
- Service Connector: 13584788
- Description: 16-Way F 1.5 MX Series, Sealed(BK)

Connector Part Information

- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way M (BK)

Terminal Part Information

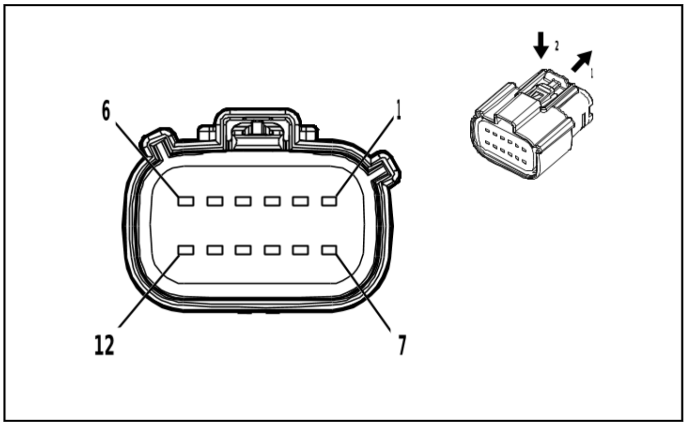
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	85528055	J-35616-2A (GY)	J-38125-217
II	Not required	No Tool Required	No Tool Required

X160 Engine Wiring Harness to Fuel Injector Wiring Harness (L3B)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / GY	(1) 496	(1) I	(1) —	(1) Knock Sensor 1 Signal	(1) 1	(1) 0.5	(1) VT / GY	(1) 496	(1) II	(1) —
(2) 2	(2) 0.75	(2) BN	(2) 4801	(2) I	(2) —	(2) Direct Fuel Injector High Voltage Control Cylinder 1	(2) 2	(2) 0.75	(2) BN	(2) 4801	(2) II	(2) —
(3) 3	(3) 0.5	(3) WH / RD	(3) 480	(3) I	(3) —	(3) Engine Control Vehicle Sensors 5 Volt Reference 1	(3) 3	(3) 0.5	(3) WH / RD	(3) 480	(3) II	(3) —
(4) 4	(4) 0.75	(4) GY / BU	(4) 4804	(4) I	(4) —	(4) Direct Fuel Injector High Voltage Control Cylinder 4	(4) 4	(4) 0.75	(4) GY / BU	(4) 4804	(4) II	(4) —
5	—	—	—	—	—	Not Occupied	5	—	—	—	—	—
(6) 6	(6) 0.75	(6) GN	(6) 4803	(6) I	(6) —	(6) Direct Fuel Injector High Voltage Control Cylinder 3	(6) 6	(6) 0.75	(6) GN	(6) 4803	(6) II	(6) —
(7) 7	(7) 0.75	(7) BU	(7) 4802	(7) I	(7) —	(7) Direct Fuel Injector High Voltage Control Cylinder 2	(7) 7	(7) 0.75	(7) BU	(7) 4802	(7) II	(7) —
(8) 8	(8) 0.5	(8) WH / GY	(8) 1876	(8) I	(8) —	(8) Knock Sensor 2 Signal	(8) 8	(8) 0.5	(8) WH / GY	(8) 1876	(8) II	(8) —
(9) 9	(9) 0.5	(9) BK / YE	(9) 1716	(9) I	(9) —	(9) Knock Sensor Low Reference 1	(9) 9	(9) 0.5	(9) BK / YE	(9) 1716	(9) II	(9) —
(10) 10	(10) 0.75	(10) BN / WH	(10) 4901	(10) I	(10) —	(10) Direct Fuel Injector High Voltage Supply Cylinder 1	(10) 10	(10) 0.75	(10) BN / WH	(10) 4901	(10) II	(10) —
(11) 11	(11) 0.5	(11) BU / WH	(11) 10786	(11) I	(11) —	(11) Fuel Rail Pressure Sensor SENT 1 Signal	(11) 11	(11) 0.5	(11) BU / WH	(11) 10786	(11) II	(11) —
(12) 12	(12) 0.5	(12) BK / GN	(12) 580	(12) I	(12) —	(12) Engine Control Sensors Low Reference 2	(12) 12	(12) 0.5	(12) BK / GN	(12) 580	(12) II	(12) —

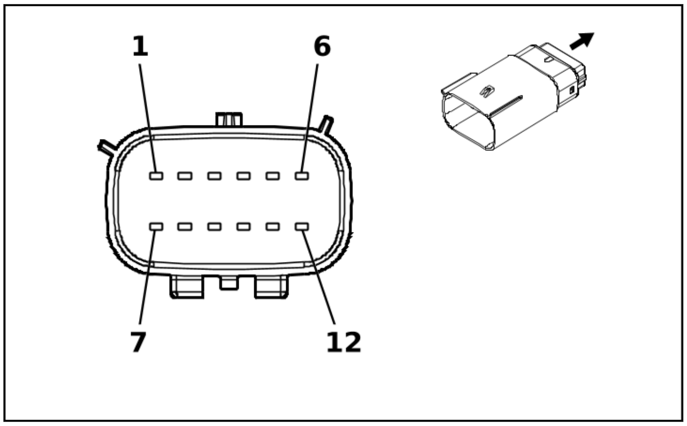
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(13) 13	(13) 0.75	(13) B U / WH	(13) 49 04	(13) I	(13) —	(13) Direct Fuel Injector High Voltage Supply Cylinder 4	(13) 13	(13) 0.75	(13) B U / WH	(13) 49 04	(13) II	(13) —
(14) 14	(14) 0.75	(14) G N / GY	(14) 49 03	(14) I	(14) —	(14) Direct Fuel Injector High Voltage Supply Cylinder 3	(14) 14	(14) 0.75	(14) G N / GY	(14) 49 03	(14) II	(14) —
(15) 15	(15) 0.75	(15) B U / GY	(15) 49 02	(15) I	(15) —	(15) Direct Fuel Injector High Voltage Supply Cylinder 2	(15) 15	(15) 0.75	(15) B U / GY	(15) 49 02	(15) II	(15) —
(16) 16	(16) 0.5	(16) B K / GY	(16) 23 03	(16) I	(16) —	(16) Knock Sensor Low Reference 2	(16) 16	(16) 0.5	(16) B K / GY	(16) 23 03	(16) II	(16) —

X160 Engine Wiring Harness to Fuel Injector Wiring Harness (LZ0)



4584248

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 33472-1259
- Service Connector: 19333239
- Description: 12-Way F 1.5 MX Series, Sealed(D-GY)



5187933

Connector Part Information
- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 33482-6261
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way M 1.5 MX Series, Sealed(GY)

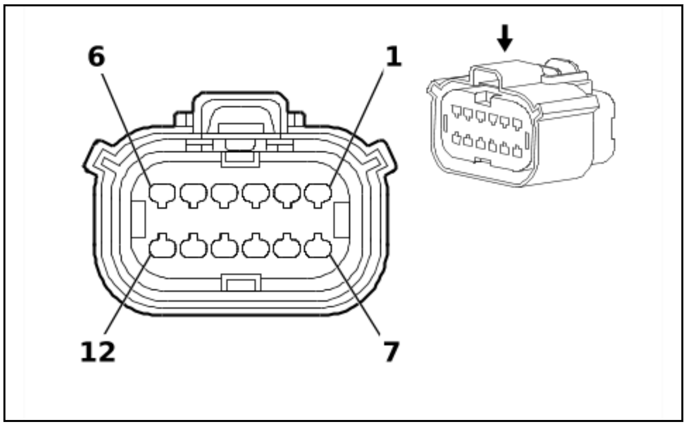
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	85528055	J-35616-2A (GY)	J-38125-217
II	Not required	J-35616-3 (GY)	No Tool Required

X160 Engine Wiring Harness to Fuel Injector Wiring Harness (LZ0)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) BN / WH	(1) 4901	(1) I	(1) —	(1) Direct Fuel Injector High Voltage Supply Cylinder 1	(1) 1	(1) 1.5	(1) BN / WH	(1) 4901	(1) II	(1) —
(2) 2	(2) 1.5	(2) BN	(2) 4801	(2) I	(2) —	(2) Direct Fuel Injector High Voltage Control Cylinder 1	(2) 2	(2) 1.5	(2) BN	(2) 4801	(2) II	(2) —
(3) 3	(3) 1.5	(3) BU / GY	(3) 4902	(3) I	(3) —	(3) Direct Fuel Injector High Voltage Supply Cylinder 2	(3) 3	(3) 1.5	(3) BU / GY	(3) 4902	(3) II	(3) —
(4) 4	(4) 1.5	(4) BU	(4) 4802	(4) I	(4) —	(4) Direct Fuel Injector High Voltage Control Cylinder 2	(4) 4	(4) 1.5	(4) BU	(4) 4802	(4) II	(4) —
(5) 5	(5) 1.5	(5) GN / GY	(5) 4903	(5) I	(5) —	(5) Direct Fuel Injector High Voltage Supply Cylinder 3	(5) 5	(5) 1.5	(5) GN / GY	(5) 4903	(5) II	(5) —
(6) 6	(6) 1.5	(6) GN	(6) 4803	(6) I	(6) —	(6) Direct Fuel Injector High Voltage Control Cylinder 3	(6) 6	(6) 1.5	(6) GN	(6) 4803	(6) II	(6) —
(7) 7	(7) 1.5	(7) BU / WH	(7) 4904	(7) I	(7) —	(7) Direct Fuel Injector High Voltage Supply Cylinder 4	(7) 7	(7) 1.5	(7) BU / WH	(7) 4904	(7) II	(7) —
(8) 8	(8) 1.5	(8) GY / BU	(8) 4804	(8) I	(8) —	(8) Direct Fuel Injector High Voltage Control Cylinder 4	(8) 8	(8) 1.5	(8) GY / BU	(8) 4804	(8) II	(8) —
(9) 9	(9) 1.5	(9) GN / WH	(9) 4905	(9) I	(9) —	(9) Direct Fuel Injector High Voltage Supply Cylinder 5	(9) 9	(9) 1.5	(9) GN / WH	(9) 4905	(9) II	(9) —
(10) 10	(10) 1.5	(10) WH / GN	(10) 4805	(10) I	(10) —	(10) Direct Fuel Injector High Voltage Control Cylinder 5	(10) 10	(10) 1.5	(10) WH / GN	(10) 4805	(10) II	(10) —
(11) 11	(11) 1.5	(11) VT / GY	(11) 4906	(11) I	(11) —	(11) Direct Fuel Injector High Voltage Supply Cylinder 6	(11) 11	(11) 1.5	(11) VT / GY	(11) 4906	(11) II	(11) —
(12) 12	(12) 1.5	(12) VT / GN	(12) 4806	(12) I	(12) —	(12) Direct Fuel Injector High Voltage Control Cylinder 6	(12) 12	(12) 1.5	(12) VT / GN	(12) 4806	(12) II	(12) —

X160 Engine Wiring Harness to Fuel Injector Wiring Harness - Bank 1 (L84 / L87)



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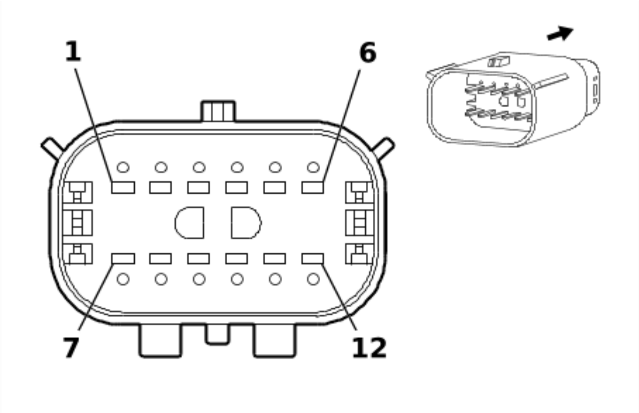


1825167

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 33472-1216
- Service Connector: 19352907
- Description: 12-Way F 1.5 MX Series, Sealed(BK)

Connector Part Information

- Harness Type: Fuel Injector Wiring Harness - Bank 1
- OEM Connector: 13520581
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way M 1.5 MX Series, Sealed(BK)

Terminal Part Information

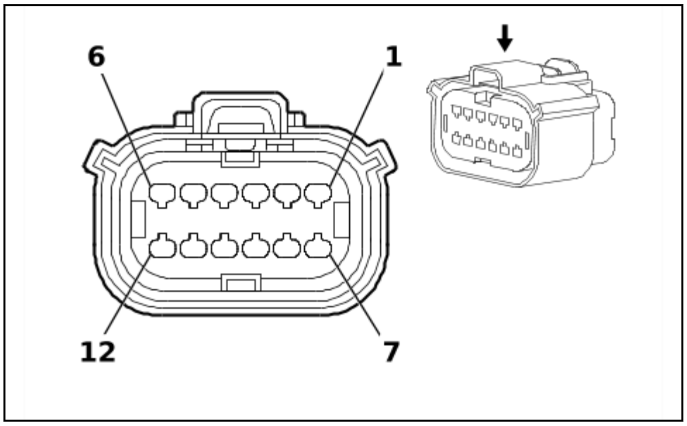
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	85528055	J-35616-2A (GY)	J-38125-217
II	Not required	J-35616-3 (GY)	No Tool Required

X160 Engine Wiring Harness to Fuel Injector Wiring Harness - Bank 1 (L84 / L87)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BN / WH	(1) 4901	(1) I	(1) —	(1) Direct Fuel Injector High Voltage Supply Cylinder 1	(1) 1	(1) 0.75	(1) BN / WH	(1) 4901	(1) II	(1) —
(2) 2	(2) 0.75	(2) GN / BK	(2) 4903	(2) I	(2) —	(2) Direct Fuel Injector High Voltage Supply Cylinder 3	(2) 2	(2) 0.75	(2) GN / GY	(2) 4903	(2) II	(2) —
(3) 3	(3) 0.75	(3) GN / WH	(3) 4905	(3) I	(3) —	(3) Direct Fuel Injector High Voltage Supply Cylinder 5	(3) 3	(3) 0.75	(3) GN / WH	(3) 4905	(3) II	(3) —
(4) 4	(4) 0.75	(4) WH / YE	(4) 4907	(4) I	(4) —	(4) Direct Fuel Injector High Voltage Supply Cylinder 7	(4) 4	(4) 0.75	(4) WH / YE	(4) 4907	(4) II	(4) —
(5) 5	(5) 0.75	(5) BN	(5) 4801	(5) I	(5) —	(5) Direct Fuel Injector High Voltage Control Cylinder 1	(5) 5	(5) 0.75	(5) BN	(5) 4801	(5) II	(5) —
6	—	—	—	—	—	Not Occupied	6	—	—	—	—	—

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(7) 7	(7) 0.75	(7) GN	(7) 4803	(7) I	(7) —	(7) Direct Fuel Injector High Voltage Control Cylinder 3	(7) 7	(7) 0.75	(7) GN	(7) 4803	(7) II	(7) —
(8) 8	(8) 0.75	(8) WH / GN	(8) 4805	(8) I	(8) —	(8) Direct Fuel Injector High Voltage Control Cylinder 5	(8) 8	(8) 0.75	(8) WH / GN	(8) 4805	(8) II	(8) —
(9) 9	(9) 0.75	(9) YE / GY	(9) 4807	(9) I	(9) —	(9) Direct Fuel Injector High Voltage Control Cylinder 7	(9) 9	(9) 0.75	(9) YE / GY	(9) 4807	(9) II	(9) —
(10) 10	(10) 0.5	(10) WH / RD	(10) 480	(10) I	(10) —	(10) Engine Control Vehicle Sensors 5 Volt Reference 1	(10) 10	(10) 0.5	(10) BN / RD	(10) 480	(10) II	(10) —
(11) 11	(11) 0.5	(11) BU / WH	(11) 10786	(11) I	(11) —	(11) Fuel Rail Pressure Sensor SENT 1 Signal	(11) 11	(11) 0.5	(11) BU / WH	(11) 10786	(11) II	(11) —
(12) 12	(12) 0.5	(12) BK / YE	(12) 548	(12) I	(12) —	(12) Engine Control Sensors Low Reference 1	(12) 12	(12) 0.5	(12) BK / GN	(12) 548	(12) II	(12) —

X161 Engine Wiring Harness to Fuel Injector Wiring Harness - Bank 2 (L84 / L87)



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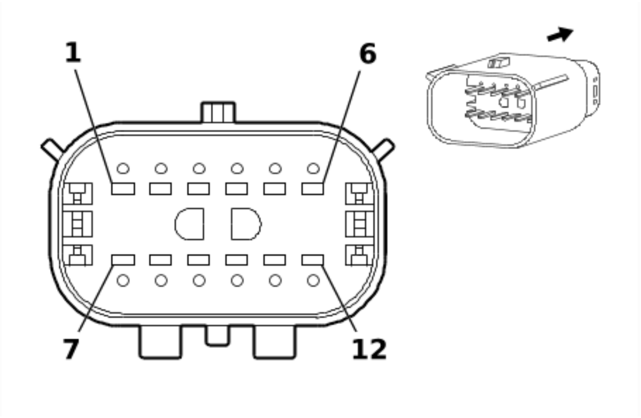


1825167

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 33472-1226
- Service Connector: 19352907
- Description: 12-Way F 1.5 MX Series, Sealed(BK)

Connector Part Information
- Harness Type: Fuel Injector Wiring Harness - Bank 2
- OEM Connector: 334826211
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way M 1.5 MX Series, Sealed(BK)

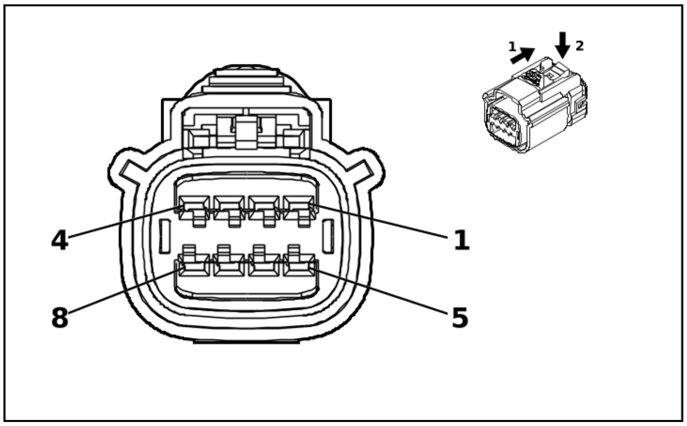
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	85528055	J-35616-2A (GY)	J-38125-217
II	Not required	J-35616-3 (GY)	No Tool Required

X161 Engine Wiring Harness to Fuel Injector Wiring Harness - Bank 2 (L84 / L87)

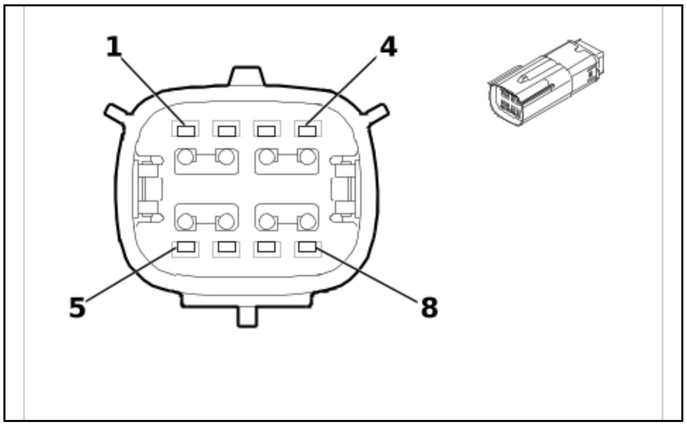
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU / BK	(1) 4902	(1) I	(1) —	(1) Direct Fuel Injector High Voltage Supply Cylinder 2	(1) 1	(1) 0.75	(1) BU / GY	(1) 4902	(1) II	(1) —
(2) 2	(2) 0.75	(2) BU / WH	(2) 4904	(2) I	(2) —	(2) Direct Fuel Injector High Voltage Supply Cylinder 4	(2) 2	(2) 0.75	(2) BU / WH	(2) 4904	(2) II	(2) —
(3) 3	(3) 0.75	(3) VT / GY	(3) 4906	(3) I	(3) —	(3) Direct Fuel Injector High Voltage Supply Cylinder 6	(3) 3	(3) 0.75	(3) VT / GY	(3) 4906	(3) II	(3) —
(4) 4	(4) 0.75	(4) GY / WH	(4) 4908	(4) I	(4) —	(4) Direct Fuel Injector High Voltage Supply Cylinder 8	(4) 4	(4) 0.75	(4) GY / WH	(4) 4908	(4) II	(4) —
(5) 5	(5) 0.75	(5) BU	(5) 4802	(5) I	(5) —	(5) Direct Fuel Injector High Voltage Control Cylinder 2	(5) 5	(5) 0.75	(5) BU	(5) 4802	(5) II	(5) —
6 - 7	—	—	—	—	—	Not Occupied	6 - 7	—	—	—	—	—
(8) 8	(8) 0.75	(8) GY / BU	(8) 4804	(8) I	(8) —	(8) Direct Fuel Injector High Voltage Control Cylinder 4	(8) 8	(8) 0.75	(8) GY / BU	(8) 4804	(8) II	(8) —
(9) 9	(9) 0.75	(9) VT / GN	(9) 4806	(9) I	(9) —	(9) Direct Fuel Injector High Voltage Control Cylinder 6	(9) 9	(9) 0.75	(9) VT / GN	(9) 4806	(9) II	(9) —
(10) 10	(10) 0.75	(10) GY	(10) 4808	(10) I	(10) —	(10) Direct Fuel Injector High Voltage Control Cylinder 8	(10) 10	(10) 0.75	(10) GY	(10) 4808	(10) II	(10) —
(11) 11	(11) 0.75	(11) VT / BK	(11) 7300	(11) I	(11) —	(11) High Pressure Fuel Pump Low Control	(11) 11	(11) 0.75	(11) VT / BK	(11) 7300	(11) II	(11) —
(12) 12	(12) 0.75	(12) YE	(12) 7301	(12) I	(12) —	(12) High Pressure Fuel Pump High Control	(12) 12	(12) 0.75	(12) YE	(12) 7301	(12) II	(12) —

X162 Front Object Alarm Sensor Wiring Harness to Front Object Alarm Sensor Wiring Harness (UKL)



5253496

Connector Part Information
- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 35507578
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.5 OCS Series, Sealed(BK)



5402096

Connector Part Information
- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 15514651
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way M 1.5 OCS Series, Sealed(BK)

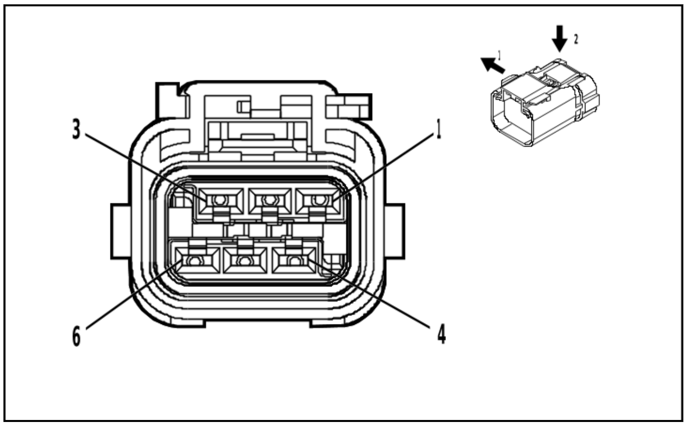
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-3 (GY)	No Tool Required

X162 Front Object Alarm Sensor Wiring Harness to Front Object Alarm Sensor Wiring Harness (UKL)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / GN	(1) 3140	(1) I	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 0.5	(1) RD / GN	(1) 3140	(1) II	(1) —
(2) 2	(2) 0.5	(2) BK / WH	(2) 651	(2) I	(2) —	(2) Signal Ground	(2) 2	(2) 0.5	(2) BK / WH	(2) 651	(2) II	(2) —
(3) 3	(3) 0.5	(3) BU / GY	(3) 4105	(3) I	(3) —	(3) AUTOSAR CAN Bus [+] 8 Serial Data	(3) 3	(3) 0.5	(3) BU / GY	(3) 4105	(3) II	(3) —
(4) 4	(4) 0.5	(4) BU / GY	(4) 4105	(4) I	(4) —	(4) AUTOSAR CAN Bus [+] 8 Serial Data	(4) 4	(4) 0.5	(4) BU / GY	(4) 4105	(4) II	(4) —
(5) 5	(5) 0.5	(5) BK / WH	(5) 651	(5) I	(5) —	(5) Signal Ground	(5) 5	(5) 0.5	(5) BK / WH	(5) 651	(5) II	(5) —
6	—	—	—	—	—	Not Occupied	6	—	—	—	—	—
(7) 7	(7) 0.5	(7) WH / GY	(7) 4104	(7) I	(7) —	(7) AUTOSAR CAN Bus [-] 8 Serial Data	(7) 7	(7) 0.5	(7) WH / GY	(7) 4104	(7) II	(7) —
(8) 8	(8) 0.5	(8) WH / GY	(8) 4104	(8) I	(8) —	(8) AUTOSAR CAN Bus [-] 8 Serial Data	(8) 8	(8) 0.5	(8) WH / GY	(8) 4104	(8) II	(8) —

X163 Engine Wiring Harness to Diesel Glow Plug Wiring Harness (LZ0)



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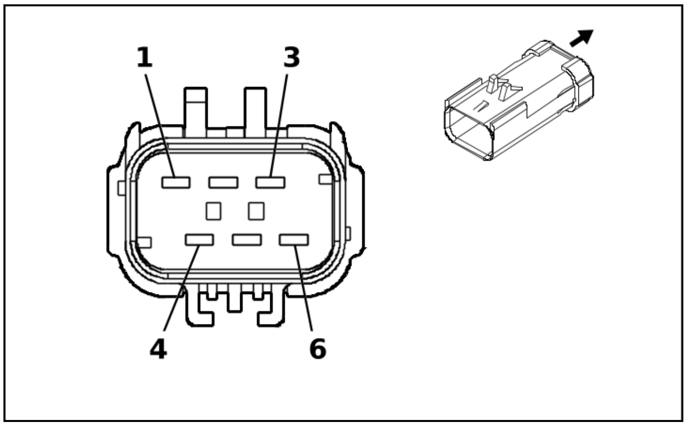


5187846

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 35063643
- Service Connector: 86825462
- Description: 6-Way F 2.8 APEX Series, Sealed(BK)

Connector Part Information
- Harness Type: Diesel Glow Plug Wiring Harness
- OEM Connector: 54200612
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way M 2.8 APEX Series, Sealed(BK)

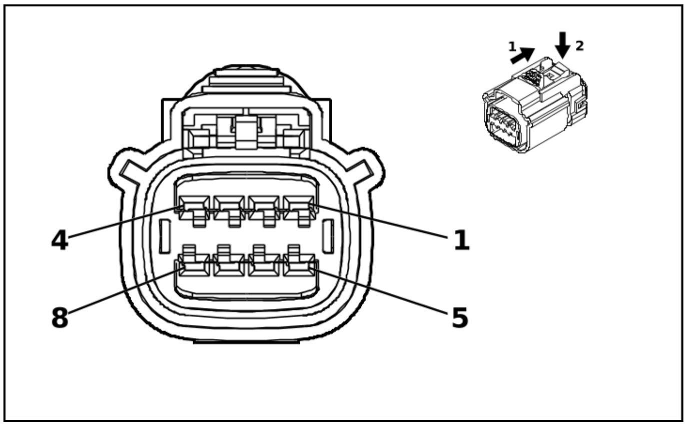
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required
II	Not required	J-35616-5 (PU)	No Tool Required

X163 Engine Wiring Harness to Diesel Glow Plug Wiring Harness (LZ0)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) GY / BU	(1) 1581	(1) I	(1) —	(1) Glow Plug 1 Control	(1) 1	(1) 2.5	(1) GY / RD	(1) 1581	(1) II	(1) —
(2) 2	(2) 2.5	(2) GY / BN	(2) 1582	(2) I	(2) —	(2) Glow Plug 2 Control	(2) 2	(2) 2.5	(2) GY / BK	(2) 1582	(2) II	(2) —
(3) 3	(3) 2.5	(3) GY / GN	(3) 1583	(3) I	(3) —	(3) Glow Plug 3 Control	(3) 3	(3) 2.5	(3) GY / GN	(3) 1583	(3) II	(3) —
(4) 4	(4) 2.5	(4) GY / YE	(4) 1584	(4) I	(4) —	(4) Glow Plug 4 Control	(4) 4	(4) 2.5	(4) GY / YE	(4) 1584	(4) II	(4) —
(5) 5	(5) 2.5	(5) GY / WH	(5) 1585	(5) I	(5) —	(5) Glow Plug 5 Control	(5) 5	(5) 2.5	(5) GY / WH	(5) 1585	(5) II	(5) —
(6) 6	(6) 2.5	(6) GY / VT	(6) 1586	(6) I	(6) —	(6) Glow Plug 6 Control	(6) 6	(6) 2.5	(6) GY	(6) 1586	(6) II	(6) —

X165 Front Object Alarm Sensor Wiring Harness to Front Object Alarm Sensor Wiring Harness (UKL)



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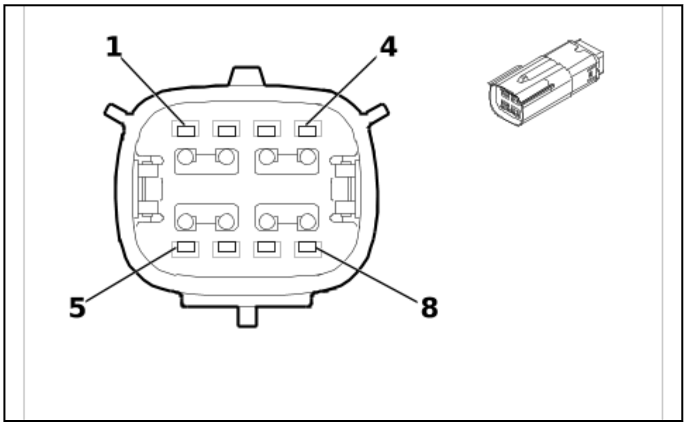


5402096

Connector Part Information

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 35507578
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.5 OCS Series, Sealed(BK)

Connector Part Information

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 15514651
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way M 1.5 OCS Series, Sealed(BK)

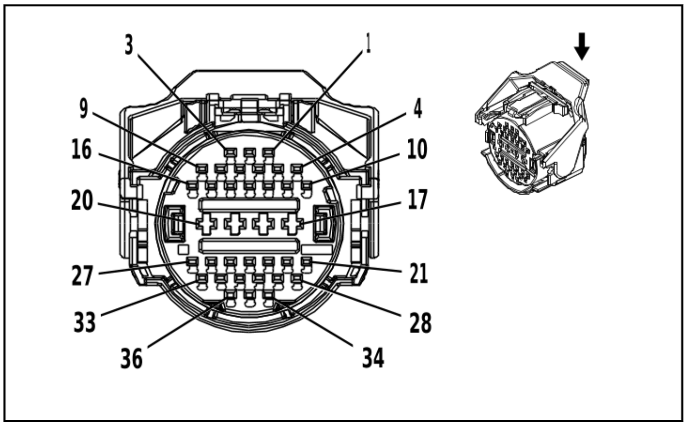
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-3 (GY)	No Tool Required

X165 Front Object Alarm Sensor Wiring Harness to Front Object Alarm Sensor Wiring Harness (UKL)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / GN	(1) 3140	(1) I	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 0.5	(1) RD / GN	(1) 3140	(1) II	(1) —
(2) 2	(2) 0.5	(2) BK / WH	(2) 651	(2) I	(2) —	(2) Signal Ground	(2) 2	(2) 0.5	(2) BK / WH	(2) 651	(2) II	(2) —
(3) 3	(3) 0.5	(3) BU / GY	(3) 4105	(3) I	(3) —	(3) AUTOSAR CAN Bus [+] 8 Serial Data	(3) 3	(3) 0.5	(3) BU / GY	(3) 4105	(3) II	(3) —
(4) 4	(4) 0.5	(4) BU / GY	(4) 4105	(4) I	(4) —	(4) AUTOSAR CAN Bus [+] 8 Serial Data	(4) 4	(4) 0.5	(4) BU / GY	(4) 4105	(4) II	(4) —
(5) 5	(5) 0.5	(5) BK / WH	(5) 651	(5) I	(5) —	(5) Signal Ground	(5) 5	(5) 0.5	(5) BK / WH	(5) 651	(5) II	(5) —
6	—	—	—	—	—	Not Occupied	6	—	—	—	—	—
(7) 7	(7) 0.5	(7) WH / GY	(7) 4104	(7) I	(7) —	(7) AUTOSAR CAN Bus [-] 8 Serial Data	(7) 7	(7) 0.5	(7) WH / GY	(7) 4104	(7) II	(7) —
(8) 8	(8) 0.5	(8) WH / GY	(8) 4104	(8) I	(8) —	(8) AUTOSAR CAN Bus [-] 8 Serial Data	(8) 8	(8) 0.5	(8) WH / GY	(8) 4104	(8) II	(8) —

X175 Engine Wiring Harness to Automatic Transmission Wiring Harness (MFC)



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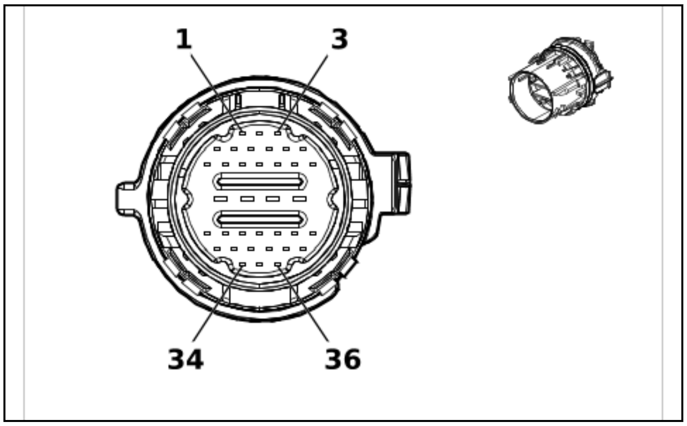


6493751

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 2138314-1
- Service Connector: 19329922
- Description: 36-Way F 1.2 MCON-CB, 2.8 MCP Series, Sealed(BK)

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2356151-9
- Service Connector: Service by Harness - See Part Catalog
- Description: 36-Way M 1.2 MCON-CB, 2.8 MCP Series, Sealed(NA)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13575368	J-35616-35 (VT)	J-38125-556
II	19300445	J-35616-12 (BU)	J-38125-214
III	Not required	No Tool Required	No Tool Required
IV	Not required	J-35616-13 (BU)	No Tool Required
V	Not required	No Tool Required	No Tool Required

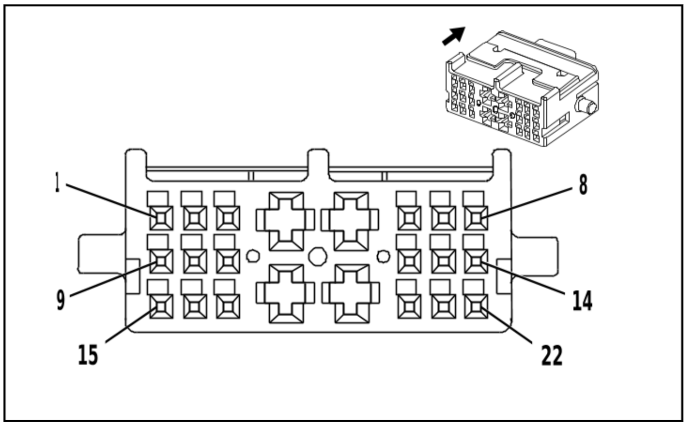
X175 Engine Wiring Harness to Automatic Transmission Wiring Harness (MFC)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / WH	(1) 6380	(1) II	(1) —	(1) Torque Converter Clutch Enable Solenoid Valve A Control	(1) 1	(1) 0.5	(1) GN / WH	(1) 6380	(1) IV	(1) —
(2) 2	(2) 0.5	(2) GN / GY	(2) 6387	(2) III	(2) —	(2) Transmission High Side Driver 1 Control	(2) 2	(2) 0.5	(2) YE / GN	(2) 6387	(2) V	(2) —
(3) 3	(3) 0.5	(3) VT / WH	(3) 422	(3) II	(3) —	(3) Torque Converter Clutch Solenoid Valve Control	(3) 3	(3) 0.5	(3) YE / BN	(3) 422	(3) IV	(3) —
(4) 4	(4) 0.5	(4) GN / WH	(4) 1530	(4) II	(4) —	(4) Transmission Line Pressure Control Solenoid Valve Control	(4) 4	(4) 0.5	(4) GY / GN	(4) 1530	(4) IV	(4) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(5) 5	(5) 0.5	(5) BN	(5) 6400	(5) II	(5) —	(5) Clutch Solenoid Valve A Control	(5) 5	(5) 0.5	(5) BN	(5) 6400	(5) IV	(5) —
(6) 6	(6) 0.5	(6) BU	(6) 6401	(6) II	(6) —	(6) Clutch Solenoid Valve B Control	(6) 6	(6) 0.5	(6) BU	(6) 6401	(6) IV	(6) —
(7) 7	(7) 0.5	(7) YE / BN	(7) 6210	(7) II	(7) —	(7) Torque Converter Clutch Enable Solenoid Valve B Control	(7) 7	(7) 0.5	(7) YE / BN	(7) 6210	(7) IV	(7) —
(8) 8	(8) 0.5	(8) GN / WH	(8) 2968	(8) II	(8) —	(8) Transmission Auxiliary Fluid Pump Control	(8) 8	(8) 0.5	(8) GN / WH	(8) 2968	(8) IV	(8) —
9	—	—	—	—	—	Not Occupied	9	—	—	—	—	—
(10) 10	(10) 0.5	(10) GY	(10) 6402	(10) II	(10) —	(10) Clutch Solenoid Valve C Control	(10) 10	(10) 0.5	(10) GY	(10) 6402	(10) IV	(10) —
(11) 11	(11) 0.5	(11) BK / BN	(11) 586	(11) II	(11) —	(11) Transmission Fluid Temperature Sensor Low Reference	(11) 11	(11) 0.5	(11) BK / BN	(11) 586	(11) IV	(11) —
(12) 12	(12) 0.5	(12) BN / WH	(12) 585	(12) II	(12) —	(12) Transmission Fluid Temperature Sensor Signal	(12) 12	(12) 0.5	(12) BN / WH	(12) 585	(12) IV	(12) —
(13) 13	(13) 0.5	(13) WH	(13) 4508	(13) II	(13) —	(13) Transmission Clutch G Control	(13) 13	(13) 0.5	(13) WH	(13) 4508	(13) IV	(13) —
(14) 14	(14) 0.5	(14) WH / BU	(14) 4507	(14) II	(14) —	(14) Transmission Clutch H Control	(14) 14	(14) 0.5	(14) WH / BU	(14) 4507	(14) IV	(14) —
15 - 16	—	—	—	—	—	Not Occupied	15 - 16	—	—	—	—	—
(17) 17	(17) 1.5	(17) RD / GY	(17) 8540	(17) I	(17) —	(17) Battery Positive Voltage	(17) 17	(17) 1.5	(17) RD / GY	(17) 8540	(17) IV	(17) —
(18) 18	(18) 0.5	(18) GN / GY	(18) 6387	(18) I	(18) —	(18) Transmission High Side Driver 1 Control	(18) 18	(18) 2.5	(18) GN / GY	(18) 6387	(18) IV	(18) —
(19) 19	(19) 0.5	(19) GY / BN	(19) 6388	(19) I	(19) —	(19) Transmission High Side Driver 2 Control	(19) 19	(19) 2.5	(19) GY / BN	(19) 6388	(19) IV	(19) —
(20) 20	(20) 1.5	(20) BK	(20) 450	(20) I	(20) —	(20) Ground	(20) 20	(20) 1.5	(20) BK / YE	(20) 450	(20) IV	(20) —
(21) 21	(21) 0.5	(21) GN / YE	(21) 3337	(21) II	(21) —	(21) Transmission Internal Mode Switch Mode Control Y	(21) 21	(21) 0.5	(21) GN / YE	(21) 3337	(21) IV	(21) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(22) 22	(22) 0.5	(22) BU / WH	(22) 3338	(22) II	(22) —	(22) Transmission Internal Mode Switch Mode Control X	(22) 22	(22) 0.5	(22) BU / WH	(22) 3338	(22) IV	(22) —
23	—	—	—	—	—	Not Occupied	23	—	—	—	—	—
(24) 24	(24) 0.5	(24) GY / BU	(24) 6358	(24) II	(24) —	(24) Output Speed Signal	(24) 24	(24) 0.5	(24) GY / BU	(24) 6358	(24) IV	(24) —
(25) 25	(25) 0.5	(25) YE / GN	(25) 4170	(25) II	(25) —	(25) Transmission Output Shaft Speed Sensor Circuit 9V Reference	(25) 25	(25) 0.5	(25) YE / GN	(25) 4170	(25) IV	(25) —
(26) 26	(26) 0.5	(26) GN / YE	(26) 6353	(26) II	(26) —	(26) Input Speed Signal	(26) 26	(26) 0.5	(26) GN / YE	(26) 6353	(26) IV	(26) —
(27) 27	(27) 0.5	(27) YE / BU	(27) 4171	(27) II	(27) —	(27) Transmission Input Shaft Speed Sensor Circuit 9V Reference	(27) 27	(27) 0.5	(27) WH / RD	(27) 4171	(27) IV	(27) —
28	—	—	—	—	—	Not Occupied	28	—	—	—	—	—
(29) 29	(29) 0.5	(29) WH / RD	(29) 480	(29) II	(29) —	(29) Engine Control Vehicle Sensors 5 Volt Reference 1	(29) 29	(29) 0.5	(29) WH / RD	(29) 480	(29) IV	(29) —
(30) 30	(30) 0.5	(30) BK / GY	(30) 626	(30) II	(30) —	(30) Engine Control Vehicle Sensors Low Reference 1	(30) 30	(30) 0.5	(30) BK / GY	(30) 626	(30) IV	(30) —
31	—	—	—	—	—	Not Occupied	31	—	—	—	—	—
(32) 32	(32) 0.5	(32) GN / VT	(32) 4510	(32) II	(32) —	(32) Transmission Intermediate Speed Signal	(32) 32	(32) 0.5	(32) GN / VT	(32) 4510	(32) IV	(32) —
33	—	—	—	—	—	Not Occupied	33	—	—	—	—	—
(34) 34	(34) 0.5	(34) GY / RD	(34) 10817	(34) II	(34) —	(34) Lubricant Circuit Pressure Sensor 5 Volt Reference	(34) 34	(34) 0.5	(34) GY / RD	(34) 10817	(34) IV	(34) —
(35) 35	(35) 0.5	(35) BU / BK	(35) 10819	(35) II	(35) —	(35) Lubricant Circuit Pressure Sensor Low Reference	(35) 35	(35) 0.5	(35) BU / BK	(35) 10819	(35) IV	(35) —
(36) 36	(36) 0.5	(36) GN / YE	(36) 10816	(36) II	(36) —	(36) Lubricant Circuit Pressure Sensor Signal	(36) 36	(36) 0.5	(36) GN / YE	(36) 10816	(36) IV	(36) —

X176 Automatic Transmission Wiring Harness to Automatic Transmission Wiring Harness (MFC)



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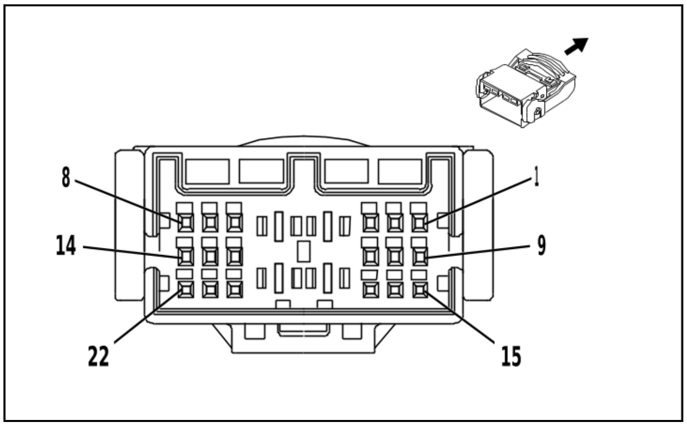

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Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 1897543-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 22-Way F 0.64 Micro-Quadlock, 2.8 Micro-Power Series(NA)

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 1897540-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 22-Way M 0.64 Micro-Quadlock, 2.8 Micro-Power Series(NA)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required
II	Not required	J-35616-64B (L-BU)	No Tool Required
III	Not required	J-35616-5 (PU)	No Tool Required
IV	Not required	J-35616-65B (L-BU)	No Tool Required

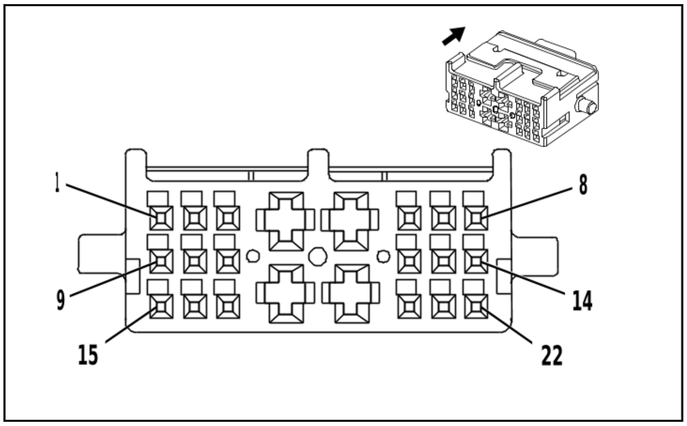
X176 Automatic Transmission Wiring Harness to Automatic Transmission Wiring Harness (MFC)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GN / WH	(1) 6380	(1) II	(1) —	(1) Torque Converter Clutch Enable Solenoid Valve A Control	(1) 1	(1) 0.5	(1) GN / WH	(1) 6380	(1) IV	(1) —
(2) 2	(2) 0.5	(2) BU / WH	(2) 3338	(2) II	(2) —	(2) Transmission Internal Mode Switch Mode Control X	(2) 2	(2) 0.5	(2) BU / WH	(2) 3338	(2) IV	(2) —
(3) 3	(3) 0.5	(3) GY / RD	(3) 10817	(3) II	(3) —	(3) Lubricant Circuit Pressure Sensor 5 Volt Reference	(3) 3	(3) 0.5	(3) GY / RD	(3) 10817	(3) IV	(3) —
(4) 4	(4) 2.5	(4) GN / GY	(4) 6387	(4) I	(4) —	(4) Transmission High Side Driver 1 Control	(4) 4	(4) 2.5	(4) GN / GY	(4) 6387	(4) III	(4) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(5) 5	(5) 1.5	(5) RD / GN	(5) 480	(5) I	(5) —	(5) Engine Control Vehicle Sensors 5 Volt Reference 1	(5) 5	(5) 1.5	(5) RD / GN	(5) 480	(5) III	(5) —
(6) 6	(6) 0.5	(6) WH / RD	(6) 596	(6) II	(6) —	(6) 5V Reference	(6) 6	(6) 0.5	(6) WH / RD	(6) 596	(6) IV	(6) —
(7) 7	(7) 0.5	(7) WH / BU	(7) 4507	(7) II	(7) —	(7) Transmission Clutch H Control	(7) 7	(7) 0.5	(7) WH / BU	(7) 4507	(7) IV	(7) —
(8) 8	(8) 0.5	(8) GY / GN	(8) 6403	(8) II	(8) —	(8) Clutch Solenoid Valve D Control	(8) 8	(8) 0.5	(8) GY / GN	(8) 6403	(8) IV	(8) —
(9) 9	(9) 0.5	(9) WH	(9) 4508	(9) II	(9) —	(9) Transmission Clutch G Control	(9) 9	(9) 0.5	(9) WH	(9) 4508	(9) IV	(9) —
(10) 10	(10) 0.5	(10) YE / BN	(10) 6210	(10) II	(10) —	(10) Torque Converter Clutch Enable Solenoid Valve B Control	(10) 10	(10) 0.5	(10) YE / BN	(10) 6210	(10) IV	(10) —
(11) 11	(11) 0.5	(11) GN / YE	(11) 3337	(11) II	(11) —	(11) Transmission Internal Mode Switch Mode Control Y	(11) 11	(11) 0.5	(11) GN / YE	(11) 3337	(11) IV	(11) —
(12) 12	(12) 0.5	(12) GN / BK	(12) 10816	(12) II	(12) —	(12) Lubricant Circuit Pressure Sensor Signal	(12) 12	(12) 0.5	(12) GN / BK	(12) 10816	(12) IV	(12) —
(13) 13	(13) 0.5	(13) GY	(13) 6402	(13) II	(13) —	(13) Clutch Solenoid Valve C Control	(13) 13	(13) 0.5	(13) GY	(13) 6402	(13) IV	(13) —
(14) 14	(14) 0.5	(14) YE / BN	(14) 6404	(14) II	(14) —	(14) Clutch Solenoid Valve E Control	(14) 14	(14) 0.5	(14) YE / BN	(14) 6404	(14) IV	(14) —
(15) 15	(15) 0.5	(15) BN / WH	(15) 585	(15) II	(15) —	(15) Transmission Fluid Temperature Sensor Signal	(15) 15	(15) 0.5	(15) BK / BN	(15) 585	(15) IV	(15) —
(16) 16	(16) 0.5	(16) BK / BN	(16) 586	(16) II	(16) —	(16) Transmission Fluid Temperature Sensor Low Reference	(16) 16	(16) 0.5	(16) BK / BN	(16) 586	(16) IV	(16) —
(17) 17	(17) 0.5	(17) BU / YE	(17) 10819	(17) II	(17) —	(17) Lubricant Circuit Pressure Sensor Low Reference	(17) 17	(17) 0.5	(17) BU / YE	(17) 10819	(17) IV	(17) —
(18) 18	(18) 2.5	(18) GY / BN	(18) 6388	(18) I	(18) —	(18) Transmission High Side Driver 2 Control	(18) 18	(18) 2.5	(18) GY / BN	(18) 6388	(18) III	(18) —
(19) 19	(19) 1.5	(19) BK	(19) 6250	(19) I	(19) —	(19) Transmission Ground	(19) 19	(19) 1.5	(19) BK	(19) 6250	(19) III	(19) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(20) 20	(20) 0.5	(20) BK / GY	(20) 626	(20) II	(20) —	(20) Engine Control Vehicle Sensors Low Reference 1	(20) 20	(20) 0.5	(20) BK / GY	(20) 626	(20) IV	(20) —
(21) 21	(21) 0.5	(21) BN	(21) 6400	(21) II	(21) —	(21) Clutch Solenoid Valve A Control	(21) 21	(21) 0.5	(21) BN	(21) 6400	(21) IV	(21) —
(22) 22	(22) 0.5	(22) BU	(22) 6401	(22) II	(22) —	(22) Clutch Solenoid Valve B Control	(22) 22	(22) 0.5	(22) BU	(22) 6401	(22) IV	(22) —

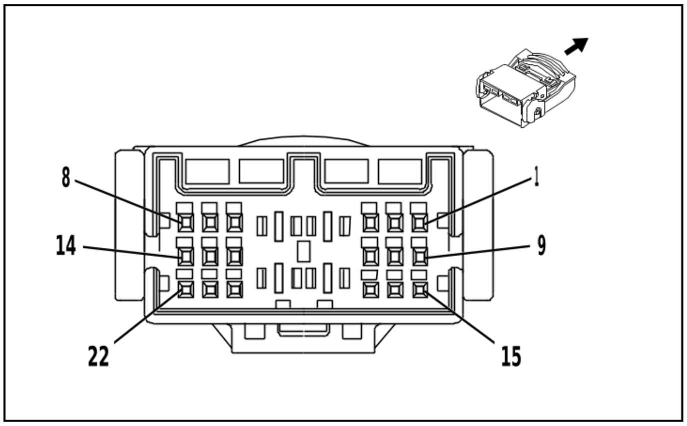
X176 Automatic Transmission Wiring Harness to Automatic Transmission Wiring Harness (MI2 / MQB / MQC / MHS / MHT)



3977748

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 1897543-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 22-Way F 0.64 Micro-Quadlock, 2.8 Micro-Power Series(NA)



3977770

Connector Part Information

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 1897540-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 22-Way M 0.64 Micro-Quadlock, 2.8 Micro-Power Series(NA)

Terminal Part Information

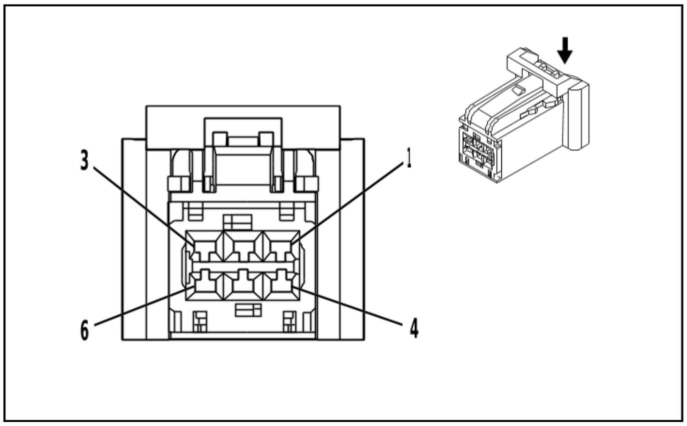
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-35 (VT)	No Tool Required
II	Not required	J-35616-64B (L-BU)	No Tool Required
III	Not required	No Tool Required	No Tool Required
IV	Not required	J-35616-5 (PU)	No Tool Required
V	Not required	J-35616-65B (L-BU)	No Tool Required
VI	Not required	No Tool Required	No Tool Required

X176 Automatic Transmission Wiring Harness to Automatic Transmission Wiring Harness (MI2 / MQB / MQC / MHS / MHT)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT	(1) 7819	(1) II	(1) —	(1) Default Disable Solenoid Control	(1) 1	(1) 0.5	(1) VT	(1) 7819	(1) V	(1) —
(2) 2	(2) 0.5	(2) GN / OG	(2) 1530	(2) II	(2) —	(2) Transmission Line Pressure Control Solenoid Valve Control	(2) 2	(2) 0.5	(2) GN / OG	(2) 1530	(2) V	(2) —
(3) 3	(3) 0.5	(3) GY / BN	(3) 422	(3) II	(3) —	(3) Torque Converter Clutch Solenoid Valve Control	(3) 3	(3) 0.5	(3) GY / BN	(3) 422	(3) V	(3) —
(4) 4	(4) 0.5	(4) BN	(4) 6387	(4) I	(4) —	(4) Transmission High Side Driver 1 Control	(4) 4	(4) 0.5	(4) BN	(4) 6387	(4) IV	(4) —
5	—	—	—	—	—	Not Occupied	5	—	—	—	—	—
(6) 6	(6) 0.5	(6) YE	(6) 6317	(6) III	(6) —	(6) Electronic Transmission Range Select Out of Park Switch Signal	(6) 6	(6) 0.5	(6) YE	(6) 6317	(6) VI	(6) —
(7) 7	(7) 0.5	(7) YE / GY	(7) 6319	(7) III	(7) —	(7) Electronic Transmission Range Select Out of Park Switch 2 Signal	(7) 7	(7) 0.5	(7) YE / GY	(7) 6319	(7) VI	(7) —
(8) 8	(8) 0.5	(8) GN	(8) 4170	(8) III	(8) —	(8) Transmission Output Shaft Speed Sensor Circuit 9V Reference	(8) 8	(8) 0.5	(8) GN	(8) 4170	(8) VI	(8) —
9	—	—	—	—	—	Not Occupied	9	—	—	—	—	—
(10) 10	(10) 0.5	(10) BK / GY	(10) 3706	(10) III	(10) —	(10) Electronic Transmission Range Select Switch Analog Signal 1	(10) 10	(10) 0.5	(10) BK / GY	(10) 3706	(10) VI	(10) —
(11) 11	(11) 0.5	(11) BU	(11) 4171	(11) III	(11) —	(11) Transmission Input Shaft Speed Sensor Circuit 9V Reference	(11) 11	(11) 0.5	(11) BU	(11) 4171	(11) VI	(11) —
12	—	—	—	—	—	Not Occupied	12	—	—	—	—	—
(13) 13	(13) 0.5	(13) BU / BN	(13) 586	(13) II	(13) —	(13) Transmission Fluid Temperature Sensor Low Reference	(13) 13	(13) 0.5	(13) BU / BN	(13) 586	(13) V	(13) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(14) 14	(14) 0.5	(14) BN / YE	(14) 585	(14) II	(14) —	(14) Transmission Fluid Temperature Sensor Signal	(14) 14	(14) 0.5	(14) BN / YE	(14) 585	(14) V	(14) —
(15) 15	(15) 0.5	(15) BU / GN	(15) 6404	(15) II	(15) —	(15) Clutch Solenoid Valve E Control	(15) 15	(15) 0.5	(15) BU / GN	(15) 6404	(15) V	(15) —
(16) 16	(16) 0.5	(16) GN / BN	(16) 6403	(16) II	(16) —	(16) Clutch Solenoid Valve D Control	(16) 16	(16) 0.5	(16) GN / BN	(16) 6403	(16) V	(16) —
(17) 17	(17) 0.5	(17) GY	(17) 6402	(17) II	(17) —	(17) Clutch Solenoid Valve C Control	(17) 17	(17) 0.5	(17) GY	(17) 6402	(17) V	(17) —
(18) 18	(18) 0.5	(18) WH	(18) 6388	(18) I	(18) —	(18) Transmission High Side Driver 2 Control	(18) 18	(18) 0.5	(18) WH	(18) 6388	(18) IV	(18) —
19	—	—	—	—	—	Not Occupied	19	—	—	—	—	—
(20) 20	(20) 0.5	(20) BN / WH	(20) 4509	(20) II	(20) —	(20) Transmission Clutch F Control	(20) 20	(20) 0.5	(20) BN / WH	(20) 4509	(20) V	(20) —
(21) 21	(21) 0.5	(21) YE / VT	(21) 4507	(21) II	(21) —	(21) Transmission Clutch H Control	(21) 21	(21) 0.5	(21) YE / VT	(21) 4507	(21) V	(21) —
(22) 22	(22) 0.5	(22) BU / GY	(22) 4508	(22) II	(22) —	(22) Transmission Clutch G Control	(22) 22	(22) 0.5	(22) BU / GY	(22) 4508	(22) V	(22) —

X177 Automatic Transmission Wiring Harness to Automatic Transmission Output Speed Sensor Wiring Harness (MFC)



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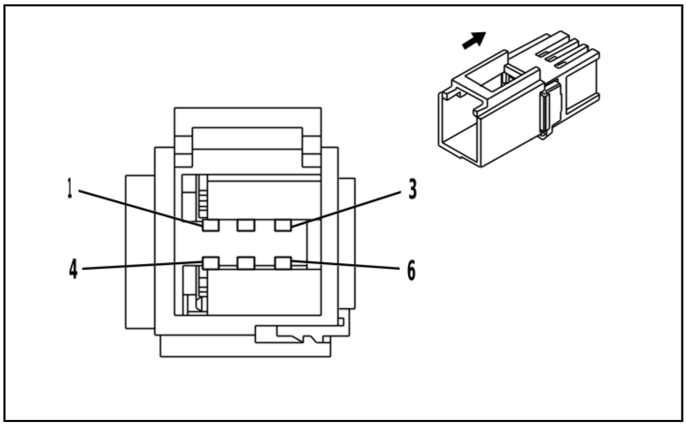


3977959

Connector Part Information
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 33134940
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.2 OCS Series(NA)

Connector Part Information
- Harness Type: Automatic Transmission Output Speed Sensor Wiring Harness
- OEM Connector: 13955963
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way M 0.64 II Series(GY)

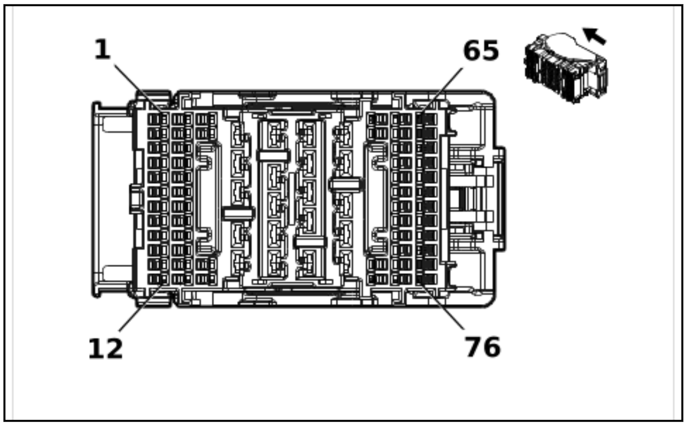
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-65B (L-BU)	No Tool Required

X177 Automatic Transmission Wiring Harness to Automatic Transmission Output Speed Sensor Wiring Harness (MFC)

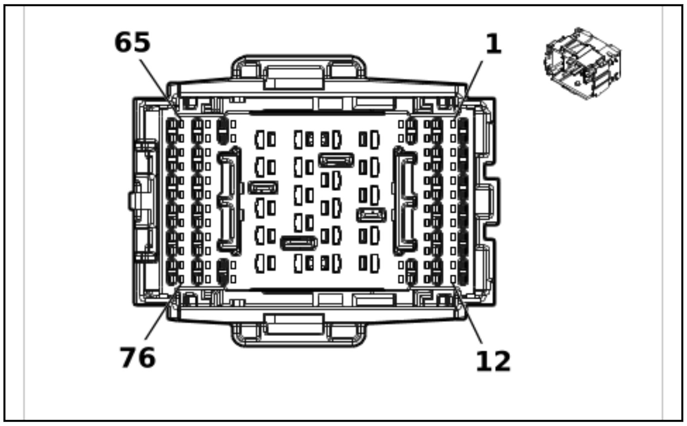
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BU	(1) 6358	(1) I	(1) —	(1) Output Speed Signal	(1) 1	(1) 0.5	(1) YE	(1) 6358	(1) II	(1) —
(2) 2	(2) 0.5	(2) YE / GN	(2) 4170	(2) I	(2) —	(2) Transmission Output Shaft Speed Sensor Circuit 9V Reference	(2) 2	(2) 0.5	(2) RD	(2) 4170	(2) II	(2) —
(3) 3	(3) 0.5	(3) YE / GN	(3) 4170	(3) I	(3) —	(3) Transmission Output Shaft Speed Sensor Circuit 9V Reference	(3) 3	(3) 0.5	(3) WH	(3) 4170	(3) II	(3) —
(4) 4	(4) 0.5	(4) WH / RD	(4) 4171	(4) I	(4) —	(4) Transmission Input Shaft Speed Sensor Circuit 9V Reference	(4) 4	(4) 0.5	(4) WH	(4) 4171	(4) II	(4) —
(5) 5	(5) 0.5	(5) GN / YE	(5) 6353	(5) I	(5) —	(5) Input Speed Signal	(5) 5	(5) 0.5	(5) GN	(5) 6353	(5) II	(5) —
(6) 6	(6) 0.5	(6) GN / VT	(6) 4510	(6) I	(6) —	(6) Transmission Intermediate Speed Signal	(6) 6	(6) 0.5	(6) BK	(6) 4510	(6) II	(6) —

X210 Instrument Panel Wiring Harness to Body Wiring Harness



6171454

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6099-0188
- Service Connector: 85026856
- Description: 76-Way F 1.2 Sumitomo, 2.8 YESC Series(BK)



6171465

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 6099-0184
- Service Connector: 13549030
- Description: 76-Way M 1.2 Sumitomo, 2.8 YESC Series(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84962854	J-35616-12 (BU)	J-38125-215A
II	84962855	J-35616-4A (PU)	J-38125-11A
III	84616651	J-35616-13 (BU)	J-38125-215A
IV	84888592	J-35616-5 (PU)	J-38125-11A

X210 Instrument Panel Wiring Harness to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / GN	(1) 1540	(1) I	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 0.5	(1) RD / GN	(1) 1540	(1) III	(1) —
(2) 2	(2) 0.5	(2) RD / YE	(2) 6540	(2) I	(2) —	(2) Battery Positive Voltage	(2) 2	(2) 0.5	(2) RD / YE	(2) 6540	(2) III	(2) —
(3) 3	(3) 0.5	(3) BN / OG	(3) 3020	(3) I	(3) —	(3) Steering Wheel Air Bag Stage 1 Low Control	(3) 3	(3) 0.35	(3) BN / OG	(3) 3020	(3) III	(3) —
(4) 4	(4) 0.5	(4) OG / VT	(4) 3021	(4) I	(4) —	(4) Steering Wheel Air Bag Stage 1 High Control	(4) 4	(4) 0.35	(4) OG / VT	(4) 3021	(4) III	(4) —
(5) 5	(5) 0.5	(5) WH / OG	(5) 3022	(5) I	(5) —	(5) Steering Wheel Air Bag Stage 2 Low Control	(5) 5	(5) 0.35	(5) WH / OG	(5) 3022	(5) III	(5) —
(6) 6	(6) 0.5	(6) OG / GN	(6) 3023	(6) I	(6) —	(6) Steering Wheel Air Bag Stage 2 High Control	(6) 6	(6) 0.35	(6) OG / GN	(6) 3023	(6) III	(6) —
(7) 7	(7) 0.35	(7) BN / WH	(7) 28	(7) I	(7) —	(7) Horn Relay Control	(7) 7	(7) 0.35	(7) BN / WH	(7) 28	(7) III	(7) —
(8) 8	(8) —	(8) —	(8) —	(8) —	(8) —	(8) Not Used	(8) 8	(8) 0.35	(8) YE	(8) 900	(8) III	(8) —
(9) 9	(9) —	(9) —	(9) —	(9) —	(9) —	(9) Not Used	(9) 9	(9) 0.35	(9) YE	(9) 901	(9) III	(9) —
(10) 10	(10) —	(10) —	(10) —	(10) —	(10) —	(10) Not Used	(10) 10	(10) 0.35	(10) YE	(10) 902	(10) III	(10) —
11 - 12	—	—	—	—	—	Not Occupied	11 - 12	—	—	—	—	—
(13) 13	(13) 0.35	(13) BN / BK	(13) 3552	(13) I	(13) —	(13) Interior Passive Entry Antenna 1 High Signal	(13) 13	(13) 0.35	(13) BN / BK	(13) 3552	(13) III	(13) —
(14) 14	(14) 0.35	(14) WH	(14) 3553	(14) I	(14) —	(14) Interior Passive Entry Antenna 1 Low Signal	(14) 14	(14) 0.35	(14) WH	(14) 3553	(14) III	(14) —
(15) 15	(15) 0.35	(15) WH	(15) 4100	(15) I	(15) —	(15) AUTOSAR CAN Bus [-] 4 Serial Data	(15) 15	(15) 0.5	(15) WH	(15) 4100	(15) III	(15) —
(16) 16	(16) 0.35	(16) BU / VT	(16) 4101	(16) I	(16) —	(16) AUTOSAR CAN Bus [+] 4 Serial Data	(16) 16	(16) 0.5	(16) BU / VT	(16) 4101	(16) III	(16) —

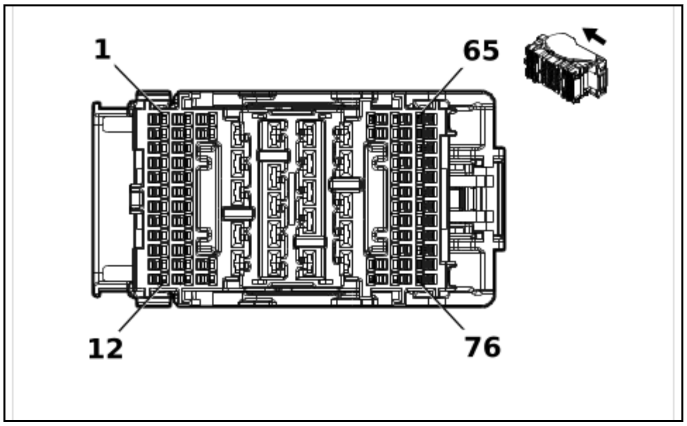
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(17) 17	(17) 0.35	(17) WH	(17) 4976	(17) I	(17) —	(17) AUTOSAR CAN Bus [-] 3 Serial Data	(17) 17	(17) 0.5	(17) WH	(17) 4976	(17) III	(17) —
(18) 18	(18) 0.35	(18) BU / BK	(18) 4977	(18) I	(18) —	(18) AUTOSAR CAN Bus [+] 3 Serial Data	(18) 18	(18) 0.5	(18) BU / BK	(18) 4977	(18) III	(18) —
19 - 20	—	—	—	—	—	Not Occupied	19 - 20	—	—	—	—	—
(21) 21	(21) 0.35	(21) BU / YE	(21) 4984	(21) I	(21) —	(21) AUTOSAR CAN Bus [-] 5 Serial Data	(21) 21	(21) 0.5	(21) BU / YE	(21) 4984	(21) III	(21) —
(22) 22	(22) 0.35	(22) BU / WH	(22) 4985	(22) I	(22) —	(22) AUTOSAR CAN Bus [+] 5 Serial Data	(22) 22	(22) 0.5	(22) BU / WH	(22) 4985	(22) III	(22) —
(23) 23	(23) 0.35	(23) WH	(23) 4986	(23) I	(23) —	(23) AUTOSAR CAN Bus [-] 1 Serial Data	(23) 23	(23) 0.5	(23) WH	(23) 4986	(23) III	(23) —
(24) 24	(24) 0.35	(24) BU	(24) 4987	(24) I	(24) —	(24) AUTOSAR CAN Bus [+] 1 Serial Data	(24) 24	(24) 0.5	(24) BU	(24) 4987	(24) III	(24) —
25 - 26	—	—	—	—	—	Not Occupied	25 - 26	—	—	—	—	—
(27) 27	(27) 0.35	(27) BN / BK	(27) 4996	(27) I	(27) —	(27) Immobilizer Antenna Signal [+]	(27) 27	(27) 0.35	(27) BN / BK	(27) 4996	(27) III	(27) —
(28) 28	(28) 0.35	(28) WH / GY	(28) 4997	(28) I	(28) —	(28) Immobilizer Antenna Low Signal	(28) 28	(28) 0.35	(28) WH / GY	(28) 4997	(28) III	(28) —
(29) 29	(29) 2.5	(29) RD / BN	(29) 4142	(29) II	(29) —	(29) Primary Fused Battery Positive Voltage	(29) 29	(29) 2.5	(29) RD / BN	(29) 4142	(29) IV	(29) —
(30) 30	(30) 0.5	(30) GY	(30) 1715	(30) II	(30) —	(30) Windshield Wiper Switch High Signal	(30) 30	(30) 0.35	(30) GY	(30) 1715	(30) IV	(30) —
(31) 31	(31) 0.5	(31) GN / YE	(31) 2731	(31) II	(31) —	(31) Brake System Control Module LIN Bus 1	(31) 31	(31) 0.5	(31) GN / YE	(31) 2731	(31) IV	(31) —
(32) 32	(32) 0.35 (32) 0.5	(32) BU / BN (32) BU	(32) 4987 (32) 4987	(32) II (32) II	(32) - UD5 (32) UD5 / KGU	(32) AUTOSAR CAN Bus [+] 1 Serial Data (32) AUTOSAR CAN Bus [+] 1 Serial Data	(32) 32	(32) 0.5	(32) BU	(32) 4987	(32) IV	(32) —
(33) 33	(33) 0.35 (33) 0.5	(33) WH / RD (33) WH	(33) 4986 (33) 4986	(33) II (33) II	(33) - UD5 (33) UD5 / KGU	(33) AUTOSAR CAN Bus [-] 1 Serial Data (33) AUTOSAR CAN Bus [-] 1 Serial Data	(33) 33	(33) 0.5	(33) WH	(33) 4986	(33) IV	(33) —
34	—	—	—	—	—	Not Occupied	34	—	—	—	—	—

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(35) 35	(35) 0.75	(35) GN / BK	(35) 116	(35) II	(35) —	(35) Left Rear Speaker [-] Control	(35) 35	(35) 0.75	(35) GN / BK	(35) 116	(35) IV	(35) —
(36) 36	(36) 0.75	(36) GN	(36) 199	(36) II	(36) —	(36) Left Rear Speaker [+] Control	(36) 36	(36) 0.75	(36) GN	(36) 199	(36) IV	(36) —
(37) 37	(37) 0.75	(37) BN / BU	(37) 118	(37) II	(37) —	(37) Left Front Speaker [-] Control 1	(37) 37	(37) 0.75	(37) BN / BU	(37) 118	(37) IV	(37) —
(38) 38	(38) 0.75	(38) BU	(38) 201	(38) II	(38) —	(38) Left Front Speaker 1 [+] Control	(38) 38	(38) 0.75	(38) BU	(38) 201	(38) IV	(38) —
39	—	—	—	—	—	Not Occupied	39	—	—	—	—	—
(40) 40	(40) 0.35	(40) BU / WH	(40) 3119	(40) II	(40) —	(40) Roof Rail Air Bag Disable Switch Signal	(40) 40	(40) 0.35	(40) BU / WH	(40) 3119	(40) IV	(40) —
(41) 41	(41) 0.35	(41) BN / WH	(41) 3895	(41) II	(41) —	(41) Roof Rail Air Bag Disable Switch Low Reference	(41) 41	(41) 0.35	(41) BN / WH	(41) 3895	(41) IV	(41) —
42	—	—	—	—	—	Not Occupied	42	—	—	—	—	—
(43) 43	(43) 0.5	(43) GN / GY	(43) 4627	(43) II	(43) —	(43) Image Processing Module LIN Bus 1	(43) 43	(43) 0.5	(43) GN / GY	(43) 4627	(43) IV	(43) —
44	—	—	—	—	—	Not Occupied	44	—	—	—	—	—
(45) 45	(45) 0.35	(45) GN / VT	(45) 4786	(45) II	(45) —	(45) Dome/ Reading Lamp Enable Signal	(45) 45	(45) 0.5	(45) GN / VT	(45) 4786	(45) IV	(45) —
(46) 46	(46) 0.35	(46) GN / BN	(46) 507	(46) II	(46) —	(46) Wait To Start Indicator Control	(46) 46	(46) 0.35	(46) GN / BN	(46) 507	(46) IV	(46) —
47	—	—	—	—	—	Not Occupied	47	—	—	—	—	—
(48) 48	(48) 0.5	(48) YE / VT	(48) 6191	(48) II	(48) —	(48) Power Rear Window Switch Open Signal	(48) 48	(48) 0.5	(48) YE / VT	(48) 6191	(48) IV	(48) —
(49) 49	(49) 0.5	(49) WH	(49) 6192	(49) I	(49) —	(49) Sliding Rear Window Switch Close Signal	(49) 49	(49) 0.5	(49) WH	(49) 6192	(49) III	(49) —
(50) 50	(50) 0.5	(50) YE	(50) 6817	(50) I	(50) —	(50) LED Backlight Dimming Control 1	(50) 50	(50) 0.5	(50) YE	(50) 6817	(50) III	(50) —
(51) 51	(51) 0.35	(51) WH / GY	(51) 7297	(51) I	(51) —	(51) Minor Endgate High Relay Control	(51) 51	(51) 0.75	(51) WH / GY	(51) 7297	(51) III	(51) —
(52) 52	(52) 0.5	(52) GN / WH	(52) 7530	(52) I	(52) —	(52) Driver Seat Adjuster Memory Module LIN Bus 1	(52) 52	(52) 0.5	(52) GN / WH	(52) 7530	(52) III	(52) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(53) 53	(53) 0.5	(53) RD / BK	(53) 7140	(53) I	(53) —	(53) Battery Positive Voltage	(53) 53	(53) 0.5	(53) RD / VT	(53) 7140	(53) III	(53) —
(54) 54	(54) 0.35	(54) WH / GN	(54) 7728	(54) I	(54) —	(54) Major Endgate High Relay Control	(54) 54	(54) 0.75	(54) WH / GN	(54) 7728	(54) III	(54) —
(55) 55	(55) 0.35	(55) BU / VT	(55) 7729	(55) I	(55) —	(55) Major Endgate Low Relay Control	(55) 55	(55) 0.75	(55) BU / VT	(55) 7729	(55) III	(55) —
(56) 56	(56) 0.5	(56) VT	(56) 801	(56) I	(56) —	(56) Retained Accessory Power Control	(56) 56	(56) 0.35	(56) VT	(56) 801	(56) III	(56) —
(57) 57	(57) 0.5	(57) BN / YE	(57) 820	(57) I	(57) —	(57) Center High Mounted Stop Lamp Supply Voltage (57) Center High Mounted Stop Lamp Supply Voltage	(57) 57	(57) 0.35 (57) 0.5	(57) BN / YE (57) BN / YE	(57) 820 (57) 820	(57) III (57) III	(57) UET (57) - UET
(58) 58	(58) 0.35	(58) GN / BU	(58) 2733	(58) I	(58) —	(58) Brake System Control Module LIN Bus 2	(58) 58	(58) 0.5	(58) GN / BU	(58) 2733	(58) III	(58) —
(59) 59	(59) 0.5	(59) RD / VT	(59) 2640	(59) I	(59) —	(59) Battery Positive Voltage	(59) 59	(59) 0.5	(59) RD / VT	(59) 2640	(59) III	(59) —
(60) 60	(60) 0.35	(60) BU / OG	(60) 4984	(60) I	(60) —	(60) AUTOSAR CAN Bus [-] 5 Serial Data	(60) 60	(60) 0.5	(60) BU / YE	(60) 4984	(60) III	(60) —
(61) 61	(61) 0.35	(61) BU / WH	(61) 4985	(61) I	(61) —	(61) AUTOSAR CAN Bus [+] 5 Serial Data	(61) 61	(61) 0.5	(61) BU / WH	(61) 4985	(61) III	(61) —
62	—	—	—	—	—	Not Occupied	62	—	—	—	—	—
(63) 63	(63) 0.5	(63) RD / BK	(63) 7740	(63) I	(63) —	(63) Battery Positive Voltage	(63) 63	(63) 0.5	(63) RD / GN	(63) 7740	(63) III	(63) —
64	—	—	—	—	—	Not Occupied	64	—	—	—	—	—
(65) 65	(65) 0.35	(65) GN / GY	(65) 817	(65) I	(65) —	(65) Vehicle Speed Signal	(65) 65	(65) 0.35	(65) GN / GY	(65) 817	(65) III	(65) —
(66) 66	(66) 0.35	(66) WH / GY	(66) 2935	(66) I	(66) —	(66) Task Lamp Switch Signal	(66) 66	(66) 0.35	(66) WH / GY	(66) 2935	(66) III	(66) —
(67) 67	(67) 0.5	(67) RD / YE	(67) 2340	(67) I	(67) —	(67) Battery Positive Voltage	(67) 67	(67) 0.5	(67) RD / YE	(67) 2340	(67) III	(67) —
(68) 68	(68) 0.5	(68) WH / VT	(68) 1430	(68) I	(68) —	(68) Exterior Courtesy Lamp Control	(68) 68	(68) 0.5	(68) WH / VT	(68) 1430	(68) III	(68) —
(69) 69	(69) 0.5	(69) GN / WH	(69) 2854	(69) I	(69) —	(69) Body Control Module LIN Bus 8	(69) 69	(69) 0.35	(69) GN / WH	(69) 2854	(69) III	(69) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(70) 70	(70) 0.5	(70) BU / BN	(70) 6807	(70) I	(70) —	(70) DC/AC Inverter Control	(70) 70	(70) 0.5	(70) BU / BN	(70) 6807	(70) III	(70) —
(71) 71	(71) 0.5	(71) VT / RD	(71) 4049	(71) I	(71) —	(71) AC Power Outlet Sensor High Reference	(71) 71	(71) 0.5	(71) VT / RD	(71) 4049	(71) III	(71) —
72 - 73	—	—	—	—	—	Not Occupied	72 - 73	—	—	—	—	—
(74) 74	(74) 0.35	(74) BARE	(74) 10116	(74) I	(74) —	(74) AC Outlet Low Reference	(74) 74	(74) 0.35	(74) BARE	(74) 10116	(74) III	(74) —
(75) 75	(75) 0.75	(75) BK	(75) 10117	(75) I	(75) —	(75) AC Outlet Phase A Control	(75) 75	(75) 0.75	(75) BK	(75) 10117	(75) III	(75) —
(76) 76	(76) 0.75	(76) RD	(76) 10118	(76) I	(76) —	(76) AC Outlet Phase B Control	(76) 76	(76) 0.75	(76) RD	(76) 10118	(76) III	(76) —

X211 Instrument Panel Wiring Harness to Body Wiring Harness



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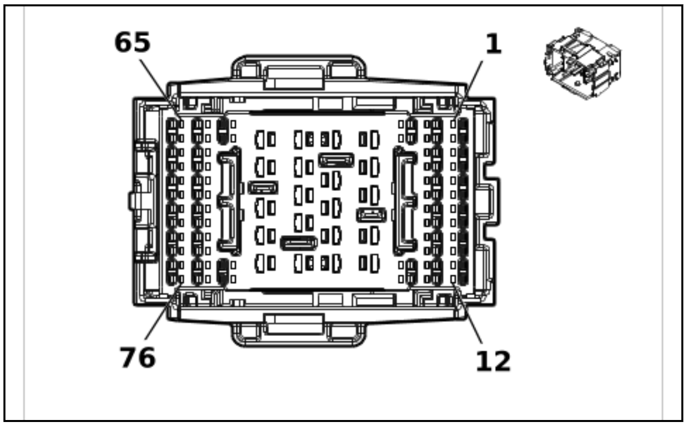

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Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6099-0188
- Service Connector: 85026856
- Description: 76-Way F 1.2 Sumitomo, 2.8 YESC Series(BK)

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 6099-0184
- Service Connector: 13549030
- Description: 76-Way M 1.2 Sumitomo, 2.8 YESC Series(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84962854	J-35616-12 (BU)	J-38125-215A
II	84962855	J-35616-4A (PU)	J-38125-11A
III	84616651	J-35616-13 (BU)	J-38125-215A
IV	84888592	J-35616-5 (PU)	J-38125-11A

X211 Instrument Panel Wiring Harness to Body Wiring Harness

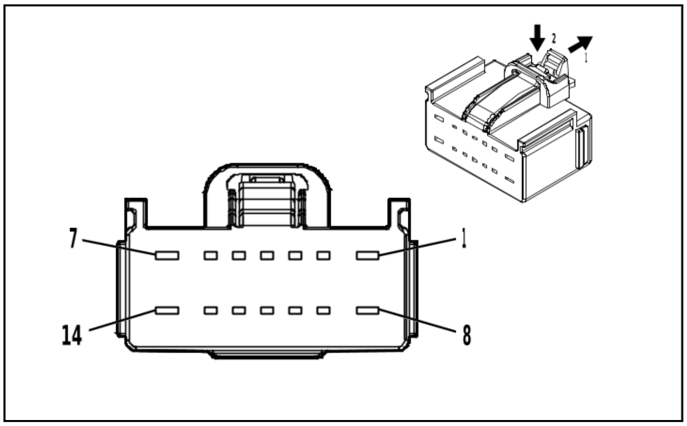
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BK	(1) 339	(1) I	(1) —	(1) Run/ Crank Ignition 1 Voltage	(1) 1	(1) 0.5	(1) VT / BK	(1) 339	(1) III	(1) —
(2) 2	(2) 0.35	(2) BU / VT	(2) 807	(2) I	(2) —	(2) Ignition Off/Accessory Ignition Voltage	(2) 2	(2) 0.35	(2) BU / VT	(2) 807	(2) III	(2) —
3	—	—	—	—	—	Not Occupied	3	—	—	—	—	—
(4) 4	(4) 0.5	(4) GN / WH	(4) 24	(4) I	(4) —	(4) Backup Lamp Control	(4) 4	(4) 0.5	(4) GN / WH	(4) 24	(4) III	(4) —
(5) 5	(5) 0.35	(5) OG / WH	(5) 3024	(5) I	(5) —	(5) Passenger Instrument Panel Air Bag Stage 1 Low Control	(5) 5	(5) 0.35	(5) OG / WH	(5) 3024	(5) III	(5) —
(6) 6	(6) 0.35	(6) YE / OG	(6) 3025	(6) I	(6) —	(6) Passenger Instrument Panel Air Bag Stage 1 High Control	(6) 6	(6) 0.35	(6) YE / OG	(6) 3025	(6) III	(6) —
(7) 7	(7) 0.35	(7) OG / VT	(7) 3026	(7) I	(7) —	(7) Passenger Instrument Panel Air Bag Stage 2 Low Control	(7) 7	(7) 0.35	(7) OG / VT	(7) 3026	(7) III	(7) —
(8) 8	(8) 0.35	(8) GY / OG	(8) 3027	(8) I	(8) —	(8) Passenger Instrument Panel Air Bag Stage 2 High Control	(8) 8	(8) 0.35	(8) GY / OG	(8) 3027	(8) III	(8) —
9 - 15	—	—	—	—	—	Not Occupied	9 - 15	—	—	—	—	—
(16) 16	(16) 0.35	(16) GN / BN	(16) 3005	(16) I	(16) —	(16) Active Noise Cancellation Microphone 1 Signal	(16) 16	(16) 0.35	(16) GN / WH	(16) 3005	(16) III	(16) —
(17) 17	(17) 0.35	(17) GN / BK	(17) 3008	(17) I	(17) —	(17) Active Noise Cancellation Microphone 1 Feedback Signal	(17) 17	(17) 0.35	(17) GN / BK	(17) 3008	(17) III	(17) —
18 - 19	—	—	—	—	—	Not Occupied	18 - 19	—	—	—	—	—
(20) 20	(20) 0.35	(20) WH / YE	(20) 4104	(20) I	(20) —	(20) AUTOSAR CAN Bus [-] 8 Serial Data	(20) 20	(20) 0.5	(20) WH / GY	(20) 4104	(20) III	(20) —
(21) 21	(21) 0.35	(21) BU / GN	(21) 4105	(21) I	(21) —	(21) AUTOSAR CAN Bus [+] 8 Serial Data	(21) 21	(21) 0.5	(21) BU / GY	(21) 4105	(21) III	(21) —
(22) 22	(22) 0.5	(22) WH / GY	(22) 4104	(22) I	(22) —	(22) AUTOSAR CAN Bus [-] 8 Serial Data	(22) 22	(22) 0.5	(22) WH / GY	(22) 4104	(22) III	(22) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(23) 23	(23) 0.5	(23) BU / GY	(23) 4105	(23) I	(23) —	(23) AUTOSAR CAN Bus [+] 8 Serial Data	(23) 23	(23) 0.5	(23) BU / GY	(23) 4105	(23) III	(23) —
24	—	—	—	—	—	Not Occupied	24	—	—	—	—	—
(25) 25	(25) 0.35	(25) BU / BK	(25) 4987	(25) I	(25) —	(25) AUTOSAR CAN Bus [+] 1 Serial Data	(25) 25	(25) 0.5	(25) BU	(25) 4987	(25) III	(25) —
(26) 26	(26) 0.35	(26) WH / YE	(26) 4986	(26) I	(26) —	(26) AUTOSAR CAN Bus [-] 1 Serial Data	(26) 26	(26) 0.5	(26) WH	(26) 4986	(26) III	(26) —
27 - 28	—	—	—	—	—	Not Occupied	27 - 28	—	—	—	—	—
(29) 29	(29) 1	(29) GN / YE	(29) 6840	(29) II	(29) —	(29) Auxiliary Device 2 Switched Voltage	(29) 29	(29) 1	(29) GN / YE	(29) 6840	(29) IV	(29) —
30 - 31	—	—	—	—	—	Not Occupied	30 - 31	—	—	—	—	—
(32) 32	(32) 0.5	(32) BU / BK	(32) 1053	(32) II	(32) —	(32) Center High Mounted Stop Lamp Control 3	(32) 32	(32) 0.5	(32) BU / BK	(32) 1053	(32) IV	(32) —
(33) 33	(33) 0.75	(33) WH	(33) 46	(33) II	(33) —	(33) Right Rear Speaker [+] Control	(33) 33	(33) 0.75	(33) WH	(33) 46	(33) IV	(33) —
(34) 34	(34) 0.75	(34) BU / BK	(34) 115	(34) II	(34) —	(34) Right Rear Speaker [-] Control	(34) 34	(34) 0.75	(34) BU / BK	(34) 115	(34) IV	(34) —
(35) 35	(35) 0.75	(35) YE / BK	(35) 117	(35) II	(35) —	(35) Right Front Speaker [-] Control 1	(35) 35	(35) 0.75	(35) YE / BK	(35) 117	(35) IV	(35) —
(36) 36	(36) 0.75	(36) YE	(36) 200	(36) II	(36) —	(36) Right Front Speaker 1 [+] Control	(36) 36	(36) 0.75	(36) YE	(36) 200	(36) IV	(36) —
(37) 37	(37) 0.75	(37) YE / BK	(37) 117	(37) II	(37) —	(37) Right Front Speaker [-] Control 1	(37) 37	(37) 0.75	(37) YE / BK	(37) 117	(37) IV	(37) —
(38) 38	(38) 0.75	(38) YE	(38) 200	(38) II	(38) —	(38) Right Front Speaker 1 [+] Control	(38) 38	(38) 0.75	(38) YE	(38) 200	(38) IV	(38) —
(39) 39	(39) 0.75	(39) YE / BK	(39) 117	(39) II	(39) —	(39) Right Front Speaker [-] Control 1	(39) 39	(39) 0.75	(39) YE / BK	(39) 117	(39) IV	(39) —
(40) 40	(40) 0.75	(40) YE	(40) 200	(40) II	(40) —	(40) Right Front Speaker 1 [+] Control	(40) 40	(40) 0.75	(40) YE	(40) 200	(40) IV	(40) —
(41) 41	(41) 0.75	(41) WH / YE	(41) 1853	(41) II	(41) —	(41) Right Front Midrange Speaker [+] Control	(41) 41	(41) 0.75	(41) WH / YE	(41) 1853	(41) IV	(41) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(42) 42	(42) 0.75	(42) BN / BK	(42) 1953	(42) II	(42) —	(42) Right Front Midrange Speaker [-] Control	(42) 42	(42) 0.75	(42) BN / BK	(42) 1953	(42) IV	(42) —
(43) 43	(43) 0.75	(43) YE / WH	(43) 1860	(43) II	(43) —	(43) Front Center Speaker [+] Control	(43) 43	(43) 0.75	(43) YE / WH	(43) 1860	(43) IV	(43) —
(44) 44	(44) 0.75	(44) BU / YE	(44) 1960	(44) II	(44) —	(44) Front Center Speaker [-] Control	(44) 44	(44) 0.75	(44) BU / YE	(44) 1960	(44) IV	(44) —
(45) 45	(45) 0.75	(45) BU / VT	(45) 1857	(45) II	(45) —	(45) Left Front Midrange Speaker [+] Control	(45) 45	(45) 0.75	(45) BU / VT	(45) 1857	(45) IV	(45) —
(46) 46	(46) 0.75	(46) BU / BN	(46) 1957	(46) II	(46) —	(46) Left Front Midrange Speaker [-] Control	(46) 46	(46) 0.75	(46) BU / BN	(46) 1957	(46) IV	(46) —
(47) 47	(47) 2	(47) BU	(47) 47	(47) II	(47) —	(47) Trailer Auxiliary Control	(47) 47	(47) 2	(47) BU	(47) 47	(47) IV	(47) —
(48) 48	(48) 2.5	(48) BK / WH	(48) 1051	(48) II	(48) —	(48) Signal Ground (48) Signal Ground	(48) 48	(48) 0.5 (48) 2.5	(48) BK / WH (48) BK / WH	(48) 1051 (48) 1051	(48) IV (48) IV	(48) - UQS (48) UQS
(49) 49	(49) 0.35 (49) 0.35	(49) BU / YE (49) BU / RD	(49) 4979 (49) 4979	(49) I (49) I	(49) UGN (49) UHY	(49) AUTOSAR CAN Bus [+] 2 Serial Data (49) AUTOSAR CAN Bus [+] 2 Serial Data	(49) 49	(49) 0.5	(49) BU / YE	(49) 4979	(49) III	(49) —
(50) 50	(50) 0.35 (50) 0.35	(50) WH / BN (50) WH	(50) 4978 (50) 4978	(50) I (50) I	(50) UGN (50) UHY	(50) AUTOSAR CAN Bus [-] 2 Serial Data (50) AUTOSAR CAN Bus [-] 2 Serial Data	(50) 50	(50) 0.5	(50) WH	(50) 4978	(50) III	(50) —
(51) 51	(51) 0.35	(51) VT / GY	(51) 7117	(51) I	(51) —	(51) Front Axle Differential Lock Indicator Control	(51) 51	(51) 0.35	(51) VT / GY	(51) 7117	(51) III	(51) —
(52) 52	(52) 0.35	(52) YE	(52) 7115	(52) I	(52) —	(52) Rear Axle Differential Lock Indicator Control	(52) 52	(52) 0.35	(52) YE	(52) 7115	(52) III	(52) —
(53) 53	(53) 0.35	(53) YE / GN	(53) 7122	(53) I	(53) —	(53) Axle Differential Lock Switch Signal	(53) 53	(53) 0.35	(53) YE / GN	(53) 7122	(53) III	(53) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(54) 54	(54) 0.5	(54) GN / VT	(54) 5199	(54) I	(54) —	(54) Run/ Crank Relay Coil Control	(54) 54	(54) 0.5	(54) GN / VT	(54) 5199	(54) III	(54) —
55 - 59	—	—	—	—	—	Not Occupied	55 - 59	—	—	—	—	—
(60) 60	(60) 0.35	(60) YE / WH	(60) 1690	(60) I	(60) —	(60) Mirror Dimming Signal	(60) 60	(60) 0.35	(60) YE / WH	(60) 1690	(60) III	(60) —
(61) 61	(61) 0.35	(61) BK / YE	(61) 1691	(61) I	(61) —	(61) Automatic Day/Night Mirror Low Reference	(61) 61	(61) 0.35	(61) BK / YE	(61) 1691	(61) III	(61) —
62 - 76	—	—	—	—	—	Not Occupied	62 - 76	—	—	—	—	—

X213 Auxiliary Fuse Block Wiring Harness to Instrument Panel Wiring Harness (- 9L7)



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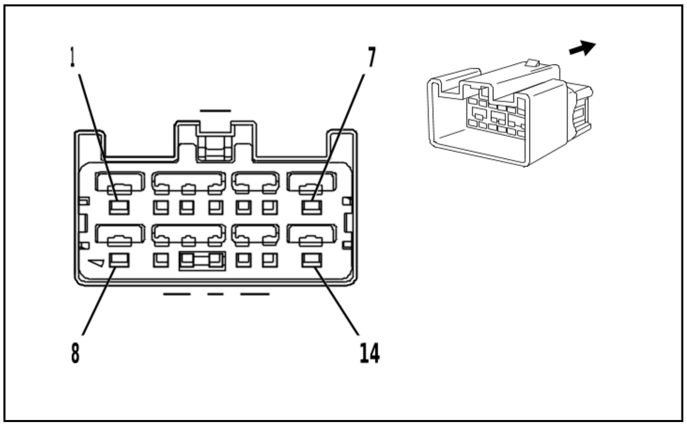


1283905

Connector Part Information

- Harness Type: Trailer Wiring Harness Extension Harness
- OEM Connector: 33366376
- Service Connector: Service by Harness - See Part Catalog
- Description: 14-Way F 1.5, 2.8 YESC Series(GY)

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 7282-6447-40
- Service Connector: 88956523
- Description: 14-Way M 1.5, 2.8 YESC Series(L-GY)

Terminal Part Information

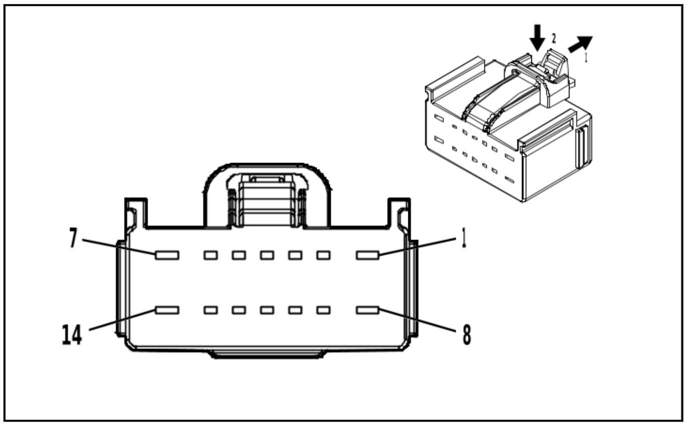
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-4A (PU)	No Tool Required
III	13578908	J-35616-5 (PU)	J-38125-11A
IV	85544421	J-35616-3 (GY)	J-38125-215A

X213 Auxiliary Fuse Block Wiring Harness to Instrument Panel Wiring Harness (- 9L7)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) WH	(1) 22	(1) II	(1) —	(1) Trailer Ground	(1) 1	(1) 2.5	(1) WH	(1) 22	(1) III	(1) —
(2) 2	(2) —	(2) —	(2) —	(2) —	(2) —	(2) Horn Relay Control	(2) 2	(2) 0.35	(2) BN / WH	(2) 28	(2) IV	(2) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(3) 3	(3) —	(3) —	(3) —	(3) —	(3) —	(3) LED Backlight Dimming Control 1	(3) 3	(3) 0.35	(3) YE	(3) 6817	(3) IV	(3) —
4	—	—	—	—	—	Not Occupied	4	—	—	—	—	—
(5) 5	(5) 0.5	(5) WH / BU	(5) 3691	(5) I	(5) —	(5) Trailer Brake Apply Signal	(5) 5	(5) 0.35	(5) WH / BU	(5) 3691	(5) IV	(5) —
6	—	—	—	—	—	Not Occupied	6	—	—	—	—	—
(7) 7	(7) 2.5	(7) RD / BN	(7) 4142	(7) II	(7) —	(7) Primary Fused Battery Positive Voltage	(7) 7	(7) 2.5	(7) RD / BN	(7) 4142	(7) III	(7) —
(8) 8	(8) —	(8) —	(8) —	(8) —	(8) —	(8) Upfitter Accessory 5 Supply Voltage	(8) 8	(8) 2.5	(8) VT / BU	(8) 10735	(8) III	(8) —
(9) 9	(9) —	(9) —	(9) —	(9) —	(9) —	(9) Out of Park Signal	(9) 9	(9) 0.35	(9) YE	(9) 6812	(9) IV	(9) —
(10) 10	(10) —	(10) —	(10) —	(10) —	(10) —	(10) Vehicle Speed Signal	(10) 10	(10) 0.35	(10) GN / GY	(10) 817	(10) IV	(10) —
(11) 11	(11) —	(11) —	(11) —	(11) —	(11) —	(11) Indicator Dimming Control	(11) 11	(11) 0.35	(11) WH	(11) 6816	(11) IV	(11) —
12	—	—	—	—	—	Not Occupied	12	—	—	—	—	—
(13) 13	(13) —	(13) —	(13) —	(13) —	(13) —	(13) Run/Crank Ignition 1 Voltage	(13) 13	(13) 0.5	(13) VT / BK	(13) 339	(13) IV	(13) —
(14) 14	(14) 2	(14) BU	(14) 47	(14) II	(14) —	(14) Trailer Auxiliary Control	(14) 14	(14) 2	(14) BU	(14) 47	(14) III	(14) —

X213 Auxiliary Fuse Block Wiring Harness to Instrument Panel Wiring Harness (9L7)



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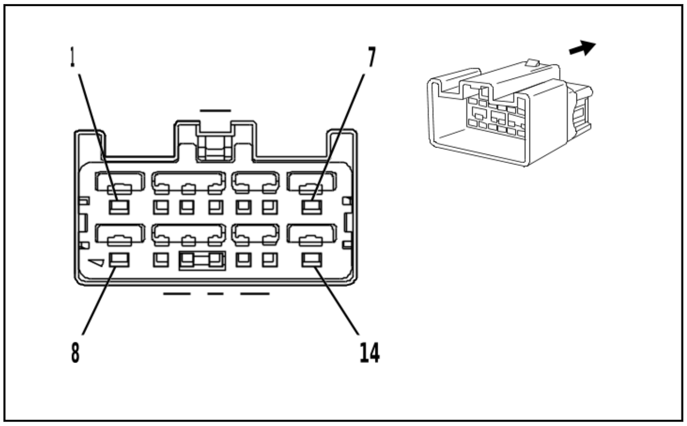


1283905

Connector Part Information

- Harness Type: Auxiliary Fuse Block Wiring Harness
- OEM Connector: 7289-7630-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 14-Way F 1.5, 2.8 YESC Series(GY)

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 7282-6447-40
- Service Connector: 88956523
- Description: 14-Way M 1.5, 2.8 YESC Series(L-GY)

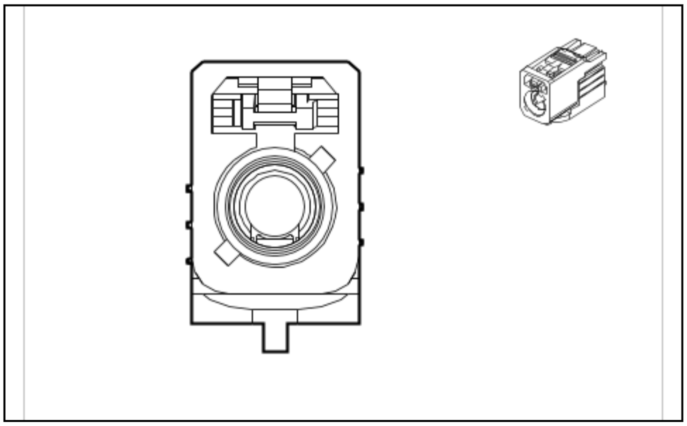
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-4A (PU)	No Tool Required
III	13578908	J-35616-5 (PU)	J-38125-11A
IV	85544421	J-35616-3 (GY)	J-38125-215A

X213 Auxiliary Fuse Block Wiring Harness to Instrument Panel Wiring Harness (9L7)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK / WH	(1) 851	(1) II	(1) —	(1) Signal Ground	(1) 1	(1) 2.5	(1) WH	(1) 22	(1) III	(1) —
2	—	—	—	—	—	Not Occupied	2	—	—	—	—	—
(3) 3	(3) 0.35	(3) YE	(3) 6817	(3) I	(3) —	(3) LED Backlight Dimming Control 1	(3) 3	(3) 0.35	(3) YE	(3) 6817	(3) IV	(3) —
4	—	—	—	—	—	Not Occupied	4	—	—	—	—	—
(5) 5	(5) 0.5	(5) WH / BU	(5) 3691	(5) I	(5) —	(5) Trailer Brake Apply Signal	(5) 5	(5) 0.35	(5) WH / BU	(5) 3691	(5) IV	(5) —
6	—	—	—	—	—	Not Occupied	6	—	—	—	—	—
(7) 7	(7) 2.5	(7) RD / BN	(7) 4142	(7) II	(7) —	(7) Primary Fused Battery Positive Voltage	(7) 7	(7) 2.5	(7) RD / BN	(7) 4142	(7) III	(7) —
(8) 8	(8) 2.5	(8) VT / BU	(8) 10735	(8) II	(8) —	(8) Upfitter Accessory 5 Supply Voltage	(8) 8	(8) 2.5	(8) VT / BU	(8) 10735	(8) III	(8) —
(9) 9	(9) —	(9) —	(9) —	(9) —	(9) —	(9) Out of Park Signal	(9) 9	(9) 0.35	(9) YE	(9) 6812	(9) IV	(9) —
(10) 10	(10) —	(10) —	(10) —	(10) —	(10) —	(10) Vehicle Speed Signal	(10) 10	(10) 0.35	(10) GN / GY	(10) 817	(10) IV	(10) —
(11) 11	(11) 0.35	(11) WH	(11) 6816	(11) I	(11) —	(11) Indicator Dimming Control	(11) 11	(11) 0.35	(11) WH	(11) 6816	(11) IV	(11) —
12	—	—	—	—	—	Not Occupied	12	—	—	—	—	—
(13) 13	(13) 0.5	(13) VT / BK	(13) 339	(13) I	(13) —	(13) Run/Crank Ignition 1 Voltage	(13) 13	(13) 0.5	(13) VT / BK	(13) 339	(13) IV	(13) —
(14) 14	(14) 2	(14) BU	(14) 47	(14) II	(14) —	(14) Trailer Auxiliary Control	(14) 14	(14) 2	(14) BU	(14) 47	(14) III	(14) —

X217 Body Wiring Harness to Instrument Panel Wiring Harness (UV2 / UVB)



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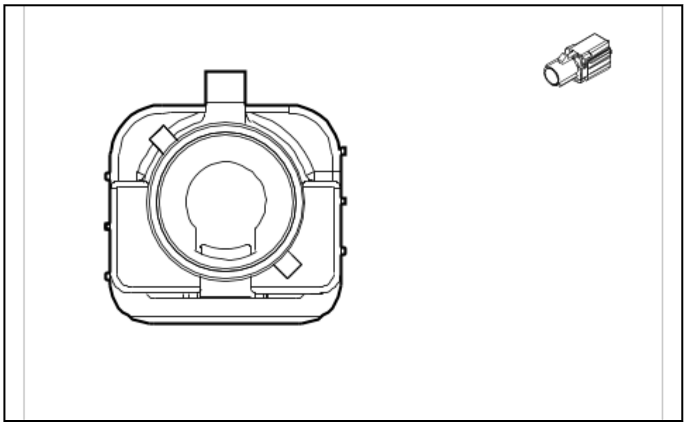


5873701

Connector Part Information
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 33351013
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BU)

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33351038
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type(BU)

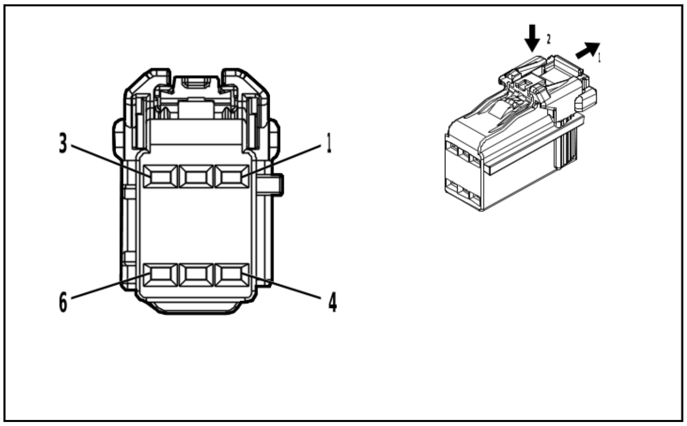
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X217 Body Wiring Harness to Instrument Panel Wiring Harness (UV2 / UVB)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	Coax Cable	—	I	—	Video Processing Module Coaxial Video Signal	—	—	Coax Cable	—	I	—

X218 Instrument Panel Wiring Harness to Body Wiring Harness



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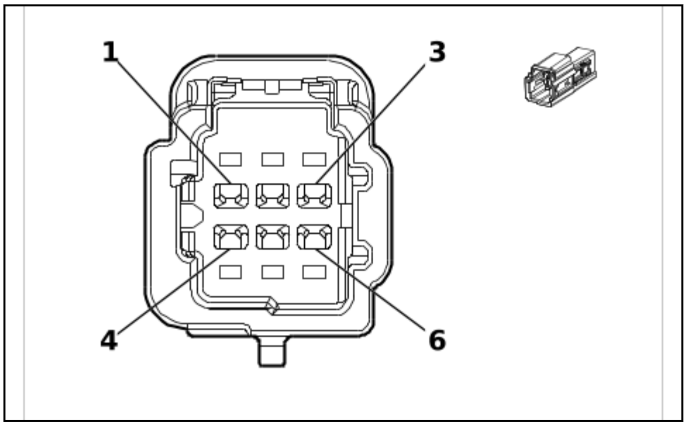


5714613

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8996
- Service Connector: 84613129
- Description: 6-Way F 1.2 Series(BK)

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 6098-9120
- Service Connector: 86825467
- Description: 6-Way M 1.2 MBS Series(BK)

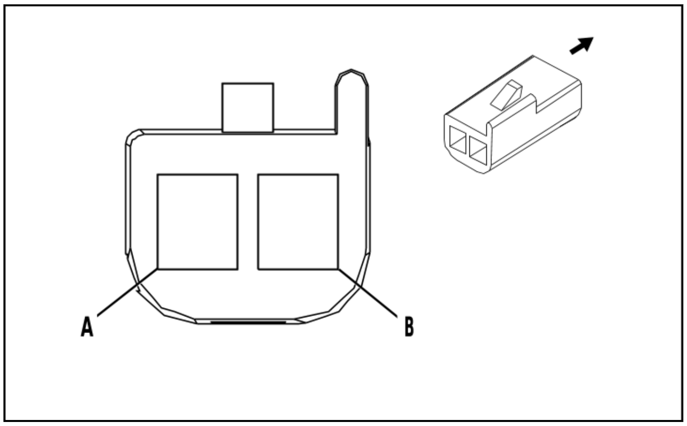
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Service by Cable	J-35616-12 (BU)	J-35616-215
III	Not required	J-35616-13 (BU)	No Tool Required
IV	Service by Cable	J-35616-13 (BU)	J-35616-215

X218 Instrument Panel Wiring Harness to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) GN	(1) 7214	(1) II	(1) —	(1) Ethernet Bus 6 [-]	(1) 1	(1) 0.35	(1) GN	(1) 7214	(1) IV	(1) —
(2) 2	(2) 0.35	(2) YE	(2) 7215	(2) II	(2) —	(2) Ethernet Bus 6 [+]	(2) 2	(2) 0.35	(2) YE	(2) 7215	(2) IV	(2) —
3 - 4	—	—	—	—	—	Not Occupied	3 - 4	—	—	—	—	—
(5) 5	(5) 0.35	(5) BU	(5) 7224	(5) I	(5) —	(5) Ethernet Bus 11 [-]	(5) 5	(5) 0.35	(5) BU	(5) 7224	(5) III	(5) —
(6) 6	(6) 0.35	(6) WH	(6) 7225	(6) I	(6) —	(6) Ethernet Bus 11 [+]	(6) 6	(6) 0.35	(6) WH	(6) 7225	(6) III	(6) —

X219 Police Accessory Wiring Harness to Instrument Panel Wiring Harness (5W4 / 9C1)



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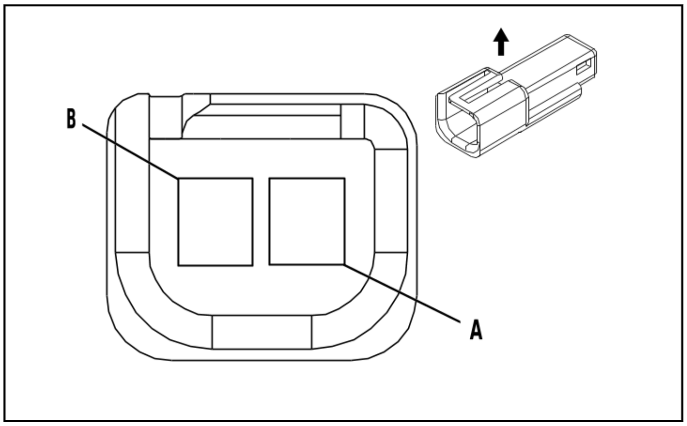


35441

Connector Part Information

- Harness Type: Police Accessory Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 12047663
- Service Connector: 13584278
- Description: 2-Way M 150 Metri-Pack Series(BK)

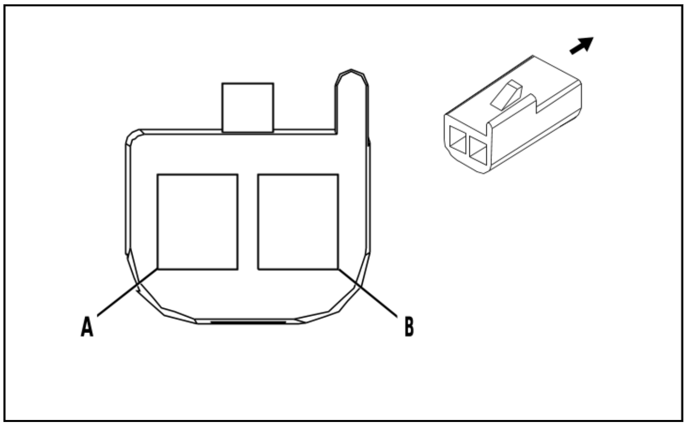
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
II	Not required	J-35616-3 (GY)	No Tool Required

X219 Police Accessory Wiring Harness to Instrument Panel Wiring Harness (5W4 / 9C1)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
B	0.75	RD / GY	10340	I	—	Battery Positive Voltage Police	B	0.75	RD / GY	10340	II	—
A	0.75	BK	1050	I	—	Ground	A	0.75	BK	1050	II	—

X220 Police Accessory Wiring Harness to Instrument Panel Wiring Harness (5W4 / 9C1)



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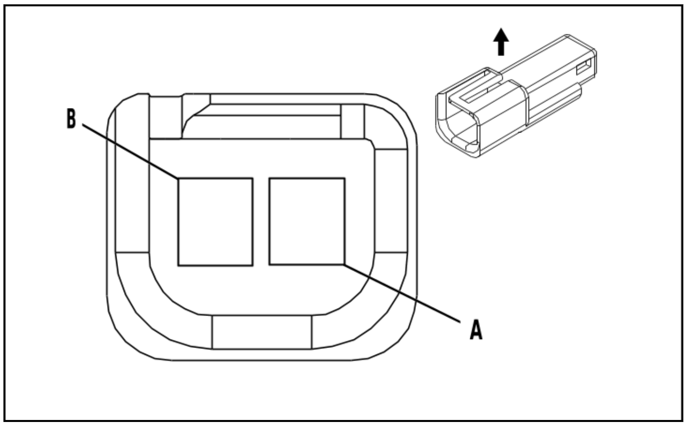


35441

Connector Part Information

- Harness Type: Police Accessory Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 12047663
- Service Connector: 13584278
- Description: 2-Way M 150 Metri-Pack Series(BK)

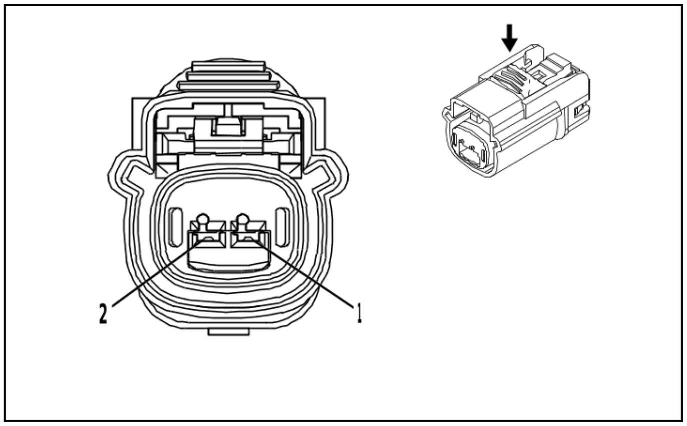
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
II	Not required	J-35616-3 (GY)	No Tool Required

X220 Police Accessory Wiring Harness to Instrument Panel Wiring Harness (5W4 / 9C1)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
B	0.75	RD / GN	10240	I	—	Battery Positive Voltage Police	B	0.75	RD / GN	10240	II	—
A	0.75	BK	1050	I	—	Ground	A	0.75	BK	1050	II	—

X225 Front Floor Console Wiring Harness to Body Wiring Harness (UKL)



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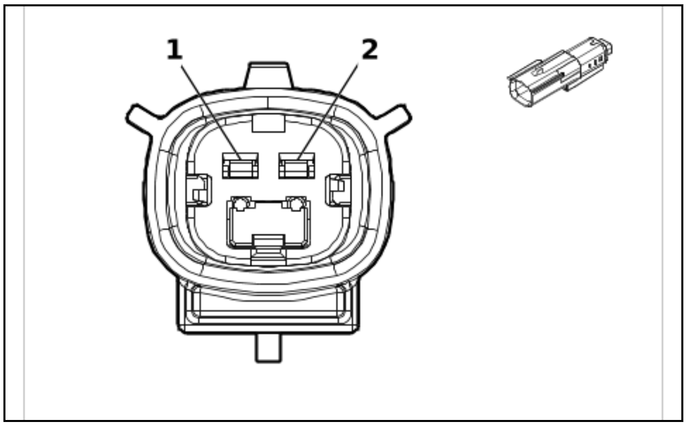


5921817

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 15514573
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 OCS Series, Sealed(BK)

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 15514550
- Service Connector: 86825463
- Description: 2-Way M 1.5 OCS Series, Sealed(BK)

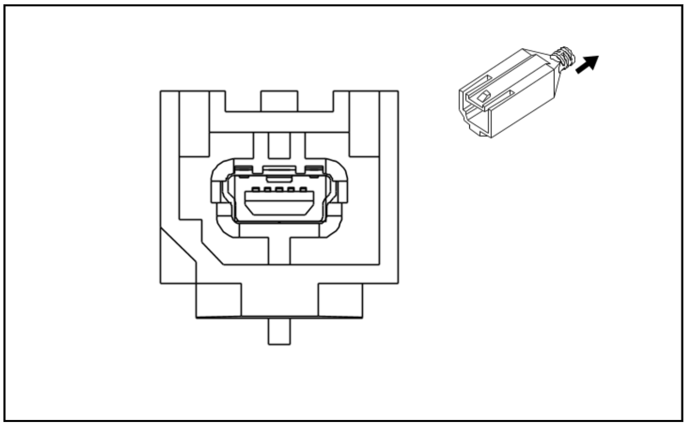
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Service by Cable	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-3 (GY)	No Tool Required

X225 Front Floor Console Wiring Harness to Body Wiring Harness (UKL)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) BU	(1) 7224	(1) I	(1) —	(1) Ethernet Bus 11 [-]	(1) 1	(1) 0.35	(1) BU	(1) 7224	(1) II	(1) —
(2) 2	(2) 0.35	(2) WH	(2) 7225	(2) I	(2) —	(2) Ethernet Bus 11 [+]	(2) 2	(2) 0.35	(2) WH	(2) 7225	(2) II	(2) —

X226 Front Floor Console Wiring Harness to Instrument Panel Wiring Harness (- UBD)



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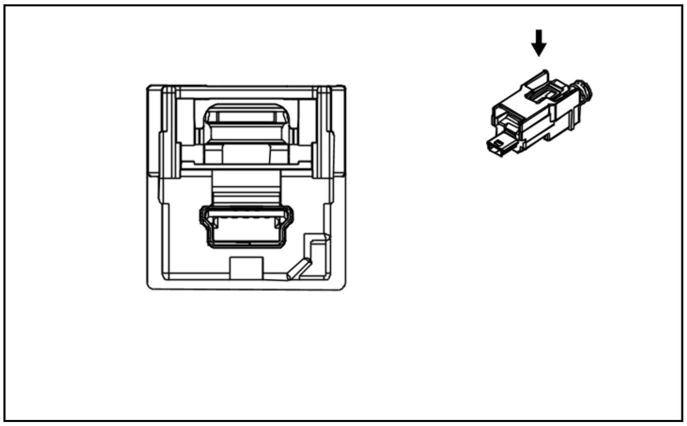


2807425

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness USB
- OEM Connector: Not Available
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way F

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness USB
- OEM Connector: 13576672
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type(BK)

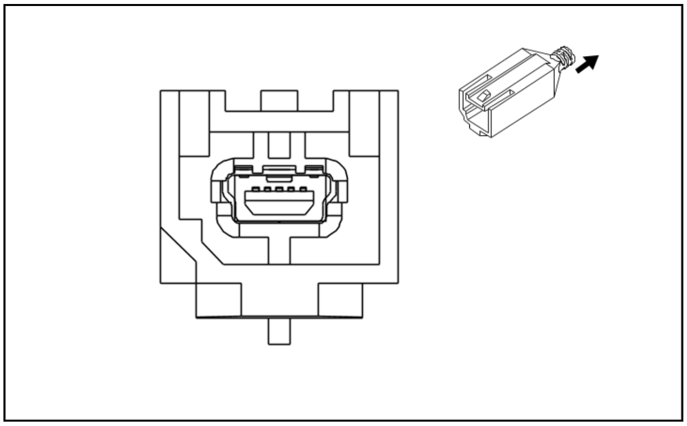
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X226 Front Floor Console Wiring Harness to Instrument Panel Wiring Harness (- UBD)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	USB	—	I	—	USB Serial Data	—	—	USB	—	I	—

X226 Front Floor Console Wiring Harness to Instrument Panel Wiring Harness (UBD)



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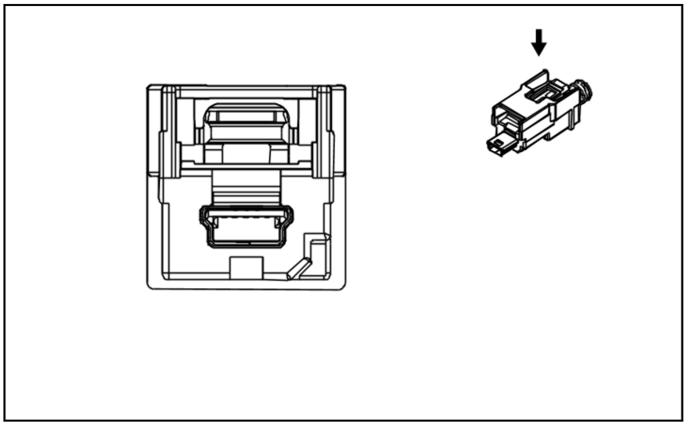


2807425

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness USB
- OEM Connector: 13699757
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way F 2.0 Mini-B USB Type(BK)

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness USB
- OEM Connector: 13576672
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type(BK)

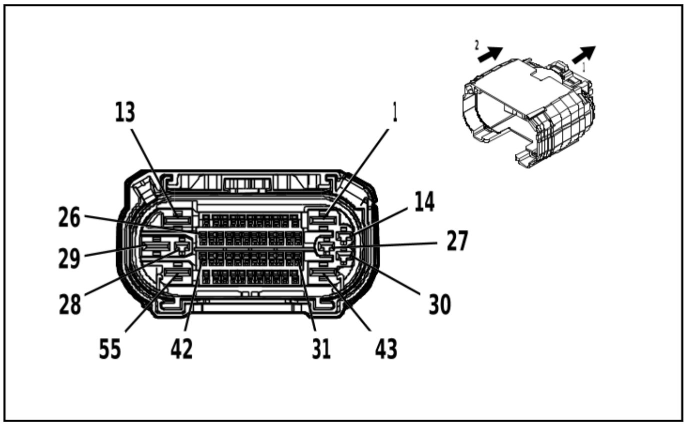
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X226 Front Floor Console Wiring Harness to Instrument Panel Wiring Harness (UBD)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	USB	—	I	—	USB Serial Data	—	—	USB	—	I	—

X227 Front Floor Console Wiring Harness to Body Wiring Harness - Double Cab / Crew Cab



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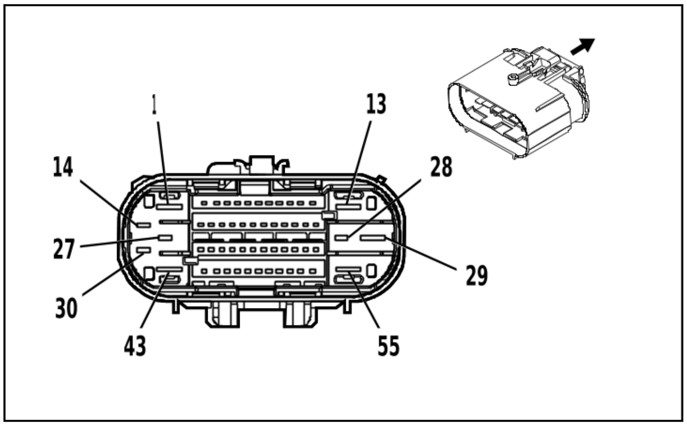


4993301

Connector Part Information
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 35598969
- Service Connector: Service by Harness - See Part Catalog
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(BK)

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 35589922
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-35 (VT)	No Tool Required
III	Not required	J-35616-42 (RD)	No Tool Required
IV	84847992	J-35616-32 (OG)	J-38125-36
V	84867140	J-35616-13 (BU)	J-38125-553
VI	84992391	J-35616-5 (PU)	J-38125-36

X227 Front Floor Console Wiring Harness to Body Wiring Harness - Double Cab / Crew Cab

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
1 - 2	—	—	—	—	—	Not Occupied	1 - 2	—	—	—	—	—
(3) 3	(3) 0.35	(3) WH	(3) 4986	(3) I	(3) —	(3) AUTOSAR CAN Bus [-] 1 Serial Data	(3) 3	(3) 0.35	(3) WH	(3) 4986	(3) V	(3) —

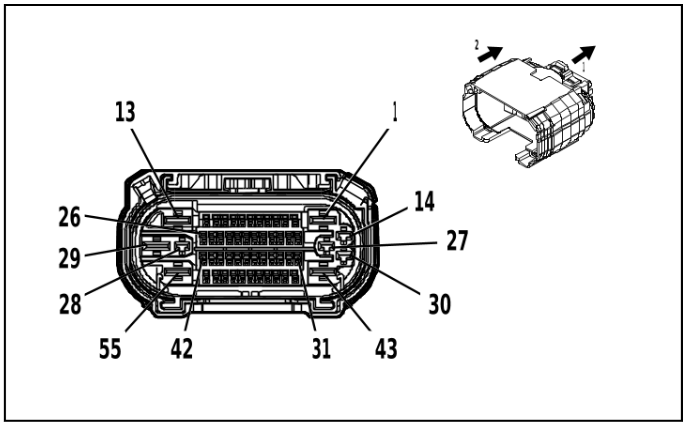
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(4) 4	(4) 0.35	(4) BU	(4) 4987	(4) I	(4) —	(4) AUTOSAR CAN Bus [+] 1 Serial Data	(4) 4	(4) 0.35	(4) BU	(4) 4987	(4) V	(4) —
(5) 5	(5) 0.35	(5) VT / WH	(5) 239	(5) I	(5) —	(5) Run/ Crank Ignition 1 Voltage	(5) 5	(5) 0.5	(5) VT / WH	(5) 239	(5) V	(5) —
(6) 6	(6) 0.35	(6) WH	(6) 4986	(6) I	(6) —	(6) AUTOSAR CAN Bus [-] 1 Serial Data	(6) 6	(6) 0.5	(6) WH	(6) 4986	(6) V	(6) —
(7) 7	(7) 0.35	(7) BU	(7) 4987	(7) I	(7) —	(7) AUTOSAR CAN Bus [+] 1 Serial Data	(7) 7	(7) 0.5	(7) BU	(7) 4987	(7) V	(7) —
(8) 8	(8) 0.35	(8) RD / WH	(8) 5440	(8) I	(8) —	(8) Battery Positive Voltage	(8) 8	(8) 0.5	(8) RD / WH	(8) 5440	(8) V	(8) —
(9) 9	(9) 0.5	(9) RD / BU	(9) 1240	(9) I	(9) —	(9) Battery Positive Voltage	(9) 9	(9) 0.5	(9) RD / BU	(9) 1240	(9) V	(9) —
(10) 10	(10) 0.35	(10) BN / BK	(10) 3552	(10) I	(10) —	(10) Interior Passive Entry Antenna 1 High Signal	(10) 10	(10) 0.35	(10) BN / BK	(10) 3552	(10) V	(10) —
(11) 11	(11) 0.35	(11) WH	(11) 3553	(11) I	(11) —	(11) Interior Passive Entry Antenna 1 Low Signal	(11) 11	(11) 0.35	(11) WH	(11) 3553	(11) V	(11) —
12 - 13	—	—	—	—	—	Not Occupied	12 - 13	—	—	—	—	—
(14) 14	(14) 0.75	(14) BK	(14) 10117	(14) II	(14) —	(14) AC Outlet Phase A Control	(14) 14	(14) 0.75	(14) BK	(14) 10117	(14) VI	(14) —
(15) 15	(15) 0.35	(15) RD / WH	(15) 4740	(15) I	(15) —	(15) Battery Positive Voltage	(15) 15	(15) 0.5	(15) RD / WH	(15) 4740	(15) V	(15) —
(16) 16	(16) 0.35	(16) YE	(16) 4976	(16) I	(16) —	(16) AUTOSAR CAN Bus [-] 3 Serial Data	(16) 16	(16) 0.5	(16) WH	(16) 4976	(16) V	(16) —
(17) 17	(17) 0.35	(17) BU / BK	(17) 4977	(17) I	(17) —	(17) AUTOSAR CAN Bus [+] 3 Serial Data	(17) 17	(17) 0.5	(17) BU / BK	(17) 4977	(17) V	(17) —
(18) 18	(18) 0.35	(18) YE	(18) 4976	(18) I	(18) —	(18) AUTOSAR CAN Bus [-] 3 Serial Data	(18) 18	(18) 0.5	(18) WH	(18) 4976	(18) V	(18) —
(19) 19	(19) 0.35	(19) BU / BK	(19) 4977	(19) I	(19) —	(19) AUTOSAR CAN Bus [+] 3 Serial Data	(19) 19	(19) 0.5	(19) BU / BK	(19) 4977	(19) V	(19) —
(20) 20	(20) 0.35 (20) 0.35	(20) WH (20) YE	(20) 4978 (20) 4978	(20) I (20) I	(20) UGN-UKL (20) UKL	(20) AUTOSAR CAN Bus [-] 2 Serial Data (20) AUTOSAR CAN Bus [-] 2 Serial Data	(20) 20	(20) 0.35	(20) WH	(20) 4978	(20) V	(20) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(21) 21	(21) 0.35	(21) BU / YE	(21) 4979	(21) I	(21) —	(21) AUTOSAR CAN Bus [+] 2 Serial Data	(21) 21	(21) 0.35	(21) BU / YE	(21) 4979	(21) V	(21) —
(22) 22	(22) 0.5	(22) BU / YE	(22) 4984	(22) I	(22) —	(22) AUTOSAR CAN Bus [-] 5 Serial Data	(22) 22	(22) 0.5	(22) BU / YE	(22) 4984	(22) V	(22) —
(23) 23	(23) 0.5	(23) BU / WH	(23) 4985	(23) I	(23) —	(23) AUTOSAR CAN Bus [+] 5 Serial Data	(23) 23	(23) 0.5	(23) BU / WH	(23) 4985	(23) V	(23) —
(24) 24	(24) 0.5	(24) BU / YE	(24) 4984	(24) I	(24) —	(24) AUTOSAR CAN Bus [-] 5 Serial Data	(24) 24	(24) 0.5	(24) BU / YE	(24) 4984	(24) V	(24) —
(25) 25	(25) 0.5	(25) BU / WH	(25) 4985	(25) I	(25) —	(25) AUTOSAR CAN Bus [+] 5 Serial Data	(25) 25	(25) 0.5	(25) BU / WH	(25) 4985	(25) V	(25) —
(26) 26	(26) 0.5	(26) BK	(26) 1350	(26) I	(26) —	(26) Ground	(26) 26	(26) 0.75	(26) BK	(26) 1350	(26) IV	(26) —
(27) 27	(27) 0.5	(27) WH	(27) 10116	(27) II	(27) —	(27) AC Outlet Low Reference	(27) 27	(27) 0.5	(27) WH	(27) 10116	(27) VI	(27) —
(28) 28	(28) 0.35	(28) GN / BU	(28) 2733	(28) II	(28) —	(28) Brake System Control Module LIN Bus 2	(28) 28	(28) 0.5	(28) GN / BU	(28) 2733	(28) VI	(28) —
(29) 29	(29) 0.5	(29) RD / VT	(29) 2640	(29) III	(29) —	(29) Battery Positive Voltage	(29) 29	(29) 0.5	(29) RD / VT	(29) 2640	(29) IV	(29) —
(30) 30	(30) 0.75	(30) RD	(30) 10118	(30) II	(30) —	(30) AC Outlet Phase B Control	(30) 30	(30) 0.75	(30) RD	(30) 10118	(30) VI	(30) —
(31) 31	(31) 0.35	(31) VT / GY	(31) 8978	(31) I	(31) —	(31) Inertial Sensor Supply Voltage	(31) 31	(31) 0.5	(31) VT / GY	(31) 8978	(31) V	(31) —
(32) 32	(32) 0.35	(32) BN / BK	(32) 4996	(32) I	(32) —	(32) Immobilizer Antenna Signal [+]	(32) 32	(32) 0.35	(32) BN / BK	(32) 4996	(32) V	(32) —
(33) 33	(33) 0.35	(33) WH / GY	(33) 4997	(33) I	(33) —	(33) Immobilizer Antenna Low Signal	(33) 33	(33) 0.35	(33) WH / GY	(33) 4997	(33) V	(33) —
(34) 34	(34) 0.35	(34) WH / YE	(34) 8976	(34) I	(34) —	(34) Private Serial Data Active Safety CAN Bus [-] Serial Data	(34) 34	(34) 0.5	(34) WH / YE	(34) 8976	(34) V	(34) —
(35) 35	(35) 0.35	(35) BU / YE	(35) 8977	(35) I	(35) —	(35) Private Serial Data Active Safety CAN Bus [+] Serial Data	(35) 35	(35) 0.5	(35) BU / YE	(35) 8977	(35) V	(35) —
(36) 36	(36) 0.5	(36) RD / YE	(36) 2340	(36) I	(36) —	(36) Battery Positive Voltage	(36) 36	(36) 0.5	(36) RD / YE	(36) 2340	(36) V	(36) —
(37) 37	(37) 0.5	(37) GN / VT	(37) 2857	(37) I	(37) —	(37) Body Control Module LIN Bus 11	(37) 37	(37) 0.35	(37) GN / VT	(37) 2857	(37) V	(37) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(38) 38	(38) 0.5	(38) VT / RD	(38) 4049	(38) I	(38) —	(38) AC Power Outlet Sensor High Reference	(38) 38	(38) 0.5	(38) VT / RD	(38) 4049	(38) V	(38) —
(39) 39	(39) 0.35	(39) VT / GN	(39) 4320	(39) I	(39) —	(39) Powertrain Sensor Bus Enable	(39) 39	(39) 0.5	(39) VT / GN	(39) 4320	(39) V	(39) —
(40) 40	(40) 0.35	(40) WH	(40) 4055	(40) I	(40) —	(40) Private Serial Data Powertrain CAN Bus [+] Serial Data	(40) 40	(40) 0.5	(40) WH	(40) 4055	(40) V	(40) —
(41) 41	(41) 0.35	(41) GN / GY	(41) 4627	(41) I	(41) —	(41) Image Processing Module LIN Bus 1	(41) 41	(41) 0.5	(41) GN / GY	(41) 4627	(41) V	(41) —
(42) 42	(42) 0.5	(42) BU / BN	(42) 6807	(42) I	(42) —	(42) DC/AC Inverter Control	(42) 42	(42) 0.5	(42) BU / BN	(42) 6807	(42) V	(42) —
(43) 43	(43) 0.5	(43) GN / VT	(43) 4786	(43) III	(43) —	(43) Dome/ Reading Lamp Enable Signal	(43) 43	(43) 0.5	(43) GN / VT	(43) 4786	(43) IV	(43) —
(44) 44	(44) 0.75	(44) YE	(44) 6817	(44) I	(44) —	(44) LED Backlight Dimming Control 1	(44) 44	(44) 0.75	(44) YE	(44) 6817	(44) IV	(44) —
(45) 45	(45) 0.35	(45) BU / GY	(45) 4054	(45) I	(45) —	(45) Private Serial Data Powertrain CAN Bus [-] Serial Data	(45) 45	(45) 0.5	(45) BU / GY	(45) 4054	(45) V	(45) —
(46) 46	(46) 0.35	(46) WH	(46) 4055	(46) I	(46) —	(46) Private Serial Data Powertrain CAN Bus [+] Serial Data	(46) 46	(46) 0.5	(46) WH	(46) 4055	(46) V	(46) —
(47) 47	(47) 0.5	(47) BK	(47) 1451	(47) I	(47) —	(47) Signal Ground	(47) 47	(47) 0.75	(47) BK / WH	(47) 1451	(47) IV	(47) —
(48) 48	(48) 0.35	(48) VT	(48) 4701	(48) I	(48) —	(48) Retained Accessory Power Control	(48) 48	(48) 0.35	(48) VT	(48) 4701	(48) V	(48) —
(49) 49	(49) 0.35	(49) WH / GY	(49) 4104	(49) I	(49) —	(49) AUTOSAR CAN Bus [-] 8 Serial Data	(49) 49	(49) 0.5	(49) WH / GY	(49) 4104	(49) V	(49) —
(50) 50	(50) 0.35	(50) BU / GY	(50) 4105	(50) I	(50) —	(50) AUTOSAR CAN Bus [+] 8 Serial Data	(50) 50	(50) 0.5	(50) BU / GY	(50) 4105	(50) V	(50) —
(51) 51	(51) 0.5	(51) BK / WH	(51) 1451	(51) I	(51) —	(51) Signal Ground	(51) 51	(51) 0.75	(51) BK / WH	(51) 1451	(51) IV	(51) —
(52) 52	(52) 0.5	(52) BK / WH	(52) 1051	(52) I	(52) —	(52) Signal Ground	(52) 52	(52) 0.5	(52) BK / WH	(52) 1051	(52) V	(52) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(53) 53	(53) 0.35	(53) BU / GY	(53) 4054	(53) I	(53) —	(53) Private Serial Data Powertrain CAN Bus [-] Serial Data	(53) 53	(53) 0.5	(53) BU / GY	(53) 4054	(53) V	(53) —
54 - 55	—	—	—	—	—	Not Occupied	54 - 55	—	—	—	—	—

X227 Front Floor Console Wiring Harness to Body Wiring Harness - Regular Cab



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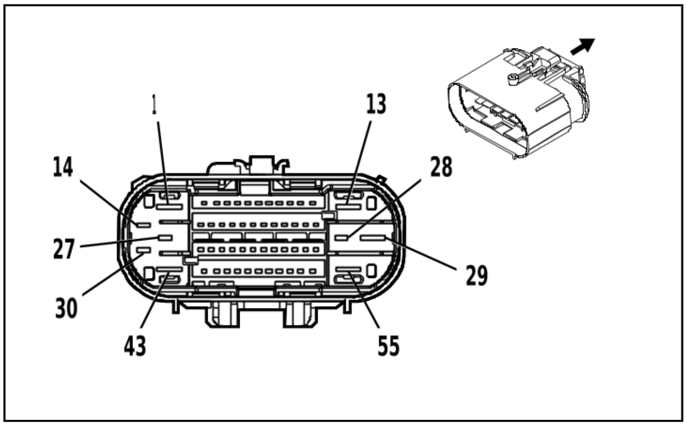


4993301

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Center
- OEM Connector: 35016652
- Service Connector: Service by Harness - See Part Catalog
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(BK)

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 35589924
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-35 (VT)	No Tool Required
III	84847992	J-35616-32 (OG)	J-38125-36
IV	84867140	J-35616-13 (BU)	J-38125-553
V	84992391	J-35616-5 (PU)	J-38125-36

X227 Front Floor Console Wiring Harness to Body Wiring Harness - Regular Cab

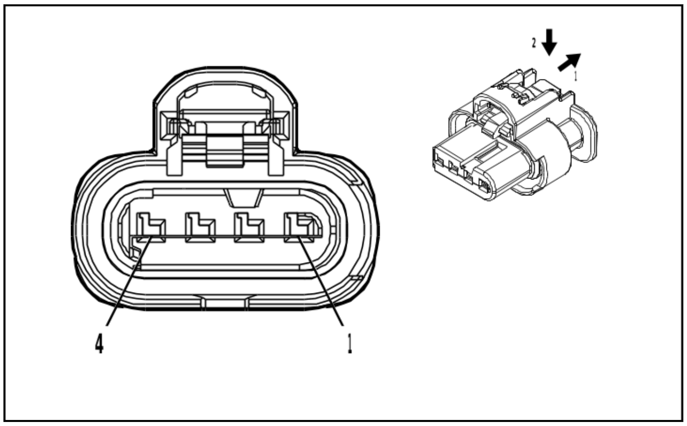
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
1 - 4	—	—	—	—	—	Not Occupied	1 - 4	—	—	—	—	—
(5) 5	(5) —	(5) —	(5) —	(5) —	(5) —	(5) Run/ Crank Ignition 1 Voltage	(5) 5	(5) 0.5	(5) VT / WH	(5) 239	(5) IV	(5) —
6 - 7	—	—	—	—	—	Not Occupied	6 - 7	—	—	—	—	—
(8) 8	(8) —	(8) —	(8) —	(8) —	(8) —	(8) Battery Positive Voltage	(8) 8	(8) 0.5	(8) RD / WH	(8) 5440	(8) IV	(8) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
9	—	—	—	—	—	Not Occupied	9	—	—	—	—	—
(10) 10	(10) —	(10) —	(10) —	(10) —	(10) —	(10) Interior Passive Entry Antenna 1 High Signal	(10) 10	(10) 0.35	(10) BN / BK	(10) 3552	(10) IV	(10) —
(11) 11	(11) —	(11) —	(11) —	(11) —	(11) —	(11) Interior Passive Entry Antenna 1 Low Signal	(11) 11	(11) 0.35	(11) WH	(11) 3553	(11) IV	(11) —
12 - 13	—	—	—	—	—	Not Occupied	12 - 13	—	—	—	—	—
(14) 14	(14) 0.75	(14) BK	(14) 10117	(14) II	(14) —	(14) AC Outlet Phase A Control	(14) 14	(14) 0.75	(14) BK	(14) 10117	(14) V	(14) —
15	—	—	—	—	—	Not Occupied	15	—	—	—	—	—
(16) 16	(16) 0.35	(16) WH	(16) 4976	(16) I	(16) —	(16) AUTOSAR CAN Bus [-] 3 Serial Data	(16) 16	(16) 0.5	(16) WH	(16) 4976	(16) IV	(16) —
(17) 17	(17) 0.35	(17) BU / BK	(17) 4977	(17) I	(17) —	(17) AUTOSAR CAN Bus [+] 3 Serial Data	(17) 17	(17) 0.5	(17) BU / BK	(17) 4977	(17) IV	(17) —
(18) 18	(18) 0.35	(18) WH	(18) 4976	(18) I	(18) —	(18) AUTOSAR CAN Bus [-] 3 Serial Data	(18) 18	(18) 0.5	(18) WH	(18) 4976	(18) IV	(18) —
(19) 19	(19) 0.35	(19) BU / BK	(19) 4977	(19) I	(19) —	(19) AUTOSAR CAN Bus [+] 3 Serial Data	(19) 19	(19) 0.5	(19) BU / BK	(19) 4977	(19) IV	(19) —
20 - 21	—	—	—	—	—	Not Occupied	20 - 21	—	—	—	—	—
(22) 22	(22) 0.5	(22) BU / YE	(22) 4984	(22) I	(22) —	(22) AUTOSAR CAN Bus [-] 5 Serial Data	(22) 22	(22) 0.5	(22) BU / YE	(22) 4984	(22) IV	(22) —
(23) 23	(23) 0.5	(23) BU / WH	(23) 4985	(23) I	(23) —	(23) AUTOSAR CAN Bus [+] 5 Serial Data	(23) 23	(23) 0.5	(23) BU / WH	(23) 4985	(23) IV	(23) —
(24) 24	(24) 0.5	(24) BU / YE	(24) 4984	(24) I	(24) —	(24) AUTOSAR CAN Bus [-] 5 Serial Data	(24) 24	(24) 0.5	(24) BU / YE	(24) 4984	(24) IV	(24) —
(25) 25	(25) 0.5	(25) BU / WH	(25) 4985	(25) I	(25) —	(25) AUTOSAR CAN Bus [+] 5 Serial Data	(25) 25	(25) 0.5	(25) BU / WH	(25) 4985	(25) IV	(25) —
(26) 26	(26) 0.75	(26) BK	(26) 1350	(26) I	(26) —	(26) Ground	(26) 26	(26) 0.75	(26) BK	(26) 1350	(26) IV	(26) —
(27) 27	(27) 0.35	(27) BK	(27) 10116	(27) II	(27) —	(27) AC Outlet Low Reference	(27) 27	(27) 0.5	(27) WH	(27) 10116	(27) V	(27) —
(28) 28	(28) —	(28) —	(28) —	(28) —	(28) —	(28) Brake System Control Module LIN Bus 2	(28) 28	(28) 0.5	(28) GN / BU	(28) 2733	(28) V	(28) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(29) 29	(29) —	(29) —	(29) —	(29) —	(29) —	(29) Battery Positive Voltage	(29) 29	(29) 0.5	(29) RD / VT	(29) 2640	(29) III	(29) —
(30) 30	(30) 0.75	(30) RD	(30) 10118	(30) II	(30) —	(30) AC Outlet Phase B Control	(30) 30	(30) 0.75	(30) RD	(30) 10118	(30) V	(30) —
31	—	—	—	—	—	Not Occupied	31	—	—	—	—	—
(32) 32	(32) 0.5	(32) BN / BK	(32) 4996	(32) I	(32) —	(32) Immobilizer Antenna Signal [+]	(32) 32	(32) 0.35	(32) BN / BK	(32) 4996	(32) IV	(32) —
(33) 33	(33) 0.5	(33) WH / GY	(33) 4997	(33) I	(33) —	(33) Immobilizer Antenna Low Signal	(33) 33	(33) 0.35	(33) WH / GY	(33) 4997	(33) IV	(33) —
34 - 35	—	—	—	—	—	Not Occupied	34 - 35	—	—	—	—	—
(36) 36	(36) —	(36) —	(36) —	(36) —	(36) —	(36) Battery Positive Voltage	(36) 36	(36) 0.5	(36) RD / YE	(36) 2340	(36) IV	(36) —
37	—	—	—	—	—	Not Occupied	37	—	—	—	—	—
(38) 38	(38) 0.75	(38) VT / RD	(38) 4049	(38) I	(38) —	(38) AC Power Outlet Sensor High Reference	(38) 38	(38) 0.5	(38) VT / RD	(38) 4049	(38) IV	(38) —
(39) 39	(39) —	(39) —	(39) —	(39) —	(39) —	(39) Powertrain Sensor Bus Enable	(39) 39	(39) 0.5	(39) VT / GN	(39) 4320	(39) IV	(39) —
(40) 40	(40) 0.35	(40) WH	(40) 4055	(40) I	(40) —	(40) Private Serial Data Powertrain CAN Bus [+] Serial Data	(40) 40	(40) 0.5	(40) WH	(40) 4055	(40) IV	(40) —
41	—	—	—	—	—	Not Occupied	41	—	—	—	—	—
(42) 42	(42) 0.75	(42) BU / BN	(42) 6807	(42) I	(42) —	(42) DC/AC Inverter Control	(42) 42	(42) 0.5	(42) BU / BN	(42) 6807	(42) IV	(42) —
(43) 43	(43) —	(43) —	(43) —	(43) —	(43) —	(43) Dome/ Reading Lamp Enable Signal	(43) 43	(43) 0.5	(43) GN / VT	(43) 4786	(43) III	(43) —
(44) 44	(44) 0.75	(44) YE	(44) 6817	(44) I	(44) —	(44) LED Backlight Dimming Control 1	(44) 44	(44) 0.75	(44) YE	(44) 6817	(44) IV	(44) —
(45) 45	(45) 0.35	(45) BU / GY	(45) 4054	(45) I	(45) —	(45) Private Serial Data Powertrain CAN Bus [-] Serial Data	(45) 45	(45) 0.5	(45) BU / GY	(45) 4054	(45) IV	(45) —
(46) 46	(46) 0.35	(46) WH	(46) 4055	(46) I	(46) —	(46) Private Serial Data Powertrain CAN Bus [+] Serial Data	(46) 46	(46) 0.5	(46) WH	(46) 4055	(46) IV	(46) —
(47) 47	(47) 0.35	(47) BK	(47) 1451	(47) I	(47) —	(47) Signal Ground	(47) 47	(47) 0.75	(47) BK / WH	(47) 1451	(47) IV	(47) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(48) 48	(48) 0.35	(48) V T	(48) 47 01	(48) I	(48) —	(48) Retained Accessory Power Control	(48) 48	(48) 0.35	(48) V T	(48) 47 01	(48) IV	(48) —
49 - 51	—	—	—	—	—	Not Occupied	49 - 51	—	—	—	—	—
(52) 52	(52) —	(52) —	(52) —	(52) —	(52) —	(52) Signal Ground	(52) 52	(52) 0.5	(52) B K / WH	(52) 10 51	(52) IV	(52) —
(53) 53	(53) 0.35	(53) B U / GY	(53) 40 54	(53) I	(53) —	(53) Private Serial Data Powertrain CAN Bus [-] Serial Data	(53) 53	(53) 0.5	(53) B U / GY	(53) 40 54	(53) IV	(53) —
54 - 55	—	—	—	—	—	Not Occupied	54 - 55	—	—	—	—	—

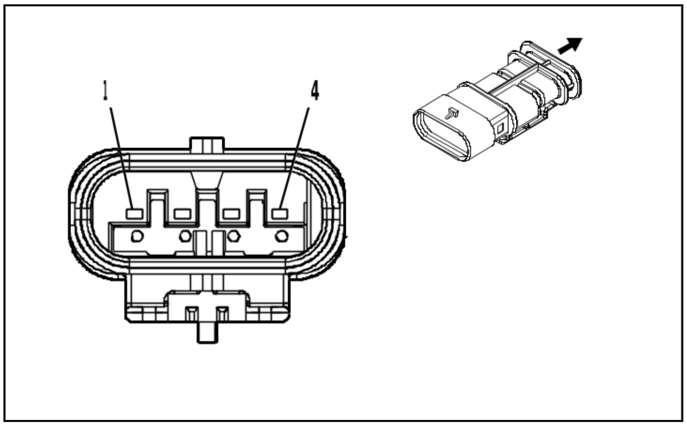
X237 Instrument Panel Wiring Harness to Passenger Instrument Panel Air Bag Jumper Wiring Harness



4900699

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2296700-3
- Service Connector: 19371193
- Description: 4-Way F 1.2 MCON-CB Series, Sealed(YE)



5149228

Connector Part Information

- Harness Type: Passenger Instrument Panel Air Bag Jumper Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M (YE)

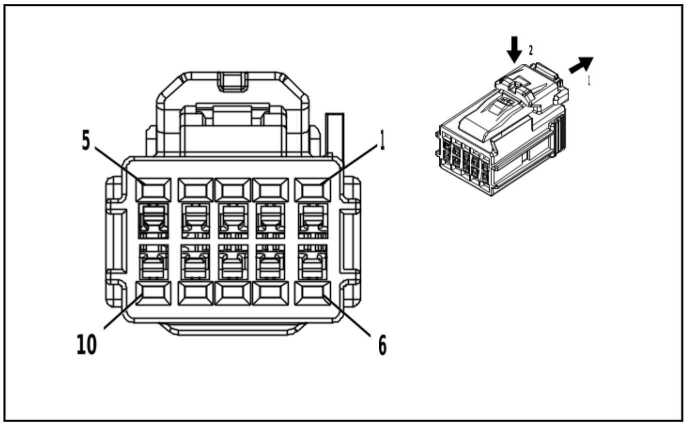
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required
II	Not required	No Tool Required	No Tool Required

X237 Instrument Panel Wiring Harness to Passenger Instrument Panel Air Bag Jumper Wiring Harness

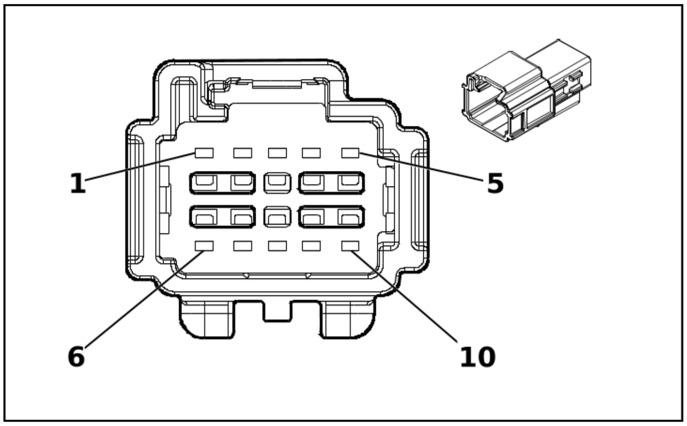
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) YE / OG	(1) 3025	(1) I	(1) —	(1) Passenger Instrument Panel Air Bag Stage 1 High Control	(1) 1	(1) 0.35	(1) YE / OG	(1) 3025	(1) II	(1) —
(2) 2	(2) 0.35	(2) OG / WH	(2) 3024	(2) I	(2) —	(2) Passenger Instrument Panel Air Bag Stage 1 Low Control	(2) 2	(2) 0.35	(2) OG / WH	(2) 3024	(2) II	(2) —
(3) 3	(3) 0.35	(3) GY / OG	(3) 3027	(3) I	(3) —	(3) Passenger Instrument Panel Air Bag Stage 2 High Control	(3) 3	(3) 0.35	(3) GY / OG	(3) 3027	(3) II	(3) —
(4) 4	(4) 0.35	(4) OG / VT	(4) 3026	(4) I	(4) —	(4) Passenger Instrument Panel Air Bag Stage 2 Low Control	(4) 4	(4) 0.35	(4) OG / VT	(4) 3026	(4) II	(4) —

X250 Instrument Panel Wiring Harness to Heater Wiring Harness



4254030

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-9004
- Service Connector: 13532428
- Description: 10-Way F 1.2 Series(BK)



5355759

Connector Part Information
- Harness Type: Heater Wiring Harness
- OEM Connector: 6098-9079
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way M 1.2 MCON Series(BK)

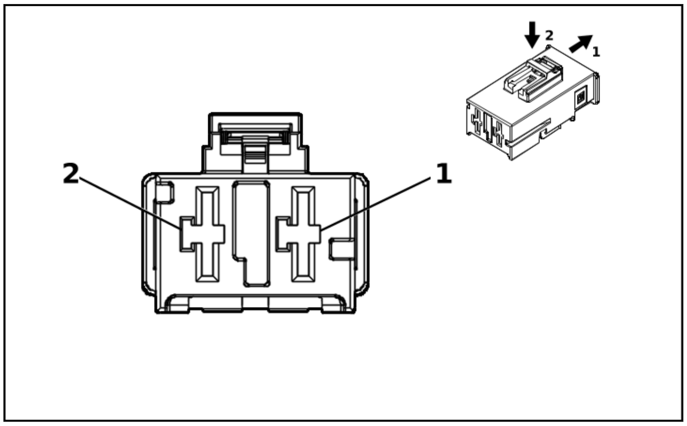
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	84962854	J-35616-12 (BU)	J-38125-215A
II	Not required	J-35616-13 (BU)	No Tool Required

X250 Instrument Panel Wiring Harness to Heater Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
1	—	—	—	—	—	Not Occupied	1	—	—	—	—	—
(2) 2	(2) 0.5	(2) BK	(2) 1050	(2) I	(2) —	(2) Ground	(2) 2	(2) 0.35	(2) BK	(2) 1050	(2) II	(2) —
3 - 4	—	—	—	—	—	Not Occupied	3 - 4	—	—	—	—	—
(5) 5	(5) 0.35	(5) GY	(5) 6137	(5) I	(5) —	(5) Air Conditioning Evaporator Temperature Sensor Signal	(5) 5	(5) 0.35	(5) BN	(5) 6137	(5) II	(5) —
(6) 6	(6) 0.35	(6) GN / VT	(6) 2852	(6) I	(6) —	(6) Body Control Module LIN Bus 6	(6) 6	(6) 0.35	(6) BU	(6) 2852	(6) II	(6) —
(7) 7	(7) 0.35	(7) BK / YE	(7) 407	(7) I	(7) —	(7) Sensor Low Reference	(7) 7	(7) 0.35	(7) BK / YE	(7) 407	(7) II	(7) —
(8) 8	(8) 0.5	(8) VT / BK	(8) 339	(8) I	(8) —	(8) Run/ Crank Ignition 1 Voltage	(8) 8	(8) 0.35	(8) BN / VT	(8) 339	(8) II	(8) —
(9) 9	(9) 0.35	(9) WH / YE	(9) 4634	(9) I	(9) —	(9) HVAC Remote Enable Signal	(9) 9	(9) 0.35	(9) RD	(9) 4634	(9) II	(9) —
10	—	—	—	—	—	Not Occupied	10	—	—	—	—	—

X251 HVAC Wiring Harness to Body Wiring Harness (C32)



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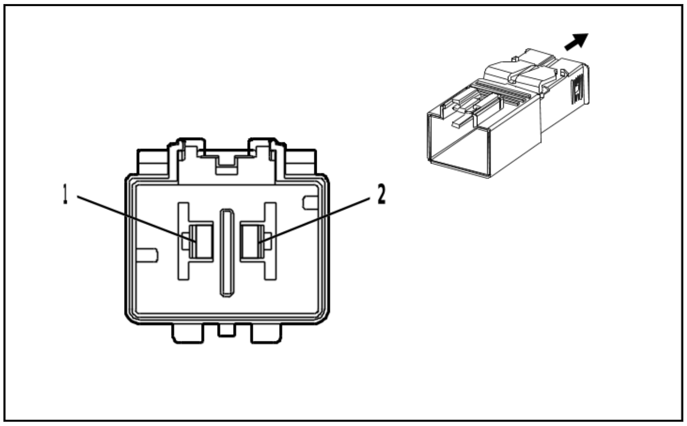


4891120

Connector Part Information
- Harness Type: HVAC Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 2317373-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 9.5 MCON-LL Series(BK)

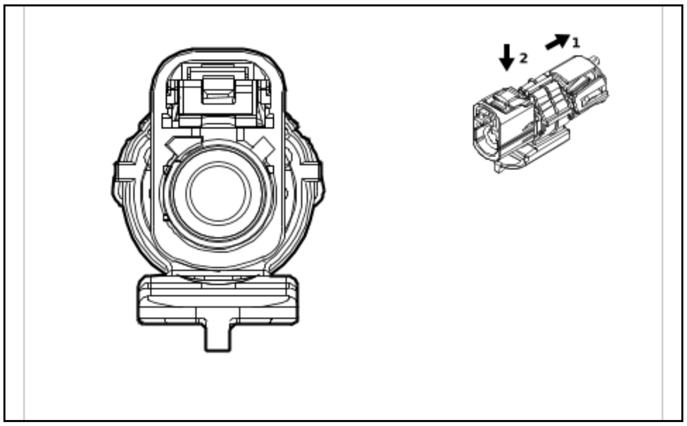
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
II	Not required	J-35616-21 (RD)	No Tool Required

X251 HVAC Wiring Harness to Body Wiring Harness (C32)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
1	—	—	—	—	—	Not Occupied	1	—	—	—	—	—
(2) 2	(2) 10	(2) RD / GY	(2) 642	(2) I	(2) —	(2) Battery Positive Voltage	(2) 2	(2) 10	(2) RD / GY	(2) 642	(2) II	(2) —

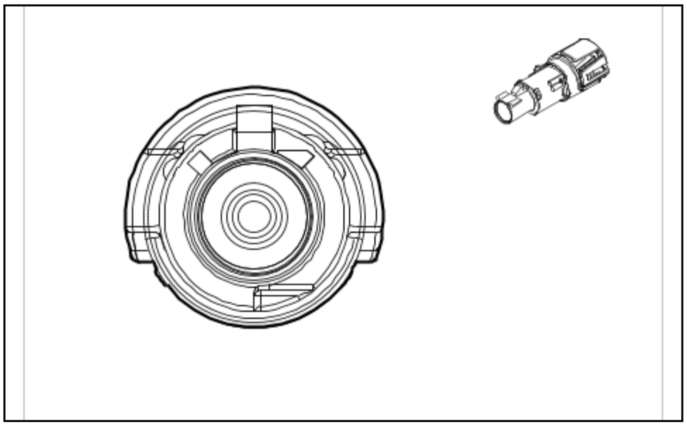
X309 Body Wiring Harness to Inside Rearview Mirror Wiring Harness - Jumper (UVN)



5519150

Connector Part Information

- Harness Type: Body Wiring Harness COAX
- OEM Connector: 35187047
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type, Sealed(BK)



5518522

Connector Part Information

- Harness Type: Inside Rearview Mirror Wiring Harness - Jumper COAX
- OEM Connector: 33355538
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type(BK)

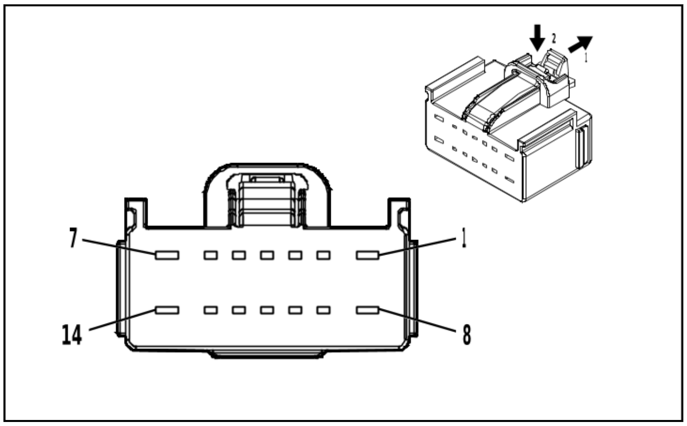
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

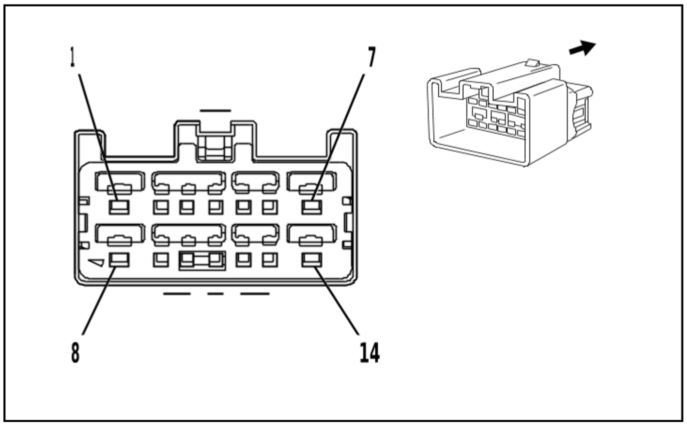
X309 Body Wiring Harness to Inside Rearview Mirror Wiring Harness - Jumper (UVN)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	Coax Cable	—	I	—	Cargo Bed Rear Vision Camera Coaxial Video Signal	—	—	Coax Cable	—	I	—

X324 Body Wiring Harness to Body Rear Wiring Harness Extension Harness (KI4 / KI5)



4934172



1283905

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 7289-7630-30
- Service Connector: 13513604
- Description: 14-Way F 1.5, 2.8 YESC Series(BK)

Connector Part Information

- Harness Type: Body Rear Wiring Harness Extension Harness
- OEM Connector: 7282-6447-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 14-Way M 1.5, 2.8 YESC Series(L-GY)

Terminal Part Information

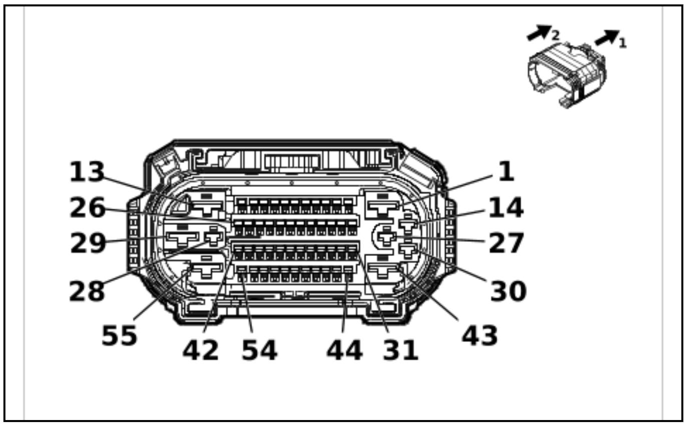
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13575850	J-35616-2A (GY)	J-38125-557
II	84962855	J-35616-4A (PU)	J-38125-11A
III	Not required	J-35616-3 (GY)	No Tool Required
IV	Not required	J-35616-5 (PU)	No Tool Required

X324 Body Wiring Harness to Body Rear Wiring Harness Extension Harness (KI4 / KI5)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK	(1) 10117	(1) II	(1) —	(1) AC Outlet Phase A Control	(1) 1	(1) 0.75	(1) BK	(1) 10117	(1) IV	(1) —
(2) 2	(2) 0.5	(2) VT / RD	(2) 4049	(2) I	(2) —	(2) AC Power Outlet Sensor High Reference	(2) 2	(2) 0.5	(2) VT / RD	(2) 4049	(2) III	(2) —
(3) 3	(3) 0.35	(3) VT / WH	(3) 239	(3) I	(3) —	(3) Run/Crank Ignition 1 Voltage	(3) 3	(3) 0.35	(3) VT / WH	(3) 239	(3) III	(3) —
(4) 4	(4) 0.5	(4) WH / GN	(4) 4628	(4) I	(4) —	(4) DC/AC Inverter Relay Control	(4) 4	(4) 0.5	(4) WH / GN	(4) 4628	(4) III	(4) —
(5) 5	(5) 0.5	(5) BU / BN	(5) 6807	(5) I	(5) —	(5) DC/AC Inverter Control	(5) 5	(5) 0.5	(5) BU / BN	(5) 6807	(5) III	(5) —
6	—	—	—	—	—	Not Occupied	6	—	—	—	—	—
(7) 7	(7) 0.75	(7) BK / WH	(7) 10120	(7) II	(7) —	(7) AC Outlet 2 Phase A Control	(7) 7	(7) 0.75	(7) BK / WH	(7) 10120	(7) IV	(7) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(8) 8	(8) 0.75	(8) RD	(8) 10118	(8) II	(8) —	(8) AC Outlet Phase B Control	(8) 8	(8) 0.75	(8) RD	(8) 10118	(8) IV	(8) —
(9) 9	(9) 0.35	(9) BARE	(9) 10116	(9) I	(9) —	(9) AC Outlet Low Reference	(9) 9	(9) 0.35	(9) BARE	(9) 10116	(9) III	(9) —
(10) 10	(10) 0.35	(10) GN / BU	(10) 6133	(10) I	(10) —	(10) Body Control Module LIN Bus 2	(10) 10	(10) 0.5	(10) GN / BU	(10) 6133	(10) III	(10) —
11	—	—	—	—	—	Not Occupied	11	—	—	—	—	—
(12) 12	(12) 0.5	(12) GN / BN	(12) 2266	(12) I	(12) —	(12) DC/AC Inverter Control 2	(12) 12	(12) 0.5	(12) GN / BN	(12) 2266	(12) III	(12) —
(13) 13	(13) 0.35	(13) BARE	(13) 10119	(13) I	(13) —	(13) AC Outlet 2 Low Reference	(13) 13	(13) 0.35	(13) BARE	(13) 10119	(13) III	(13) —
(14) 14	(14) 0.75	(14) RD / WH	(14) 10121	(14) II	(14) —	(14) AC Outlet 2 Phase B Control	(14) 14	(14) 0.75	(14) RD / WH	(14) 10121	(14) IV	(14) —

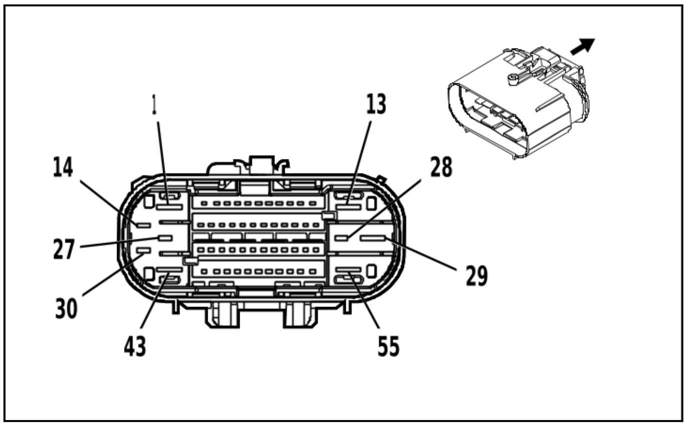
X331 Front Seat Wiring Harness - Driver to Body Wiring Harness



5823852

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 35572204
- Service Connector: Service by Harness - See Part Catalog
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(BK)



4993301

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 35588064
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(BK)

Terminal Part Information

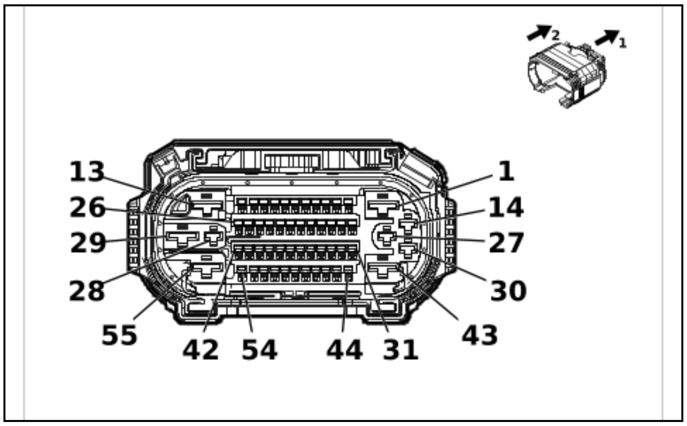
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-42 (RD)	No Tool Required
III	Not required	No Tool Required	No Tool Required
IV	84847992	J-35616-32 (OG)	J-38125-36
V	84867140	J-35616-13 (BU)	J-38125-553

X331 Front Seat Wiring Harness - Driver to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) BK	(1) 1550	(1) II	(1) —	(1) Ground	(1) 1	(1) 2.5	(1) BK	(1) 1550	(1) IV	(1) —
2 - 3	—	—	—	—	—	Not Occupied	2 - 3	—	—	—	—	—
(4) 4	(4) 0.5 (4) 0.75	(4) RD / BN (4) RD / BN	(4) 2240 (4) 2240	(4) I (4) I	(4) - A45 (4) A45	(4) Battery Positive Voltage (4) Battery Positive Voltage	(4) 4	(4) 0.5	(4) RD / BN	(4) 2240	(4) V	(4) —
(5) 5	(5) 0.35	(5) GN / WH	(5) 7530	(5) I	(5) —	(5) Driver Seat Adjuster Memory Module LIN Bus 1	(5) 5	(5) 0.5	(5) GN / WH	(5) 7530	(5) V	(5) —
6	—	—	—	—	—	Not Occupied	6	—	—	—	—	—
(7) 7	(7) 0.35	(7) WH	(7) 615	(7) I	(7) —	(7) Seat Memory Switch Signal 1	(7) 7	(7) 0.35	(7) WH	(7) 615	(7) V	(7) —
(8) 8	(8) 0.35	(8) BU / GN	(8) 614	(8) I	(8) —	(8) Seat Memory Switch Set Signal	(8) 8	(8) 0.35	(8) BU / GN	(8) 614	(8) V	(8) —
9 - 14	—	—	—	—	—	Not Occupied	9 - 14	—	—	—	—	—
(15) 15	(15) 0.75	(15) BN / VT	(15) 2077	(15) I	(15) —	(15) Driver Seat Heating Element Control	(15) 15	(15) 0.75	(15) BN / VT	(15) 2077	(15) V	(15) —
(16) 16	(16) 0.75	(16) BN / BK	(16) 2078	(16) I	(16) —	(16) Driver Seat Heating Element Low Reference	(16) 16	(16) 0.75	(16) BN / BK	(16) 2078	(16) V	(16) —
(17) 17	(17) 0.5	(17) YE / GY	(17) 2079	(17) I	(17) —	(17) Driver Seat Heating Temperature Sensor Signal	(17) 17	(17) 0.5	(17) YE / GY	(17) 2079	(17) V	(17) —
(18) 18	(18) 0.5	(18) BK / YE	(18) 2080	(18) I	(18) —	(18) Driver Heated Seat Thermistor Low Reference	(18) 18	(18) 0.5	(18) BK / YE	(18) 2080	(18) V	(18) —
(19) 19	(19) 0.5	(19) BU	(19) 2425	(19) I	(19) —	(19) Driver Seat Back Heating Temperature Sensor Signal	(19) 19	(19) 0.5	(19) BU	(19) 2425	(19) V	(19) —
(20) 20	(20) 0.75	(20) BN	(20) 2432	(20) I	(20) —	(20) Driver Seat Back Heating Element Control	(20) 20	(20) 0.75	(20) BN	(20) 2432	(20) V	(20) —
21 - 28	—	—	—	—	—	Not Occupied	21 - 28	—	—	—	—	—
(29) 29	(29) 2.5	(29) RD / YE	(29) 5040	(29) II	(29) —	(29) Battery Positive Voltage	(29) 29	(29) 2.5	(29) RD / YE	(29) 5040	(29) IV	(29) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
30	—	—	—	—	—	Not Occupied	30	—	—	—	—	—
(31) 31	(31) 0.5	(31) OG / GY	(31) 2652	(31) I	(31) —	(31) Driver Seat Belt Sensor Signal	(31) 31	(31) 0.35	(31) OG / GY	(31) 2652	(31) V	(31) —
(32) 32	(32) 0.5	(32) BK / OG	(32) 1363	(32) I	(32) —	(32) Driver Seat Belt Switch Low Reference	(32) 32	(32) 0.5	(32) BK / OG	(32) 1363	(32) V	(32) —
33	—	—	—	—	—	Not Occupied	33	—	—	—	—	—
(34) 34	(34) 0.5	(34) BK / OG	(34) 4963	(34) III	(34) —	(34) Driver Seat Back Air Bag Low Control	(34) 34	(34) 0.5	(34) BK / OG	(34) 4963	(34) V	(34) —
(35) 35	(35) 0.5	(35) OG / BU	(35) 4962	(35) III	(35) —	(35) Driver Seat Back Air Bag High Control	(35) 35	(35) 0.5	(35) OG / BU	(35) 4962	(35) V	(35) —
36 - 40	—	—	—	—	—	Not Occupied	36 - 40	—	—	—	—	—
(41) 41	(41) 0.35	(41) BU / VT	(41) 4101	(41) I	(41) —	(41) AUTOSAR CAN Bus [+] 4 Serial Data	(41) 41	(41) 0.5	(41) BU / VT	(41) 4101	(41) V	(41) —
(42) 42	(42) 0.35	(42) WH	(42) 4100	(42) I	(42) —	(42) AUTOSAR CAN Bus [-] 4 Serial Data	(42) 42	(42) 0.5	(42) WH	(42) 4100	(42) V	(42) —
43 - 49	—	—	—	—	—	Not Occupied	43 - 49	—	—	—	—	—
(50) 50	(50) 0.35	(50) BU / VT	(50) 4101	(50) I	(50) —	(50) AUTOSAR CAN Bus [+] 4 Serial Data	(50) 50	(50) 0.5	(50) BU / VT	(50) 4101	(50) V	(50) —
(51) 51	(51) 0.35	(51) WH	(51) 4100	(51) I	(51) —	(51) AUTOSAR CAN Bus [-] 4 Serial Data	(51) 51	(51) 0.5	(51) WH	(51) 4100	(51) V	(51) —
(52) 52	(52) 0.5	(52) GN / VT	(52) 5906	(52) I	(52) —	(52) Driver Seat Blower Motor Control 1	(52) 52	(52) 0.5	(52) GN / VT	(52) 5906	(52) V	(52) —
(53) 53	(53) 0.75	(53) VT / WH	(53) 1139	(53) I	(53) —	(53) Run/Crank Ignition 1 Voltage	(53) 53	(53) 0.75	(53) VT / WH	(53) 1139	(53) V	(53) —
54 - 55	—	—	—	—	—	Not Occupied	54 - 55	—	—	—	—	—

X336 Front Seat Wiring Harness - Passenger to Body Wiring Harness



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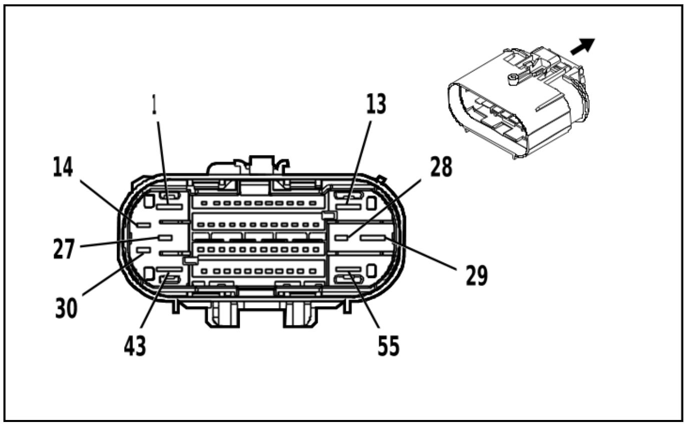


4993301

Connector Part Information

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 35572205
- Service Connector: Service by Harness - See Part Catalog
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(BK)

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 35588064
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-42 (RD)	No Tool Required
III	Not required	No Tool Required	No Tool Required
IV	84847992	J-35616-32 (OG)	J-38125-36
V	84867140	J-35616-13 (BU)	J-38125-553

X336 Front Seat Wiring Harness - Passenger to Body Wiring Harness

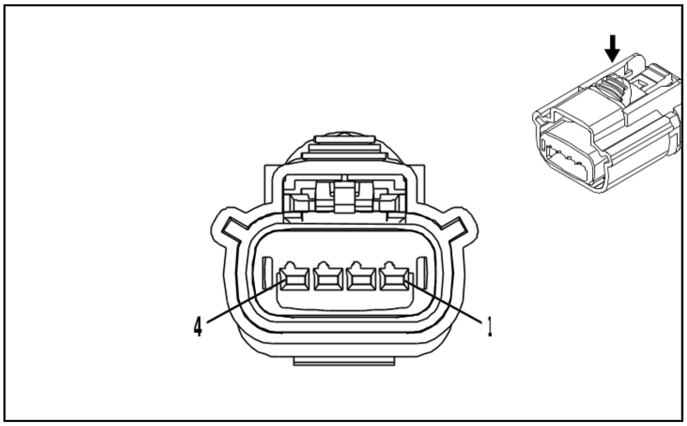
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.75 (1) 2.5	(1) BK (1) BK	(1) 1350 (1) 1350	(1) II (1) II	(1) - (A7K/AVU) (1) A7K / AVU	(1) Ground (1) Ground	(1) 1	(1) 2.5	(1) BK	(1) 1350	(1) IV	(1) —
2	—	—	—	—	—	Not Occupied	2	—	—	—	—	—
(3) 3	(3) 0.75	(3) RD / GN	(3) 6140	(3) I	(3) —	(3) Battery Positive Voltage	(3) 3	(3) 0.75	(3) RD / GN	(3) 6140	(3) V	(3) —
(4) 4	(4) 0.75 (4) 0.5	(4) RD / BN (4) RD / BN	(4) 2240 (4) 2240	(4) I (4) I	(4) - AVU (4) AVU	(4) Battery Positive Voltage (4) Battery Positive Voltage	(4) 4	(4) 0.5	(4) RD / BN	(4) 2240	(4) V	(4) —
(5) 5	(5) 0.75	(5) RD / BN	(5) 6640	(5) I	(5) —	(5) Battery Positive Voltage	(5) 5	(5) 0.75	(5) RD / BN	(5) 6640	(5) V	(5) —
6	—	—	—	—	—	Not Occupied	6	—	—	—	—	—

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(7) 7	(7) 0.5	(7) BU	(7) 4987	(7) I	(7) —	(7) AUTOSAR CAN Bus [+] 1 Serial Data (7) AUTOSAR CAN Bus [+] 1 Serial Data	(7) 7	(7) 0.35 (7) 0.5	(7) BU (7) BU	(7) 4987 (7) 4987	(7) V (7) V	(7) UKL / UGN (7) AL0
(8) 8	(8) 0.5	(8) WH	(8) 4986	(8) I	(8) —	(8) AUTOSAR CAN Bus [-] 1 Serial Data (8) AUTOSAR CAN Bus [-] 1 Serial Data	(8) 8	(8) 0.35 (8) 0.5	(8) WH (8) WH	(8) 4986 (8) 4986	(8) V (8) V	(8) UKL / UGN (8) AL0
9 - 14	—	—	—	—	—	Not Occupied	9 - 14	—	—	—	—	—
(15) 15	(15) 0.75	(15) BN / VT	(15) 2077	(15) I	(15) —	(15) Driver Seat Heating Element Control	(15) 15	(15) 0.75	(15) BN / VT	(15) 2077	(15) V	(15) —
(16) 16	(16) 0.75	(16) BN / BK	(16) 2078	(16) I	(16) —	(16) Driver Seat Heating Element Low Reference	(16) 16	(16) 0.75	(16) BN / BK	(16) 2078	(16) V	(16) —
(17) 17	(17) 0.5	(17) YE / GY	(17) 2079	(17) I	(17) —	(17) Driver Seat Heating Temperature Sensor Signal	(17) 17	(17) 0.5	(17) YE / GY	(17) 2079	(17) V	(17) —
(18) 18	(18) 0.5	(18) BK / YE	(18) 2080	(18) I	(18) —	(18) Driver Heated Seat Thermistor Low Reference	(18) 18	(18) 0.5	(18) BK / YE	(18) 2080	(18) V	(18) —
(19) 19	(19) 0.5	(19) BU	(19) 2425	(19) I	(19) —	(19) Driver Seat Back Heating Temperature Sensor Signal	(19) 19	(19) 0.5	(19) BU	(19) 2425	(19) V	(19) —
(20) 20	(20) 0.75	(20) BN	(20) 2432	(20) I	(20) —	(20) Driver Seat Back Heating Element Control	(20) 20	(20) 0.75	(20) BN	(20) 2432	(20) V	(20) —
(21) 21	(21) 0.5	(21) GN / VT	(21) 2857	(21) I	(21) —	(21) Body Control Module LIN Bus 11	(21) 21	(21) 0.35	(21) GN / VT	(21) 2857	(21) V	(21) —
22	—	—	—	—	—	Not Occupied	22	—	—	—	—	—
(23) 23	(23) 0.5	(23) RD / GN	(23) 4440	(23) I	(23) —	(23) Battery Positive Voltage	(23) 23	(23) 0.5	(23) RD / GN	(23) 4440	(23) V	(23) —
(24) 24	(24) 0.5	(24) GY / OG	(24) 3946	(24) I	(24) AL0	(24) Passenger Automatic Locking Retractor Switch Low Reference	(24) 24	(24) 0.35	(24) GY / OG	(24) 3946	(24) V	(24) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(25) 25	(25) 0.5	(25) OG / BN	(25) 3947	(25) I	(25) AL0	(25) Passenger Automatic Locking Retractor Switch Signal	(25) 25	(25) 0.35	(25) OG / BN	(25) 3947	(25) V	(25) —
(26) 26	(26) 0.5	(26) BK / WH	(26) 1251	(26) I	(26) —	(26) Signal Ground	(26) 26	(26) 0.5	(26) BK / WH	(26) 1251	(26) V	(26) —
27 - 28	—	—	—	—	—	Not Occupied	27 - 28	—	—	—	—	—
(29) 29	(29) 2.5	(29) RD / YE	(29) 7440	(29) II	(29) —	(29) Battery Positive Voltage	(29) 29	(29) 2.5	(29) RD / YE	(29) 7440	(29) IV	(29) —
30	—	—	—	—	—	Not Occupied	30	—	—	—	—	—
(31) 31	(31) 0.5	(31) OG / VT	(31) 1362	(31) I	(31) —	(31) Passenger Seat Belt Switch Signal	(31) 31	(31) 0.35	(31) OG / VT	(31) 1362	(31) V	(31) —
(32) 32	(32) 0.5	(32) BK / OG	(32) 1363	(32) I	(32) —	(32) Driver Seat Belt Switch Low Reference	(32) 32	(32) 0.5	(32) BK / OG	(32) 1363	(32) V	(32) —
33	—	—	—	—	—	Not Occupied	33	—	—	—	—	—
(34) 34	(34) 0.5	(34) BU / OG	(34) 4957	(34) III	(34) —	(34) Passenger Seat Back Air Bag Low Control	(34) 34	(34) 0.5	(34) BU / OG	(34) 4957	(34) V	(34) —
(35) 35	(35) 0.5	(35) OG / GY	(35) 4956	(35) III	(35) —	(35) Passenger Seat Back Air Bag High Control	(35) 35	(35) 0.5	(35) OG / GY	(35) 4956	(35) V	(35) —
(36) 36	(36) 0.5	(36) GN / VT	(36) 5906	(36) I	(36) —	(36) Driver Seat Blower Motor Control 1	(36) 36	(36) 0.5	(36) GN / VT	(36) 5906	(36) V	(36) —
(37) 37	(37) 0.75	(37) VT / WH	(37) 1139	(37) I	(37) —	(37) Run/Crank Ignition 1 Voltage	(37) 37	(37) 0.75	(37) VT / WH	(37) 1139	(37) V	(37) —
38 - 40	—	—	—	—	—	Not Occupied	38 - 40	—	—	—	—	—
(41) 41	(41) 0.35	(41) BU / VT	(41) 4101	(41) I	(41) —	(41) AUTOSAR CAN Bus [+] 4 Serial Data	(41) 41	(41) 0.5	(41) BU / VT	(41) 4101	(41) V	(41) —
(42) 42	(42) 0.35	(42) WH	(42) 4100	(42) I	(42) —	(42) AUTOSAR CAN Bus [-] 4 Serial Data	(42) 42	(42) 0.5	(42) WH	(42) 4100	(42) V	(42) —
43 - 49	—	—	—	—	—	Not Occupied	43 - 49	—	—	—	—	—
(50) 50	(50) 0.35	(50) BU / VT	(50) 4101	(50) I	(50) —	(50) AUTOSAR CAN Bus [+] 4 Serial Data	(50) 50	(50) 0.5	(50) BU / VT	(50) 4101	(50) V	(50) —
(51) 51	(51) 0.35	(51) WH	(51) 4100	(51) I	(51) —	(51) AUTOSAR CAN Bus [-] 4 Serial Data	(51) 51	(51) 0.5	(51) WH	(51) 4100	(51) V	(51) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(52) 52	(52) 0.5	(52) BU	(52) 4987	(52) I	(52) —	(52) AUTOSAR CAN Bus [+] 1 Serial Data	(52) 52	(52) 0.5	(52) BU	(52) 4987	(52) V	(52) —
(53) 53	(53) 0.5	(53) WH	(53) 4986	(53) I	(53) —	(53) AUTOSAR CAN Bus [-] 1 Serial Data	(53) 53	(53) 0.5	(53) WH	(53) 4986	(53) V	(53) —
54 - 55	—	—	—	—	—	Not Occupied	54 - 55	—	—	—	—	—

X340 Body Wiring Harness to Rear Seat Heater Control Wiring Harness (KA6)



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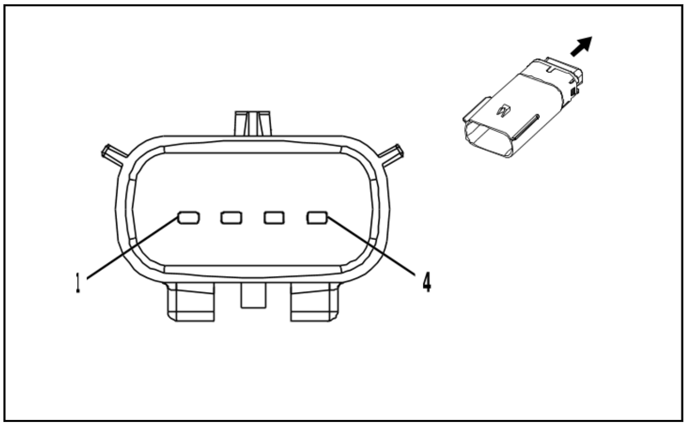

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Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 15514524
- Service Connector: 19355605
- Description: 4-Way F 1.5 OCS Series, Sealed(BK)

Connector Part Information
- Harness Type: Rear Seat Heater Control Wiring Harness
- OEM Connector: 33481-4401
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.5 Series, Sealed(BK)

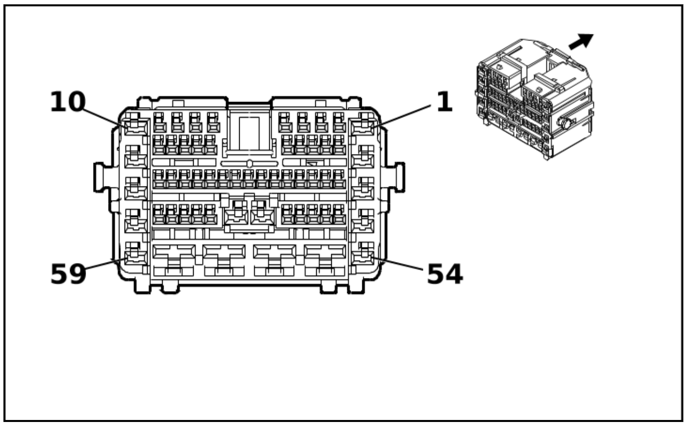
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-3 (GY)	No Tool Required

X340 Body Wiring Harness to Rear Seat Heater Control Wiring Harness (KA6)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) RD / WH	(1) 5740	(1) I	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 0.75	(1) RD / YE	(1) 5740	(1) II	(1) —
(2) 2	(2) 0.75	(2) RD / BU	(2) 6740	(2) I	(2) —	(2) Battery Positive Voltage	(2) 2	(2) 0.75	(2) RD / VT	(2) 6740	(2) II	(2) —
(3) 3	(3) 0.35	(3) GN / VT	(3) 2857	(3) I	(3) —	(3) Body Control Module LIN Bus 11	(3) 3	(3) 0.5	(3) GN / BU	(3) 2857	(3) II	(3) —
(4) 4	(4) 1	(4) BK	(4) 1550	(4) I	(4) —	(4) Ground	(4) 4	(4) 1	(4) BK	(4) 1550	(4) II	(4) —

X370 Dome Lamp Wiring Harness to Instrument Panel Wiring Harness (IOK)



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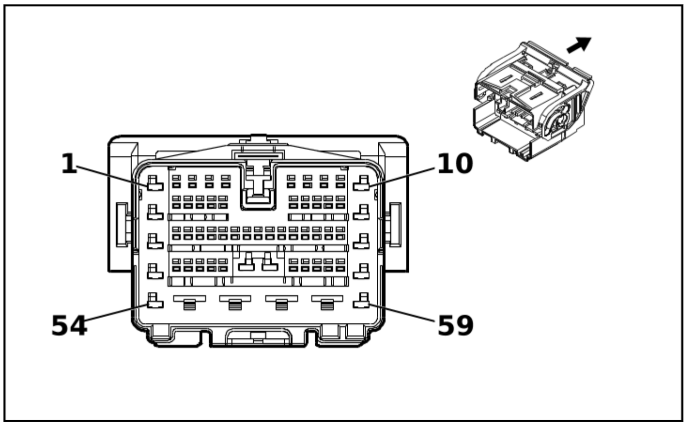

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Connector Part Information

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 7289-7293-30
- Service Connector: 13528126
- Description: 59-Way F 1.2 MCON, 2.8, 6.3 YESC Series(BK)

Connector Part Information

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 7288-7295-30
- Service Connector: 84766292
- Description: 59-Way M 1.2 MCON, 2.8, 6.3 YESC Series(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19331733	J-35616-12 (BU)	J-38125-553
II	85544080	J-35616-4A (PU)	J-38125-11A
III	13578908	J-35616-5 (PU)	J-38125-11A
IV	19330704	J-35616-13 (BU)	J-38125-215A

X370 Dome Lamp Wiring Harness to Instrument Panel Wiring Harness (IOK)

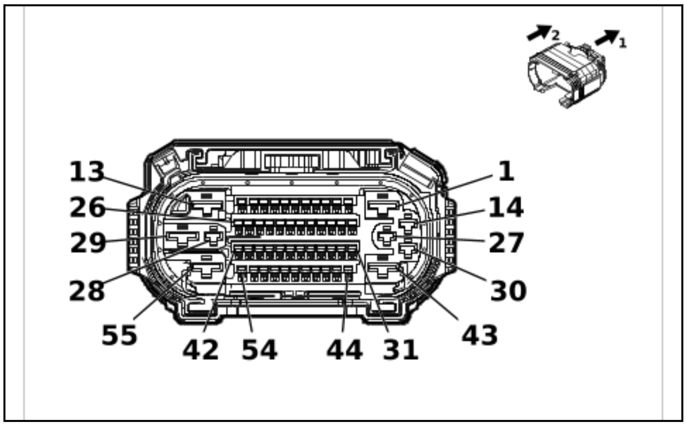
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / YE	(1) 240	(1) II	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 0.5	(1) RD / YE	(1) 240	(1) III	(1) —
(2) 2	(2) 0.5	(2) VT / BK	(2) 339	(2) I	(2) —	(2) Run/ Crank Ignition 1 Voltage	(2) 2	(2) 0.5	(2) VT / BK	(2) 339	(2) IV	(2) —
3	—	—	—	—	—	Not Occupied	3	—	—	—	—	—
(4) 4	(4) 0.35	(4) GN / BN	(4) 3005	(4) I	(4) —	(4) Active Noise Cancellation Microphone 1 Signal	(4) 4	(4) 0.35	(4) GN / BN	(4) 3005	(4) IV	(4) —
(5) 5	(5) 0.35	(5) GN / BK	(5) 3008	(5) I	(5) —	(5) Active Noise Cancellation Microphone 1 Feedback Signal	(5) 5	(5) 0.35	(5) GN / BK	(5) 3008	(5) IV	(5) —
(6) 6	(6) 0.35	(6) WH / GY	(6) 4104	(6) I	(6) —	(6) AUTOSAR CAN Bus [-] 8 Serial Data	(6) 6	(6) 0.35	(6) WH / GY	(6) 4104	(6) IV	(6) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(7) 7	(7) 0.35	(7) BU / GY	(7) 4105	(7) I	(7) —	(7) AUTOSAR CAN Bus [+] 8 Serial Data	(7) 7	(7) 0.35	(7) BU / GY	(7) 4105	(7) IV	(7) —
(8) 8	(8) 0.35	(8) WH / GY	(8) 4104	(8) I	(8) —	(8) AUTOSAR CAN Bus [-] 8 Serial Data	(8) 8	(8) 0.5	(8) WH / GY	(8) 4104	(8) IV	(8) —
(9) 9	(9) 0.35	(9) BU / GY	(9) 4105	(9) I	(9) —	(9) AUTOSAR CAN Bus [+] 8 Serial Data	(9) 9	(9) 0.5	(9) BU / GY	(9) 4105	(9) IV	(9) —
(10) 10	(10) 0.35	(10) YE / WH	(10) 1690	(10) II	(10) —	(10) Mirror Dimming Signal	(10) 10	(10) 0.35	(10) YE / WH	(10) 1690	(10) III	(10) —
(11) 11	(11) 0.35	(11) BK / YE	(11) 1691	(11) II	(11) —	(11) Automatic Day/Night Mirror Low Reference	(11) 11	(11) 0.35	(11) BK / YE	(11) 1691	(11) III	(11) —
(12) 12	(12) 0.35	(12) WH	(12) 4978	(12) I	(12) —	(12) AUTOSAR CAN Bus [-] 2 Serial Data	(12) 12	(12) 0.35	(12) WH	(12) 4978	(12) IV	(12) UHY
(13) 13	(13) 0.35	(13) BU / YE	(13) 4979	(13) I	(13) —	(13) AUTOSAR CAN Bus [+] 2 Serial Data	(13) 13	(13) 0.35	(13) BU / YE	(13) 4979	(13) IV	(13) UHY
(14) 14	(14) 0.35	(14) BK / BN	(14) 654	(14) I	(14) —	(14) Cellular Telephone Microphone Low Reference	(14) 14	(14) 0.35	(14) BK / BN	(14) 654	(14) IV	(14) —
(15) 15	(15) 0.35	(15) BU	(15) 655	(15) I	(15) —	(15) Cellular Telephone Microphone Signal	(15) 15	(15) 0.35	(15) BU	(15) 655	(15) IV	(15) —
(16) 16	(16) 0.35	(16) YE / VT	(16) 6191	(16) I	(16) —	(16) Power Rear Window Switch Open Signal	(16) 16	(16) 0.5	(16) YE / VT	(16) 6191	(16) IV	(16) —
(17) 17	(17) 0.35	(17) WH	(17) 6192	(17) I	(17) —	(17) Sliding Rear Window Switch Close Signal	(17) 17	(17) 0.5	(17) WH	(17) 6192	(17) IV	(17) —
(18) 18	(18) 0.5	(18) BU / BK	(18) 1053	(18) I	(18) —	(18) Center High Mounted Stop Lamp Control 3	(18) 18	(18) 0.5	(18) BU / BK	(18) 1053	(18) IV	(18) —
(19) 19	(19) 0.5	(19) WH / VT	(19) 1430	(19) I	(19) —	(19) Exterior Courtesy Lamp Control	(19) 19	(19) 0.5	(19) WH / VT	(19) 1430	(19) IV	(19) —
(20) 20	(20) 0.35	(20) BU / YE	(20) 4979	(20) I	(20) —	(20) AUTOSAR CAN Bus [+] 2 Serial Data	(20) 20	(20) 0.35	(20) BU / RD	(20) 4979	(20) IV	(20) UHY
(21) 21	(21) 0.35	(21) WH	(21) 4978	(21) I	(21) —	(21) AUTOSAR CAN Bus [-] 2 Serial Data	(21) 21	(21) 0.35	(21) WH / BN	(21) 4978	(21) IV	(21) UHY
(22) 22	(22) 0.5	(22) GN / WH	(22) 24	(22) II	(22) —	(22) Backup Lamp Control	(22) 22	(22) 0.5	(22) GN / WH	(22) 24	(22) III	(22) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(23) 23	(23) 0.35	(23) GN / WH	(23) 2514	(23) II	(23) —	(23) Telematics Switch Signal	(23) 23	(23) 0.35	(23) GN / WH	(23) 2514	(23) III	(23) —
(24) 24	(24) 0.35	(24) GN / BK	(24) 2515	(24) I	(24) —	(24) Telematics Switch Supply Voltage	(24) 24	(24) 0.35	(24) GN / BK	(24) 2515	(24) IV	(24) —
(25) 25	(25) 0.35	(25) YE / VT	(25) 2516	(25) I	(25) —	(25) Telematics Switch Green LED Indicator Control	(25) 25	(25) 0.35	(25) YE / VT	(25) 2516	(25) IV	(25) —
(26) 26	(26) 0.35	(26) BN / WH	(26) 2517	(26) I	(26) —	(26) Telematics Switch Red LED Indicator Control	(26) 26	(26) 0.35	(26) BN / WH	(26) 2517	(26) IV	(26) —
(27) 27	(27) 0.5	(27) GN / WH	(27) 2854	(27) I	(27) —	(27) Body Control Module LIN Bus 8	(27) 27	(27) 0.5	(27) GN / WH	(27) 2854	(27) IV	(27) —
(28) 28	(28) 0.5	(28) GN / WH	(28) 4115	(28) I	(28) —	(28) Body Control Module LIN Bus 5	(28) 28	(28) 0.35	(28) GN / WH	(28) 4115	(28) IV	(28) —
(29) 29	(29) 0.35	(29) VT / YE	(29) 7043	(29) I	(29) —	(29) Microphone [+] Signal	(29) 29	(29) 0.35	(29) VT / YE	(29) 7043	(29) IV	(29) —
(30) 30	(30) 0.35	(30) BU / BK	(30) 7044	(30) I	(30) —	(30) Microphone [-] Signal	(30) 30	(30) 0.35	(30) BU / BK	(30) 7044	(30) IV	(30) —
(31) 31	(31) 0.35	(31) YE	(31) 6817	(31) I	(31) —	(31) LED Backlight Dimming Control 1	(31) 31	(31) 0.35	(31) YE	(31) 6817	(31) IV	(31) —
(32) 32	(32) 0.5	(32) VT	(32) 801	(32) I	(32) —	(32) Retained Accessory Power Control	(32) 32	(32) 0.5	(32) VT	(32) 801	(32) IV	(32) —
(33) 33	(33) 0.5	(33) BN / YE	(33) 820	(33) I	(33) —	(33) Center High Mounted Stop Lamp Supply Voltage	(33) 33	(33) 0.5	(33) BN / YE	(33) 820	(33) IV	(33) —
34 - 35	—	—	—	—	—	Not Occupied	34 - 35	—	—	—	—	—
(36) 36	(36) 0.35	(36) BK / WH	(36) 851	(36) I	(36) —	(36) Signal Ground	(36) 36	(36) 0.5	(36) BK / WH	(36) 851	(36) IV	(36) —
37 - 38	—	—	—	—	—	Not Occupied	37 - 38	—	—	—	—	—
(39) 39	(39) 2.5	(39) VT / BU	(39) 10735	(39) II	(39) —	(39) Upfitter Accessory 5 Supply Voltage	(39) 39	(39) 2.5	(39) VT / BU	(39) 10735	(39) III	(39) —
(40) 40	(40) 2.5	(40) BK	(40) 1050	(40) II	(40) —	(40) Ground	(40) 40	(40) 2.5	(40) BK	(40) 1050	(40) III	(40) —
41 - 52	—	—	—	—	—	Not Occupied	41 - 52	—	—	—	—	—

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(53) 53	(53) 2.5	(53) RD / BU	(53) 4540	(53) II	(53) —	(53) Battery Positive Voltage	(53) 53	(53) 2.5	(53) RD / BU	(53) 4540	(53) III	(53) —
54 - 59	—	—	—	—	—	Not Occupied	54 - 59	—	—	—	—	—

X370 Dome Lamp Wiring Harness to Instrument Panel Wiring Harness (IOR)



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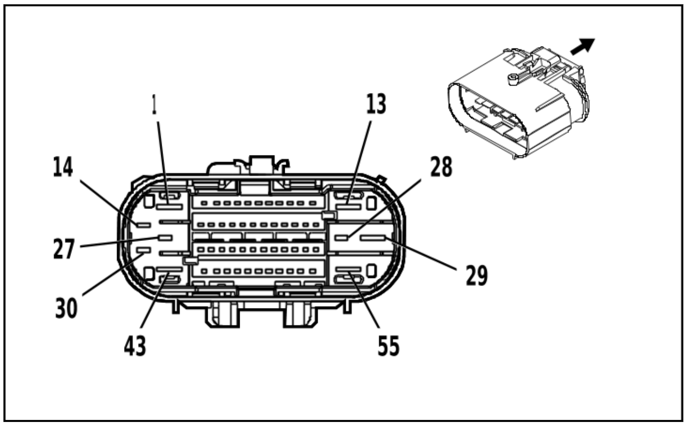


4993301

Connector Part Information
- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 35587201
- Service Connector: 19371185
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(BK)

Connector Part Information
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35605246
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19332901	J-35616-35 (VT)	J-38125-212
II	19370818	J-35616-12 (BU)	J-38125-553
III	84634921	J-35616-42 (RD)	J-38125-212
IV	84847992	J-35616-32 (OG)	J-38125-36
V	84867140	J-35616-13 (BU)	J-38125-553
VI	84992391	J-35616-5 (PU)	J-38125-36

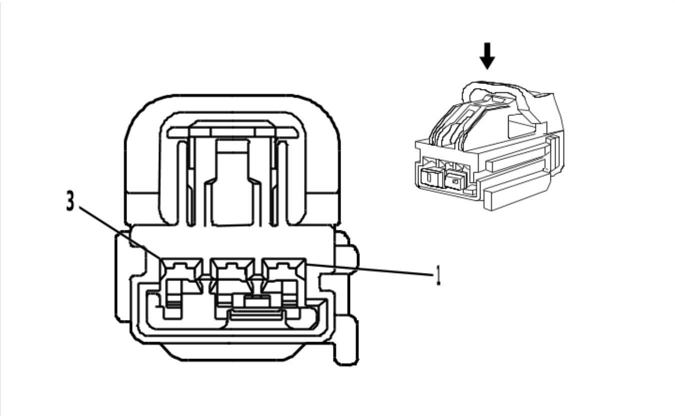
X370 Dome Lamp Wiring Harness to Instrument Panel Wiring Harness (IOR)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / YE	(1) 240	(1) III	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 0.5	(1) RD / YE	(1) 240	(1) IV	(1) —
2 - 3	—	—	—	—	—	Not Occupied	2 - 3	—	—	—	—	—
(4) 4	(4) 0.35	(4) WH	(4) 4978	(4) II	(4) —	(4) AUTOSAR CAN Bus [-] 2 Serial Data	(4) 4	(4) 0.35	(4) WH	(4) 4978	(4) V	(4) UHY

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(5) 5	(5) 0.35	(5) BU / YE	(5) 4979	(5) II	(5) —	(5) AUTOSAR CAN Bus [+] 2 Serial Data	(5) 5	(5) 0.35	(5) BU / YE	(5) 4979	(5) V	(5) UHY
(6) 6	(6) 0.35	(6) BK / BN	(6) 654	(6) II	(6) —	(6) Cellular Telephone Microphone Low Reference	(6) 6	(6) 0.35	(6) BK / BN	(6) 654	(6) V	(6) —
(7) 7	(7) 0.35	(7) BU	(7) 655	(7) II	(7) —	(7) Cellular Telephone Microphone Signal	(7) 7	(7) 0.35	(7) BU	(7) 655	(7) V	(7) —
(8) 8	(8) 0.5	(8) BU / BK	(8) 1053	(8) II	(8) —	(8) Center High Mounted Stop Lamp Control 3	(8) 8	(8) 0.5	(8) BU / BK	(8) 1053	(8) V	(8) —
(9) 9	(9) 0.5	(9) WH / VT	(9) 1430	(9) II	(9) —	(9) Exterior Courtesy Lamp Control	(9) 9	(9) 0.5	(9) WH / VT	(9) 1430	(9) V	(9) —
(10) 10	(10) 0.5	(10) GN / WH	(10) 24	(10) II	(10) —	(10) Backup Lamp Control	(10) 10	(10) 0.5	(10) GN / WH	(10) 24	(10) V	(10) —
(11) 11	(11) 0.35	(11) GN / WH	(11) 2514	(11) II	(11) —	(11) Telematics Switch Signal	(11) 11	(11) 0.35	(11) GN / WH	(11) 2514	(11) V	(11) —
12 - 13	—	—	—	—	—	Not Occupied	12 - 13	—	—	—	—	—
(14) 14	(14) 0.35	(14) BN / WH	(14) 2517	(14) I	(14) —	(14) Telematics Switch Red LED Indicator Control	(14) 14	(14) 0.35	(14) BN / WH	(14) 2517	(14) VI	(14) —
(15) 15	(15) 0.5	(15) GN / WH	(15) 2854	(15) II	(15) —	(15) Body Control Module LIN Bus 8	(15) 15	(15) 0.5	(15) GN / WH	(15) 2854	(15) V	(15) —
16	—	—	—	—	—	Not Occupied	16	—	—	—	—	—
(17) 17	(17) 0.5	(17) BN / YE	(17) 820	(17) II	(17) —	(17) Center High Mounted Stop Lamp Supply Voltage	(17) 17	(17) 0.5	(17) BN / YE	(17) 820	(17) V	(17) —
(18) 18	(18) 0.35	(18) YE / VT	(18) 2516	(18) II	(18) —	(18) Telematics Switch Green LED Indicator Control	(18) 18	(18) 0.35	(18) YE / VT	(18) 2516	(18) V	(18) —
19	—	—	—	—	—	Not Occupied	19	—	—	—	—	—
(20) 20	(20) 0.35	(20) BK / WH	(20) 851	(20) II	(20) —	(20) Signal Ground	(20) 20	(20) 0.5	(20) BK / WH	(20) 851	(20) V	(20) —
(21) 21	(21) 0.5	(21) VT / BK	(21) 339	(21) II	(21) —	(21) Run/Crank Ignition 1 Voltage	(21) 21	(21) 0.5	(21) VT / BK	(21) 339	(21) V	(21) —
22 - 26	—	—	—	—	—	Not Occupied	22 - 26	—	—	—	—	—
(27) 27	(27) 2.5	(27) BK	(27) 1050	(27) I	(27) —	(27) Ground	(27) 27	(27) 2.5	(27) BK	(27) 1050	(27) VI	(27) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(28) 28	(28) 2.5	(28) VT / BU	(28) 10735	(28) I	(28) —	(28) Upfitter Accessory 5 Supply Voltage	(28) 28	(28) 2.5	(28) VT / BU	(28) 10735	(28) VI	(28) —
29 - 44	—	—	—	—	—	Not Occupied	29 - 44	—	—	—	—	—
(45) 45	(45) 0.35	(45) GN / BK	(45) 2515	(45) II	(45) —	(45) Telematics Switch Supply Voltage	(45) 45	(45) 0.35	(45) GN / BK	(45) 2515	(45) V	(45) —
(46) 46	(46) 0.35	(46) WH	(46) 4978	(46) II	(46) —	(46) AUTOSAR CAN Bus [-] 2 Serial Data	(46) 46	(46) 0.35	(46) WH	(46) 4978	(46) V	(46) IOR
(47) 47	(47) 0.35	(47) BU / YE	(47) 4979	(47) II	(47) —	(47) AUTOSAR CAN Bus [+] 2 Serial Data	(47) 47	(47) 0.35	(47) BU / YE	(47) 4979	(47) V	(47) IOR
48 - 55	—	—	—	—	—	Not Occupied	48 - 55	—	—	—	—	—

X371 Dome Lamp Wiring Harness to High Mount Stop Lamp Wiring Harness - Regular Cab



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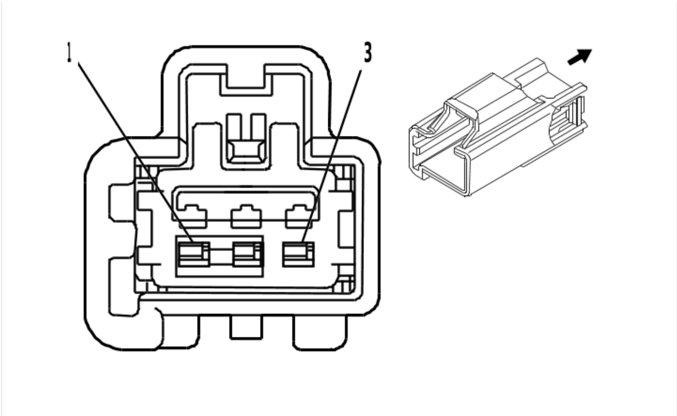


1787800

Connector Part Information

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 7283-3440-40
- Service Connector: 86825460
- Description: 3-Way F 1.5 Kaizen Series(L-GY)

Connector Part Information

- Harness Type: High Mount Stop Lamp Wiring Harness
- OEM Connector: 7282-3440-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way M 1.5 Kaizen Series(L-GY)

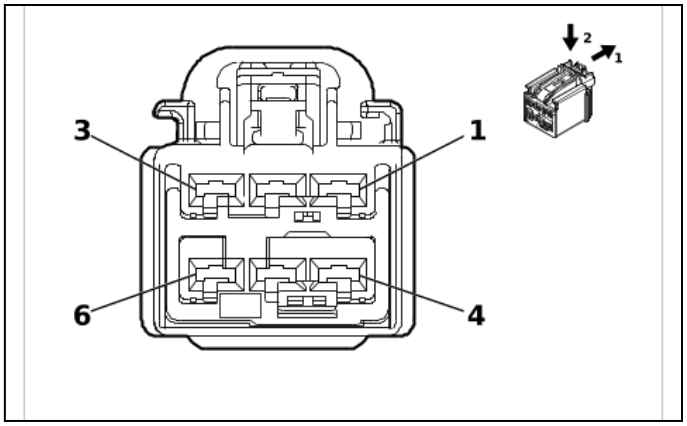
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-3 (GY)	No Tool Required

X371 Dome Lamp Wiring Harness to High Mount Stop Lamp Wiring Harness - Regular Cab

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / VT	(1) 1430	(1) I	(1) —	(1) Exterior Courtesy Lamp Control	(1) 1	(1) 18	(1) BN	(1) 1430	(1) II	(1) —
(2) 2	(2) 0.5	(2) BU / BK	(2) 1053	(2) I	(2) —	(2) Center High Mounted Stop Lamp Control 3	(2) 2	(2) 18	(2) RD	(2) 1053	(2) II	(2) —
(3) 3	(3) 1	(3) BK	(3) 1050	(3) I	(3) —	(3) Ground	(3) 3	(3) 18	(3) BK	(3) 1050	(3) II	(3) —

X371 Inside Rearview Mirror Wiring Harness - Jumper to Dome Lamp Wiring Harness - Double Cab / Crew Cab



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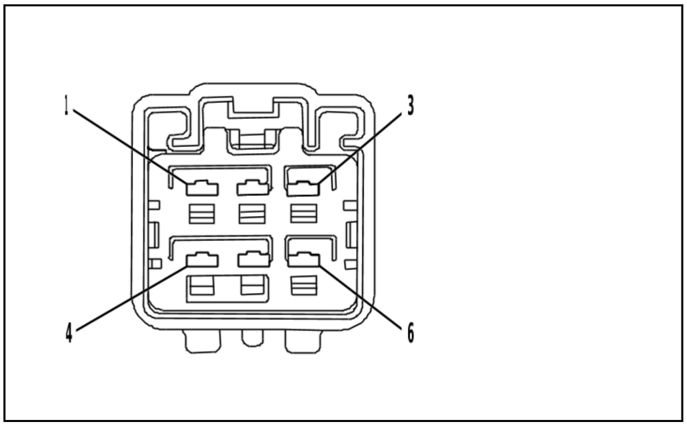


1849802

Connector Part Information

- Harness Type: Inside Rearview Mirror Wiring Harness - Jumper
- OEM Connector: 7289-7238-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 2.8 YESC Series(GY)

Connector Part Information

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 7282-6466-40
- Service Connector: 84727361
- Description: 6-Way M Kaizen Series(L-GY)

Terminal Part Information

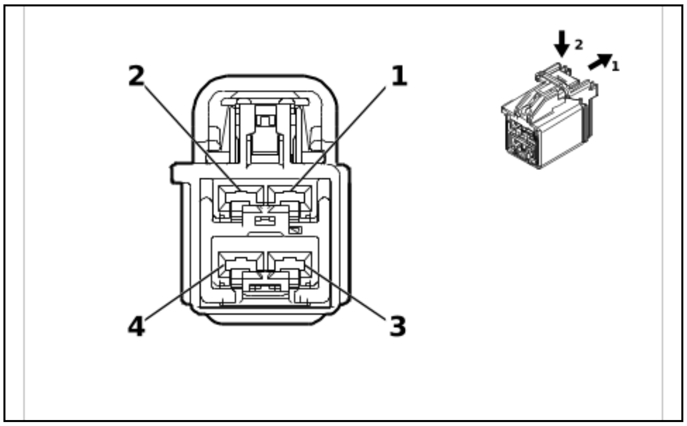
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required
II	Not required	J-35616-5 (PU)	No Tool Required

X371 Inside Rearview Mirror Wiring Harness - Jumper to Dome Lamp Wiring Harness - Double Cab / Crew Cab

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / VT	(1) 1430	(1) I	(1) —	(1) Exterior Courtesy Lamp Control	(1) 1	(1) 0.5	(1) WH / VT	(1) 1430	(1) II	(1) —
(2) 2	(2) 0.5	(2) BN / YE	(2) 820	(2) I	(2) —	(2) Center High Mounted Stop Lamp Supply Voltage	(2) 2	(2) 0.5	(2) BN / YE	(2) 820	(2) II	(2) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(3) 3	(3) 0.5	(3) BK	(3) 1050	(3) I	(3) —	(3) Ground	(3) 3	(3) 1	(3) BK	(3) 1050	(3) II	(3) —
(4) 4	(4) 2.5	(4) BK	(4) 1050	(4) I	(4) —	(4) Ground	(4) 4	(4) 2.5	(4) BK	(4) 1050	(4) II	(4) —
(5) 5	(5) 2.5	(5) VT / BU	(5) 10735	(5) I	(5) —	(5) Upfitter Accessory 5 Supply Voltage	(5) 5	(5) 2.5	(5) VT / BU	(5) 10735	(5) II	(5) —
6	—	—	—	—	—	Not Occupied	6	—	—	—	—	—

X375 Sunroof Wiring Harness to Dome Lamp Wiring Harness (CF5)



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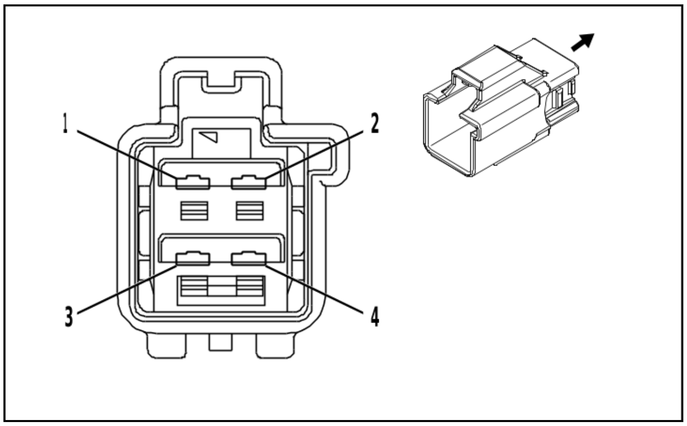


4257143

Connector Part Information

- Harness Type: Sunroof Wiring Harness
- OEM Connector: 7289-7224-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 2.8 YESC Series(GY)

Connector Part Information

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 7282-6446-40
- Service Connector: 89046843
- Description: 4-Way M 2.8 YESC Series(GY)

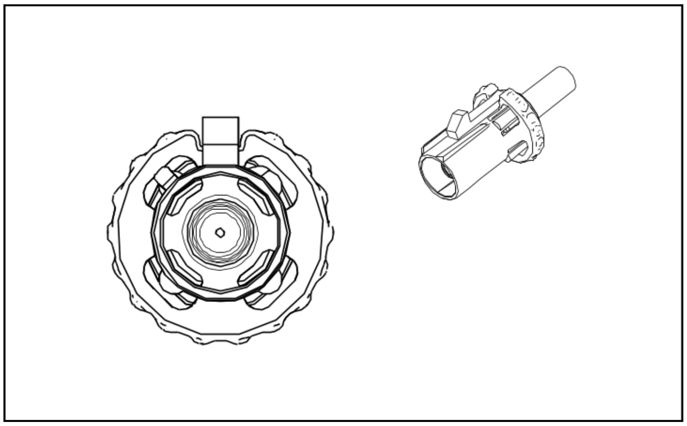
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-4A (PU)	No Tool Required
II	Not required	J-35616-5 (PU)	No Tool Required

X375 Sunroof Wiring Harness to Dome Lamp Wiring Harness (CF5)

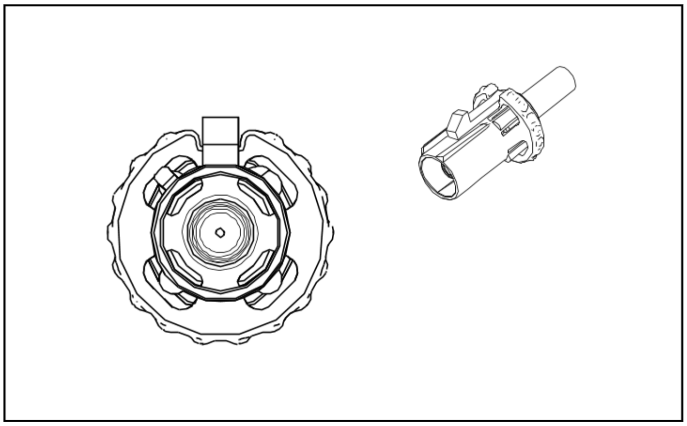
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 1.5	(1) BK	(1) 1050	(1) I	(1) —	(1) Ground	(1) 1	(1) 2.5	(1) BK	(1) 1050	(1) II	(1) —
(2) 2	(2) 0.35	(2) GY / BN	(2) 2854	(2) I	(2) —	(2) Body Control Module LIN Bus 8	(2) 2	(2) 0.5	(2) GN / WH	(2) 2854	(2) II	(2) —
3	—	—	—	—	—	Not Occupied	3	—	—	—	—	—
(4) 4	(4) 1.5	(4) RD / GY	(4) 4540	(4) I	(4) —	(4) Battery Positive Voltage	(4) 4	(4) 2.5	(4) RD / BU	(4) 4540	(4) II	(4) —

X381 Rearview Driver Information Camera Rear Closure Coaxial Cable to Rearview Driver Information Camera Rear Closure Coaxial Cable (DRZ)



4109605

Connector Part Information
- Harness Type: Rearview Driver Information Camera Rear Closure Coaxial Cable
- OEM Connector: Not Available
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F



4109605

Connector Part Information
- Harness Type: Rearview Driver Information Camera Rear Closure Coaxial Cable
- OEM Connector: 13581672
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type(BK)

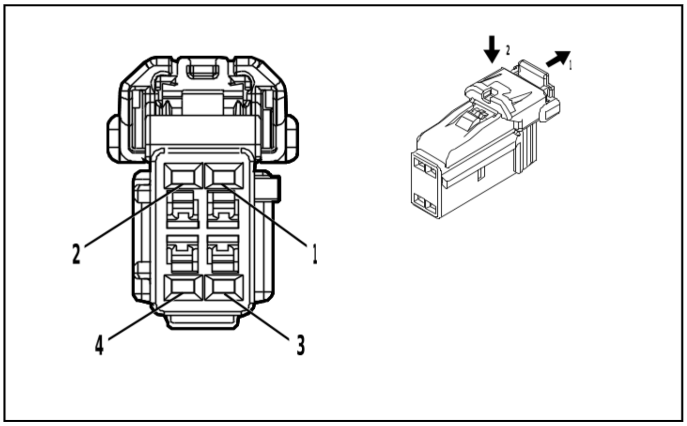
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X381 Rearview Driver Information Camera Rear Closure Coaxial Cable to Rearview Driver Information Camera Rear Closure Coaxial Cable (DRZ)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	LVDS	—	I	—	Center Rear Camera LVDS (Low Voltage DIfferential Signaling) Coaxial Signal	—	—	LVDS	—	I	—

X382 Headlamp Automatic Control Ambient Light Sensor Wiring Harness to Dome Lamp Wiring Harness (ASV - CE1)



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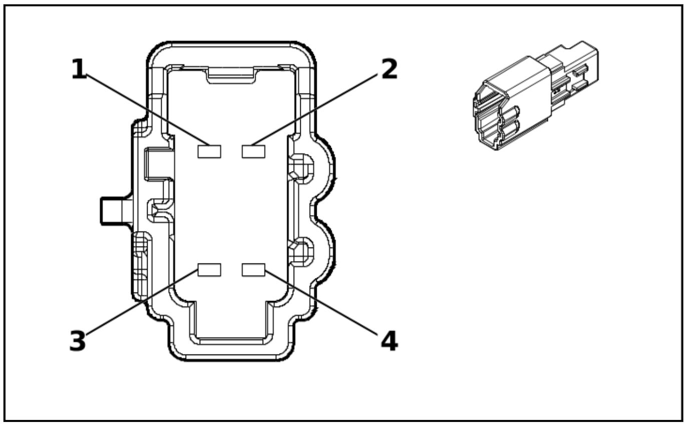


5360963

Connector Part Information
- Harness Type: Inside Rearview Mirror Wiring Harness
- OEM Connector: 13533335
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 Series(BK)

Connector Part Information
- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 6098-9046
- Service Connector: 84847258
- Description: 4-Way M 1.2 MCON Series(BK)

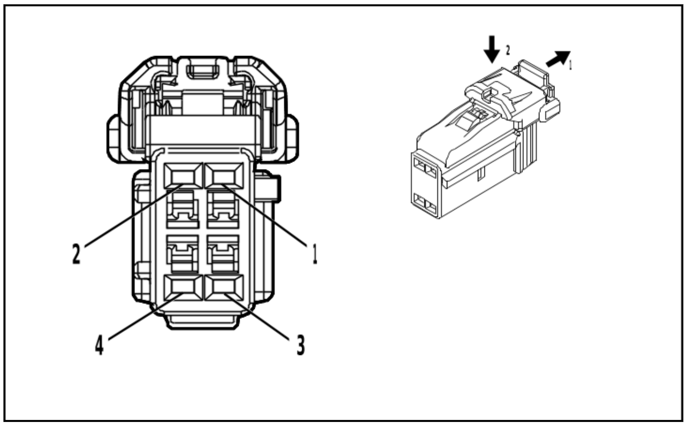
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-13 (BU)	No Tool Required
III	Not required	J-35616-17 (L-GN)	No Tool Required

X382 Headlamp Automatic Control Ambient Light Sensor Wiring Harness to Dome Lamp Wiring Harness (ASV - CE1)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) VT / BK	(1) 339	(1) I	(1) —	(1) Run/ Crank Ignition 1 Voltage	(1) 1	(1) 0.35	(1) VT / BK	(1) 339	(1) II	(1) —
(2) 2	(2) 0.35	(2) BK / WH	(2) 851	(2) I	(2) —	(2) Signal Ground	(2) 2	(2) 0.5	(2) BK / WH	(2) 851	(2) III	(2) —
(3) 3	(3) 0.35	(3) GN / WH	(3) 4115	(3) I	(3) —	(3) Body Control Module LIN Bus 5	(3) 3	(3) 0.5	(3) GN / WH	(3) 4115	(3) III	(3) —
4	—	—	—	—	—	Not Occupied	4	—	—	—	—	—

X382 Headlamp Automatic Control Ambient Light Sensor Wiring Harness to Dome Lamp Wiring Harness (ASV & CE1)



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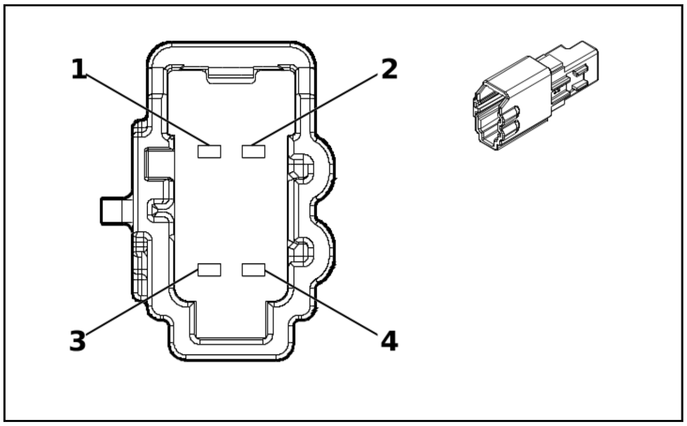


5360963

Connector Part Information

- Harness Type: Headlamp Automatic Control Ambient Light Sensor Wiring Harness
- OEM Connector: 13533335
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 Series(BK)

Connector Part Information

- Harness Type: Dome Lamp Wiring Harness
- OEM Connector: 6098-9046
- Service Connector: 84847258
- Description: 4-Way M 1.2 MCON Series(BK)

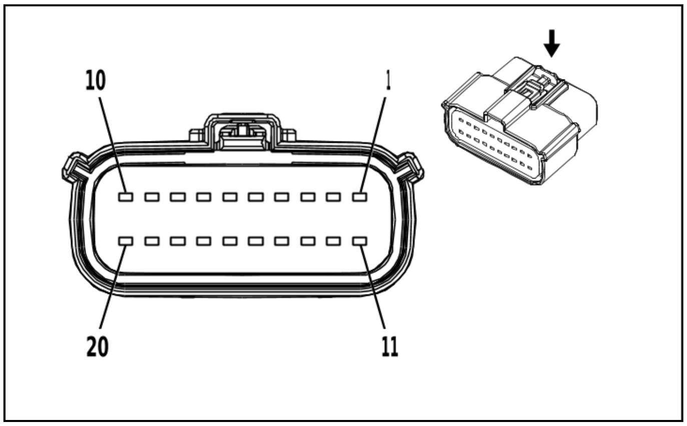
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-13 (BU)	No Tool Required
III	Not required	J-35616-17 (L-GN)	No Tool Required

X382 Headlamp Automatic Control Ambient Light Sensor Wiring Harness to Dome Lamp Wiring Harness (ASV & CE1)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.35	(1) RD / VT	(1) 339	(1) I	(1) —	(1) Run/ Crank Ignition 1 Voltage	(1) 1	(1) 0.35	(1) VT / BK	(1) 339	(1) II	(1) —
(2) 2	(2) 0.35	(2) BK / BN	(2) 851	(2) I	(2) —	(2) Signal Ground	(2) 2	(2) 0.5	(2) BK / WH	(2) 851	(2) III	(2) —
(3) 3	(3) 0.35	(3) BK / BN	(3) 4115	(3) I	(3) —	(3) Body Control Module LIN Bus 5	(3) 3	(3) 0.5	(3) GN / WH	(3) 4115	(3) III	(3) —
4	—	—	—	—	—	Not Occupied	4	—	—	—	—	—

X400 Body Wiring Harness to Chassis Wiring Harness - Double Cab / Crew Cab



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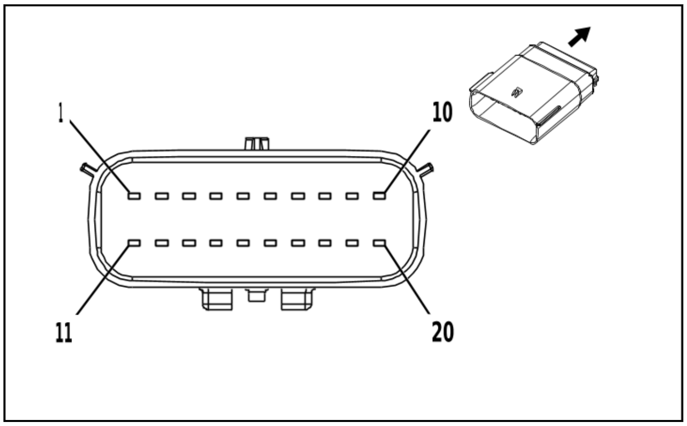


2871861

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 13504367
- Service Connector: 19300557
- Description: 20-Way F 1.5 MX Series, Sealed(BK)

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 13598210
- Service Connector: 19351705
- Description: 20-Way M 1.5 MX Series, Sealed(BK)

Terminal Part Information

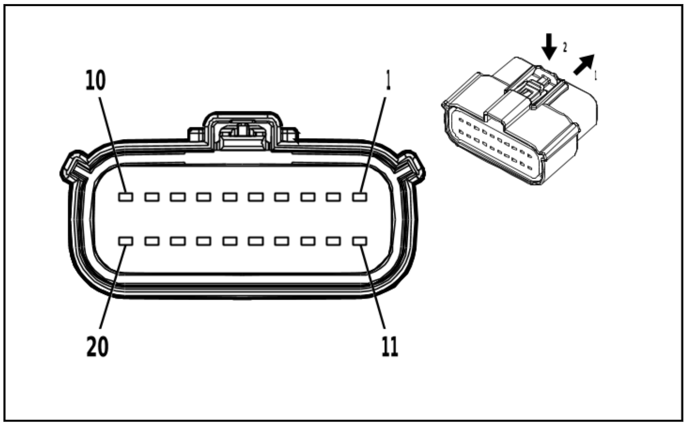
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	85528055	J-35616-2A (GY)	J-38125-217
II	86800300	J-35616-3 (GY)	J-38125-217

X400 Body Wiring Harness to Chassis Wiring Harness - Double Cab / Crew Cab

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
1 - 2	—	—	—	—	—	Not Occupied	1 - 2	—	—	—	—	—
(3) 3	(3) 0.5	(3) WH	(3) 4986	(3) I	(3) —	(3) AUTOSAR CAN Bus [-] 1 Serial Data	(3) 3	(3) 0.5	(3) WH	(3) 4986	(3) II	(3) —
(4) 4	(4) 0.5	(4) BU	(4) 4987	(4) I	(4) —	(4) AUTOSAR CAN Bus [+] 1 Serial Data	(4) 4	(4) 0.5	(4) BU	(4) 4987	(4) II	(4) —
(5) 5	(5) 0.5	(5) GY	(5) 830	(5) I	(5) —	(5) Left Front Wheel Speed Sensor Signal	(5) 5	(5) 0.5	(5) GY	(5) 830	(5) II	(5) —
(6) 6	(6) 0.5	(6) GY / WH	(6) 7064	(6) I	(6) —	(6) Left Front Wheel Speed Sensor Control	(6) 6	(6) 0.5	(6) GY / WH	(6) 7064	(6) II	(6) —
(7) 7	(7) 0.5	(7) YE	(7) 872	(7) I	(7) —	(7) Right Front Wheel Speed Sensor Signal	(7) 7	(7) 0.5	(7) YE	(7) 872	(7) II	(7) —
(8) 8	(8) 0.5	(8) GY / BN	(8) 7065	(8) I	(8) —	(8) Right Front Wheel Speed Sensor Control	(8) 8	(8) 0.5	(8) GY / BN	(8) 7065	(8) II	(8) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(9) 9	(9) 0.5	(9) BN / BU	(9) 1602	(9) I	(9) —	(9) Front Brake Pad Wear Sensor Signal	(9) 9	(9) 0.5	(9) BN / BU	(9) 1602	(9) II	(9) —
(10) 10	(10) 0.35	(10) GY	(10) 7292	(10) I	(10) —	(10) Major Endgate Release Switch Signal Exterior	(10) 10	(10) 0.5	(10) GY	(10) 7292	(10) II	(10) —
(11) 11	(11) 0.35	(11) YE	(11) 7294	(11) I	(11) —	(11) Minor Endgate Release Switch Discrete Signal Exterior	(11) 11	(11) 0.5	(11) YE	(11) 7294	(11) II	(11) —
(12) 12	(12) 0.5	(12) BU / WH	(12) 4306	(12) I	(12) —	(12) Exhaust Flow Control Valve 1 - Cylinder Deactivation Feedback Signal	(12) 12	(12) 0.5	(12) BU / WH	(12) 4306	(12) II	(12) —
(13) 13	(13) 0.5	(13) BN / GN	(13) 4305	(13) I	(13) —	(13) Exhaust Flow Control Valve 1	(13) 13	(13) 0.5	(13) BN / GN	(13) 4305	(13) II	(13) —
14 - 20	—	—	—	—	—	Not Occupied	14 - 20	—	—	—	—	—

X400 Body Wiring Harness to Chassis Wiring Harness - Regular Cab



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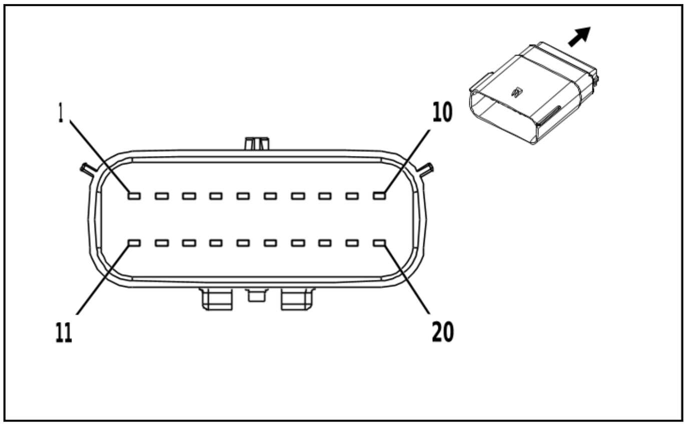


2871861

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 35602781
- Service Connector: 19300557
- Description: 20-Way F 1.5 MX Series, Sealed(BK)

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 13598210
- Service Connector: 19351705
- Description: 20-Way M 1.5 MX Series, Sealed(BK)

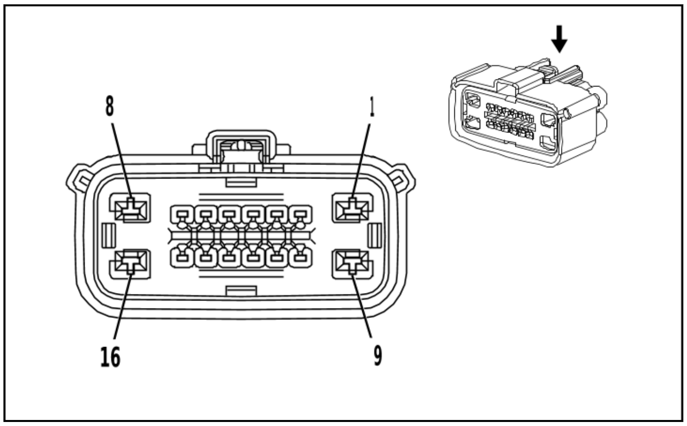
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	85528055	J-35616-2A (GY)	J-38125-217
II	86800300	J-35616-3 (GY)	J-38125-217

X400 Body Wiring Harness to Chassis Wiring Harness - Regular Cab

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
1 - 2	—	—	—	—	—	Not Occupied	1 - 2	—	—	—	—	—
(3) 3	(3) 0.5	(3) WH	(3) 4986	(3) I	(3) —	(3) AUTOSAR CAN Bus [-] 1 Serial Data	(3) 3	(3) 0.5	(3) WH	(3) 4986	(3) II	(3) —
(4) 4	(4) 0.5	(4) BU	(4) 4987	(4) I	(4) —	(4) AUTOSAR CAN Bus [+] 1 Serial Data	(4) 4	(4) 0.5	(4) BU	(4) 4987	(4) II	(4) —
(5) 5	(5) 0.5	(5) GY	(5) 830	(5) I	(5) —	(5) Left Front Wheel Speed Sensor Signal	(5) 5	(5) 0.5	(5) GY	(5) 830	(5) II	(5) —
(6) 6	(6) 0.5	(6) GY / WH	(6) 7064	(6) I	(6) —	(6) Left Front Wheel Speed Sensor Control	(6) 6	(6) 0.5	(6) GY / WH	(6) 7064	(6) II	(6) —
(7) 7	(7) 0.5	(7) YE	(7) 872	(7) I	(7) —	(7) Right Front Wheel Speed Sensor Signal	(7) 7	(7) 0.5	(7) YE	(7) 872	(7) II	(7) —
(8) 8	(8) 0.5	(8) GY / BN	(8) 7065	(8) I	(8) —	(8) Right Front Wheel Speed Sensor Control	(8) 8	(8) 0.5	(8) GY / BN	(8) 7065	(8) II	(8) —
(9) 9	(9) 0.5	(9) BN / BU	(9) 1602	(9) I	(9) —	(9) Front Brake Pad Wear Sensor Signal	(9) 9	(9) 0.5	(9) BN / BU	(9) 1602	(9) II	(9) —
(10) 10	(10) 0.35	(10) GY	(10) 7292	(10) I	(10) —	(10) Major Endgate Release Switch Signal Exterior	(10) 10	(10) 0.5	(10) GY	(10) 7292	(10) II	(10) —
(11) 11	(11) 0.35	(11) YE	(11) 7294	(11) I	(11) —	(11) Minor Endgate Release Switch Discrete Signal Exterior	(11) 11	(11) 0.5	(11) YE	(11) 7294	(11) II	(11) —
12 - 20	—	—	—	—	—	Not Occupied	12 - 20	—	—	—	—	—

X401 Engine Wiring Harness to Chassis Wiring Harness



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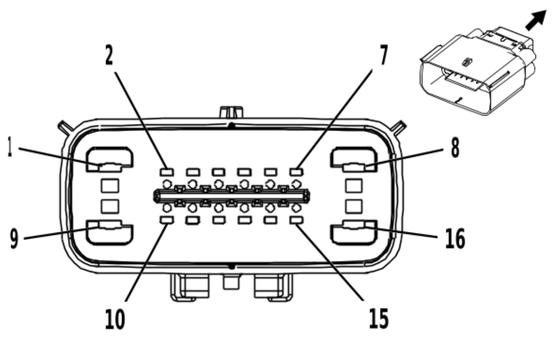


2373686

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 34985-1606
- Service Connector: 19352906
- Description: 16-Way F 1.5, 2.8 MX Series, Sealed(BK)

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 34986-1601
- Service Connector: 19331031
- Description: 16-Way M 1.5, 2.8 MX Series, Sealed(BK)

Terminal Part Information

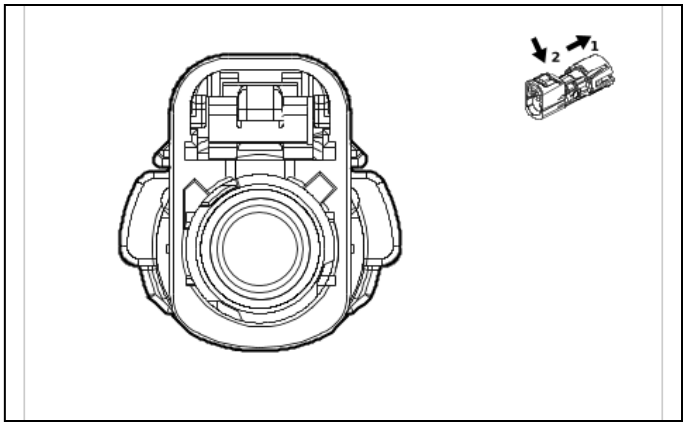
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13576377	J-35616-35 (VT)	J-38125-12A
II	85528055	J-35616-2A (GY)	J-38125-217
III	19366658	J-35616-5 (PU)	J-38125-12A
IV	86800300	J-35616-3 (GY)	J-38125-217

X401 Engine Wiring Harness to Chassis Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
1 - 2	—	—	—	—	—	Not Occupied	1 - 2	—	—	—	—	—
(3) 3	(3) 0.5	(3) GN / GY	(3) 465	(3) II	(3) —	(3) Fuel Pump Primary Relay Control	(3) 3	(3) 0.5	(3) GN / GY	(3) 465	(3) IV	(3) —
(4) 4	(4) 1	(4) BK / WH	(4) 1151	(4) II	(4) —	(4) Signal Ground	(4) 4	(4) 1	(4) BK / WH	(4) 1151	(4) IV	(4) —
(5) 5	(5) 1.5	(5) VT / GN	(5) 4320	(5) II	(5) —	(5) Powertrain Sensor Bus Enable	(5) 5	(5) 1.5	(5) VT / GN	(5) 4320	(5) IV	(5) —
(6) 6	(6) 0.5	(6) BU / BK	(6) 4977	(6) II	(6) —	(6) AUTOSAR CAN Bus [+] 3 Serial Data	(6) 6	(6) 0.5	(6) BU / BK	(6) 4977	(6) IV	(6) —
(7) 7	(7) 0.5	(7) WH	(7) 4976	(7) II	(7) —	(7) AUTOSAR CAN Bus [-] 3 Serial Data	(7) 7	(7) 0.5	(7) WH	(7) 4976	(7) IV	(7) —
(8) 8	(8) 0.5	(8) BU / RD	(8) 460	(8) I	(8) —	(8) Engine Control Sensors 5 Volt Reference 1	(8) 8	(8) 0.5	(8) BU / RD	(8) 460	(8) III	(8) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(9) 9	(9) 0.5	(9) BN / GN	(9) 4305	(9) I	(9) —	(9) Exhaust Flow Control Valve 1	(9) 9	(9) 0.5	(9) BN / GN	(9) 4305	(9) III	(9) —
10	—	—	—	—	—	Not Occupied	10	—	—	—	—	—
(11) 11	(11) 0.75	(11) YE / BN	(11) 1420	(11) II	(11) —	(11) Exhaust Restrictor Motor Open Control	(11) 11	(11) 0.75	(11) YE / BN	(11) 1420	(11) IV	(11) —
(12) 12	(12) 0.75	(12) BN	(12) 1421	(12) II	(12) —	(12) Exhaust Restrictor Motor Closed Control	(12) 12	(12) 0.75	(12) BN	(12) 1421	(12) IV	(12) —
(13) 13	(13) 0.5	(13) BK / YE	(13) 548	(13) II	(13) —	(13) Engine Control Sensors Low Reference 1	(13) 13	(13) 0.5	(13) BK / YE	(13) 548	(13) IV	(13) —
(14) 14	(14) 0.5	(14) BU / BK	(14) 4977	(14) II	(14) —	(14) AUTOSAR CAN Bus [+] 3 Serial Data	(14) 14	(14) 0.5	(14) BU / BK	(14) 4977	(14) IV	(14) —
(15) 15	(15) 0.5	(15) WH	(15) 4976	(15) II	(15) —	(15) AUTOSAR CAN Bus [-] 3 Serial Data	(15) 15	(15) 0.5	(15) WH	(15) 4976	(15) IV	(15) —
16	—	—	—	—	—	Not Occupied	16	—	—	—	—	—

X402A Body Wiring Harness to Chassis Wiring Harness



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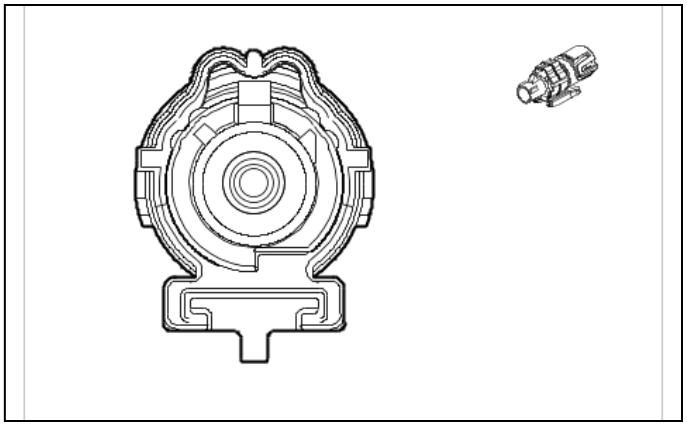


5757466

Connector Part Information
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 35187033
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(WH)

Connector Part Information
- Harness Type: Chassis Wiring Harness COAX
- OEM Connector: 33338240
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type, Sealed(WH)

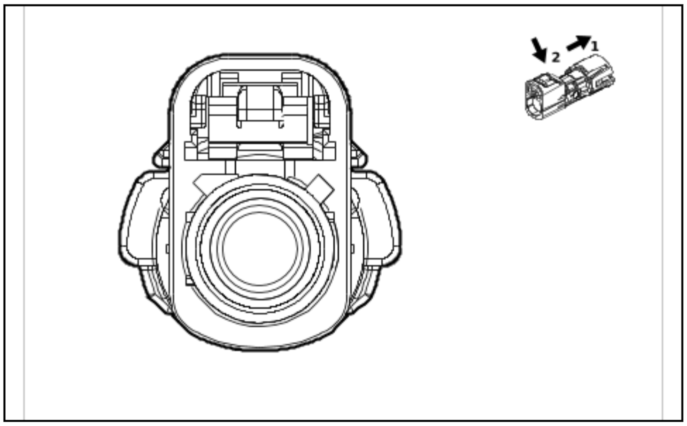
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X402A Body Wiring Harness to Chassis Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	Coax Cable	—	I	—	Trailer Rear Vision Camera Coaxial Video Signal	—	—	Coax Cable	—	I	—

X402B Body Wiring Harness to Chassis Wiring Harness



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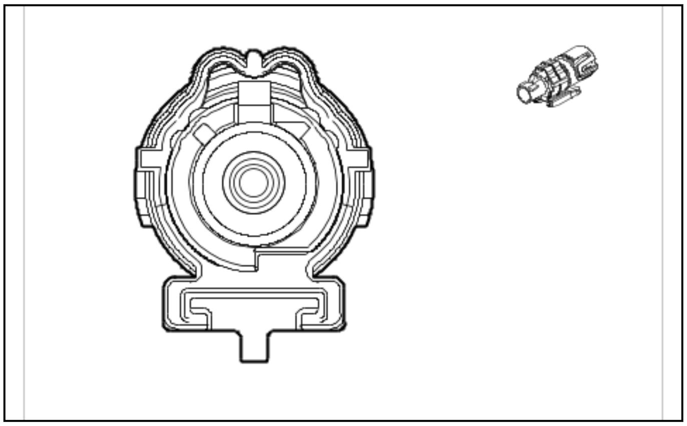


5758019

Connector Part Information
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 35187032
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BK)

Connector Part Information
- Harness Type: Chassis Wiring Harness COAX
- OEM Connector: 33338239
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type, Sealed(BK)

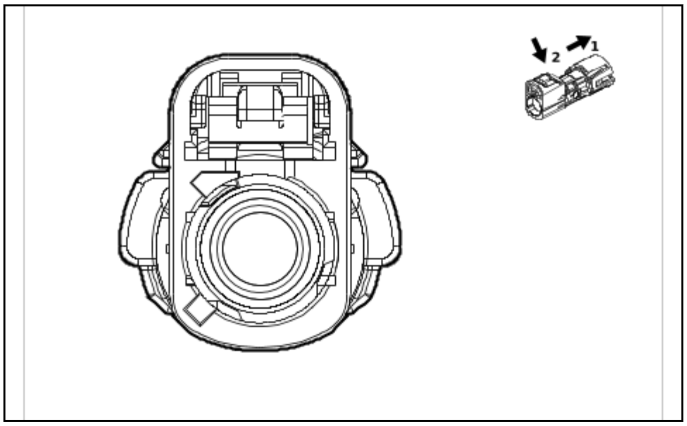
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X402B Body Wiring Harness to Chassis Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	Coax Cable	—	I	—	Trailer Rear Vision Camera Coaxial Video Signal	—	—	Coax Cable	—	I	—

X402C Body Wiring Harness to Chassis Wiring Harness



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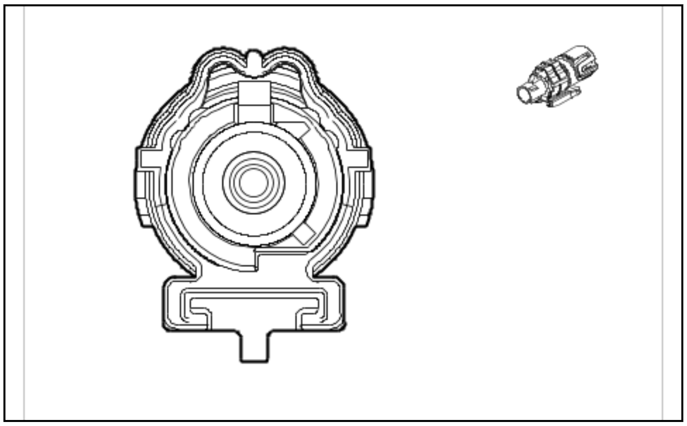


5758017

Connector Part Information
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 35187037
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BN)

Connector Part Information
- Harness Type: Chassis Wiring Harness COAX
- OEM Connector: 33338245
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type, Sealed(BN)

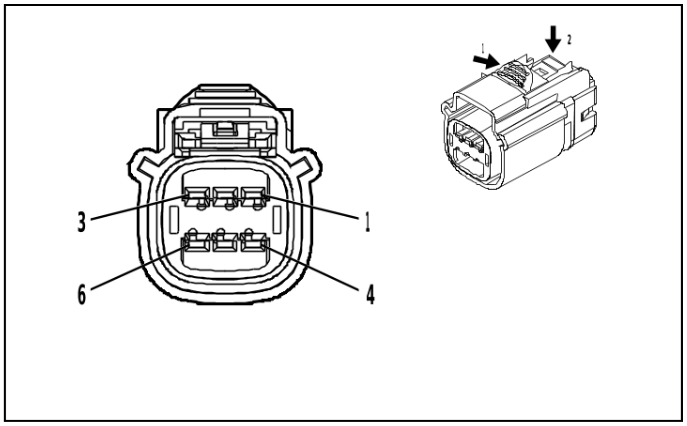
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X402C Body Wiring Harness to Chassis Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	Coax Cable	—	I	—	Rear Vision Camera Coaxial Video Signal	—	—	Coax Cable	—	I	—

X403 Chassis Wiring Harness to Power Steering Wiring Harness Extension Harness - Double Cab / Crew Cab



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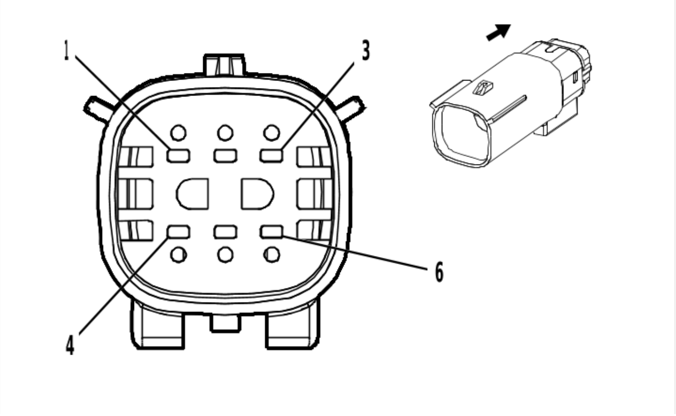


1986159

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 35325491
- Service Connector: 84999473
- Description: 6-Way F 1.5 OCS Series, Sealed(BK)

Connector Part Information

- Harness Type: Power Steering Wiring Harness Extension Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way M (BK)

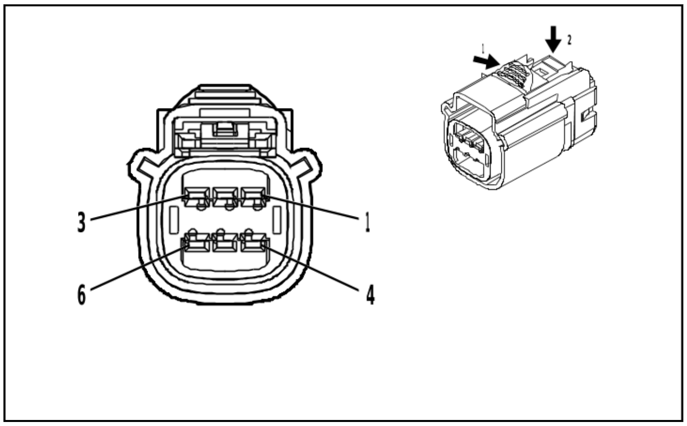
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	No Tool Required	No Tool Required

X403 Chassis Wiring Harness to Power Steering Wiring Harness Extension Harness - Double Cab / Crew Cab

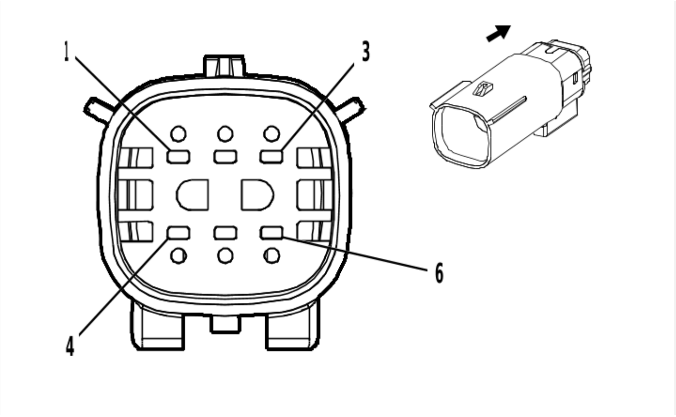
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU	(1) 4987	(1) I	(1) —	(1) AUTOSAR CAN Bus [+] 1 Serial Data	(1) 1	(1) 0.5	(1) WH / BU	(1) 4987	(1) II	(1) —
2 - 5	—	—	—	—	—	Not Occupied	2 - 5	—	—	—	—	—
(6) 6	(6) 0.5	(6) WH	(6) 4986	(6) I	(6) —	(6) AUTOSAR CAN Bus [-] 1 Serial Data	(6) 6	(6) 0.5	(6) BU / WH	(6) 4986	(6) II	(6) —

X403 Chassis Wiring Harness to Power Steering Wiring Harness Extension Harness - Regular Cab



5004419

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 15513504
- Service Connector: 84999473
- Description: 6-Way F 1.5 OCS Series, Sealed(BK)



1986159

Connector Part Information
- Harness Type: Power Steering Wiring Harness Extension Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way M (BK)

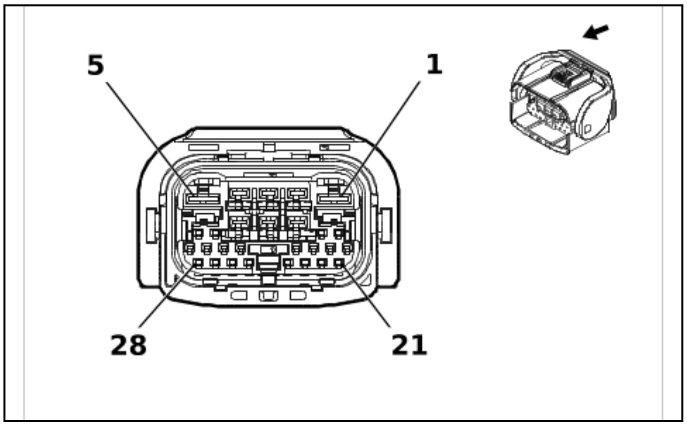
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	No Tool Required	No Tool Required

X403 Chassis Wiring Harness to Power Steering Wiring Harness Extension Harness - Regular Cab

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BU	(1) 4987	(1) I	(1) —	(1) AUTOSAR CAN Bus [+] 1 Serial Data	(1) 1	(1) 0.5	(1) WH / BU	(1) 4987	(1) II	(1) —
2 - 5	—	—	—	—	—	Not Occupied	2 - 5	—	—	—	—	—
(6) 6	(6) 0.5	(6) WH	(6) 4986	(6) I	(6) —	(6) AUTOSAR CAN Bus [-] 1 Serial Data	(6) 6	(6) 0.5	(6) BU / WH	(6) 4986	(6) II	(6) —

X404 Chassis Wiring Harness to Emission Reduction Fluid Tank Reservoir Wire Harness (FHX)



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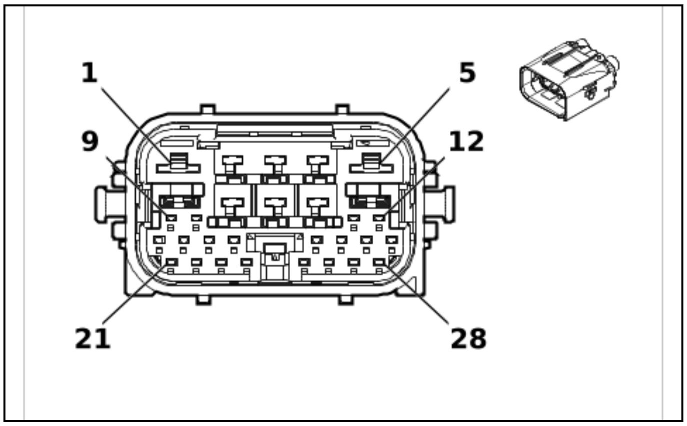


6757546

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 7298-4827-30
- Service Connector: 85761013
- Description: 28-Way F 1.2 MLK, 2.8, 6.3 YESC Series(BK)

Connector Part Information

- Harness Type: Emission Reduction Fluid Tank Reservoir Wire Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 28-Way M (BK)

Terminal Part Information

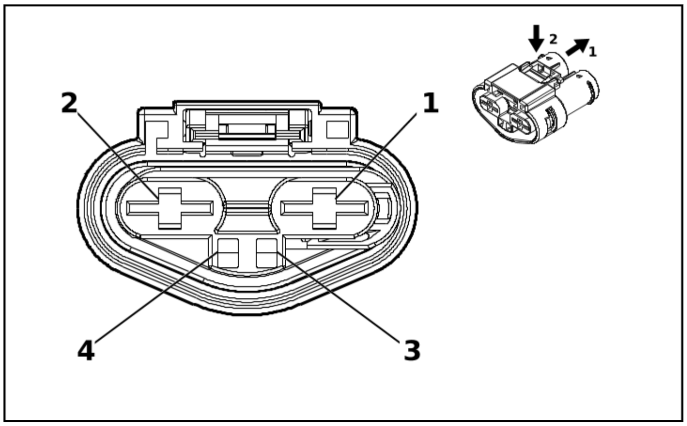
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	13575383	J-35616-42 (RD)	J-38125-11A
II	19368324	J-35616-35 (VT)	J-38125-11A
III	85669160	J-35616-12 (BU)	J-38125-215A
IV	Not required	No Tool Required	No Tool Required

X404 Chassis Wiring Harness to Emission Reduction Fluid Tank Reservoir Wire Harness (FHX)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) BK / WH	(1) 2040	(1) I	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 2.5	(1) RD / WH	(1) 2040	(1) IV	(1) —
2 - 4	—	—	—	—	—	Not Occupied	2 - 4	—	—	—	—	—
(5) 5	(5) 3	(5) BK	(5) 1650	(5) I	(5) —	(5) Ground	(5) 5	(5) 3	(5) WH	(5) 1650	(5) IV	(5) —
6	—	—	—	—	—	Not Occupied	6	—	—	—	—	—
(7) 7	(7) 1.5	(7) RD / WH	(7) 3440	(7) II	(7) —	(7) Battery Positive Voltage	(7) 7	(7) 1.5	(7) RD / WH	(7) 3440	(7) IV	(7) —
8 - 14	—	—	—	—	—	Not Occupied	8 - 14	—	—	—	—	—
(15) 15	(15) 0.5	(15) BN / WH	(15) 639	(15) III	(15) —	(15) Run/ Crank Ignition 1 Voltage	(15) 15	(15) 0.5	(15) VT / WH	(15) 639	(15) IV	(15) —
(16) 16	(16) 0.5	(16) BU / BK	(16) 4977	(16) III	(16) —	(16) AUTOSAR CAN Bus [+] 3 Serial Data	(16) 16	(16) 0.5	(16) BU	(16) 4977	(16) IV	(16) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(17) 17	(17) 0.5	(17) BU / BK	(17) 4977	(17) III	(17) —	(17) AUTOSAR CAN Bus [+] 3 Serial Data	(17) 17	(17) 0.5	(17) BU	(17) 4977	(17) IV	(17) —
18 - 23	—	—	—	—	—	Not Occupied	18 - 23	—	—	—	—	—
(24) 24	(24) 0.5	(24) WH	(24) 4976	(24) III	(24) —	(24) AUTOSAR CAN Bus [-] 3 Serial Data	(24) 24	(24) 0.5	(24) BN	(24) 4976	(24) IV	(24) —
(25) 25	(25) 0.5	(25) WH	(25) 4976	(25) III	(25) —	(25) AUTOSAR CAN Bus [-] 3 Serial Data	(25) 25	(25) 0.5	(25) BN	(25) 4976	(25) IV	(25) —
26 - 28	—	—	—	—	—	Not Occupied	26 - 28	—	—	—	—	—

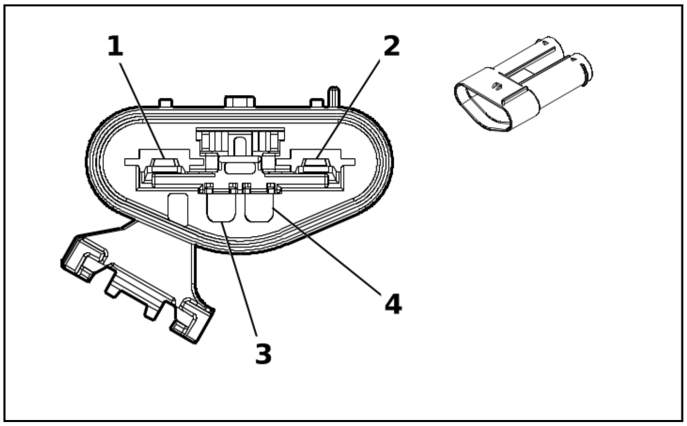
X405 Power Steering Wiring Harness to Power Steering Control Module Wiring Harness



5330342

Connector Part Information

- Harness Type: Power Steering Wiring Harness
- OEM Connector: 13508902
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 2.8, 12 MAK Series, Sealed(BK)



5330353

Connector Part Information

- Harness Type: Power Steering Control Module Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M (BK)

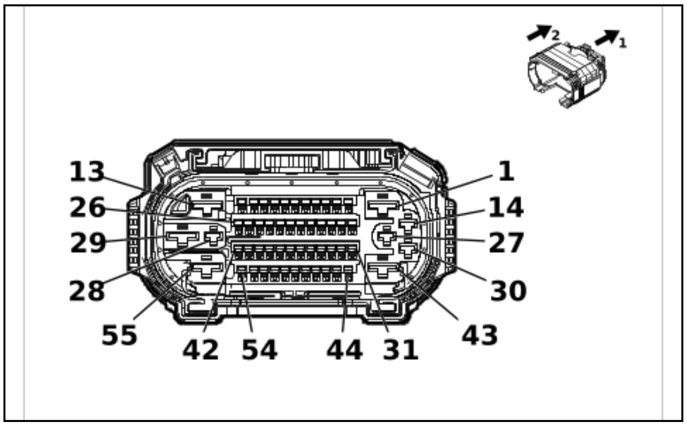
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
II	Not required	No Tool Required	No Tool Required

X405 Power Steering Wiring Harness to Power Steering Control Module Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 25	(1) BK	(1) 350	(1) I	(1) —	(1) Ground	(1) 1	(1) 25	(1) BK	(1) 350	(1) II	(1) —
(2) 2	(2) 25	(2) RD / VT	(2) 3542	(2) I	(2) —	(2) Battery Positive Voltage	(2) 2	(2) 25	(2) RD	(2) 3542	(2) II	(2) —
3 - 4	—	—	—	—	—	Not Occupied	3 - 4	—	—	—	—	—

X410 Chassis Wiring Harness to Body Wiring Harness



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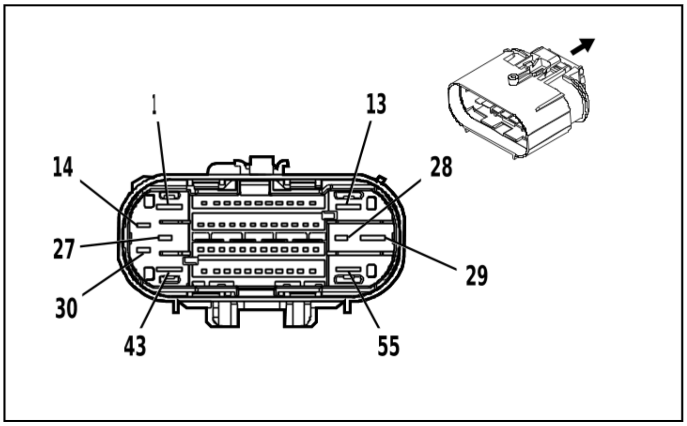


4993301

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 35588033
- Service Connector: 19371185
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(BK)

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 35588063
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19332901	J-35616-35 (VT)	J-38125-212
II	19370818	J-35616-12 (BU)	J-38125-553
III	84634921	J-35616-42 (RD)	J-38125-212
IV	84847992	J-35616-32 (OG)	J-38125-36
V	84867140	J-35616-13 (BU)	J-38125-553
VI	84992391	J-35616-5 (PU)	J-38125-36

X410 Chassis Wiring Harness to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 5	(1) GN / VT	(1) 1988	(1) III	(1) —	(1) Right Park Brake Motor Apply Control	(1) 1	(1) 2.5	(1) GN / VT	(1) 1988	(1) IV	(1) —
(2) 2	(2) 0.75	(2) BU / VT	(2) 1335	(2) II	(2) —	(2) Right Rear Turn Signal Lamp Control 2	(2) 2	(2) 0.75	(2) BU / VT	(2) 1335	(2) V	(2) —
(3) 3	(3) 0.5	(3) YE / GN	(3) 7122	(3) II	(3) —	(3) Axle Differential Lock Switch Signal	(3) 3	(3) 0.35	(3) YE / GN	(3) 7122	(3) V	(3) —
(4) 4	(4) 0.5	(4) GN / BU	(4) 2733	(4) II	(4) —	(4) Brake System Control Module LIN Bus 2	(4) 4	(4) 0.5	(4) GN / BU	(4) 2733	(4) V	(4) —
(5) 5	(5) 0.5	(5) BN / GN	(5) 3568	(5) II	(5) —	(5) Rear Closure Passive Entry Antenna High Signal	(5) 5	(5) 0.35	(5) BN / GN	(5) 3568	(5) V	(5) —

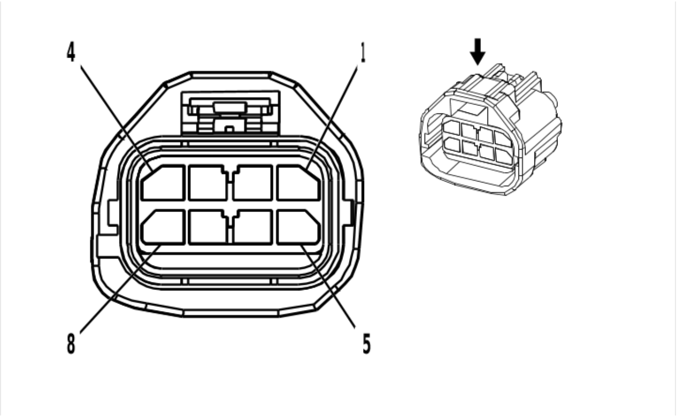
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(6) 6	(6) 0.5	(6) GN / GY	(6) 3569	(6) II	(6) —	(6) Rear Closure Passive Entry Antenna Low Signal	(6) 6	(6) 0.35	(6) GN / GY	(6) 3569	(6) V	(6) —
(7) 7	(7) 0.75	(7) BU / WH	(7) 1334	(7) II	(7) —	(7) Left Rear Turn Signal Lamp Control 2	(7) 7	(7) 0.75	(7) BU / WH	(7) 1334	(7) V	(7) —
(8) 8	(8) 0.5	(8) WH / VT	(8) 1430	(8) II	(8) —	(8) Exterior Courtesy Lamp Control	(8) 8	(8) 0.5	(8) WH / VT	(8) 1430	(8) V	(8) —
(9) 9	(9) 0.5	(9) GN / YE	(9) 1616	(9) II	(9) —	(9) Rear Brake Pad Wear Sensor Signal	(9) 9	(9) 0.5	(9) GN / YE	(9) 1616	(9) V	(9) —
(10) 10	(10) 0.5	(10) WH / BK	(10) 2223	(10) II	(10) —	(10) Trailer Brake Apply Signal	(10) 10	(10) 0.5	(10) WH / BK	(10) 2223	(10) V	(10) —
(11) 11	(11) 0.5	(11) GN / YE	(11) 2862	(11) II	(11) —	(11) Body Control Module LIN Bus 16	(11) 11	(11) 0.35	(11) GN / YE	(11) 2862	(11) V	(11) —
12	—	—	—	—	—	Not Occupied	12	—	—	—	—	—
(13) 13	(13) 5	(13) WH	(13) 2001	(13) III	(13) —	(13) Left Park Brake Motor Apply Control	(13) 13	(13) 2.5	(13) WH	(13) 2001	(13) IV	(13) —
(14) 14	(14) 2.5	(14) RD / VT	(14) 4442	(14) I	(14) —	(14) Primary Fused Battery Positive Voltage	(14) 14	(14) 2.5	(14) RD / VT	(14) 4442	(14) VI	(14) —
(15) 15	(15) 0.5	(15) BU / YE	(15) 4979	(15) II	(15) —	(15) AUTOSAR CAN Bus [+] 2 Serial Data	(15) 15	(15) 0.5	(15) BU / YE	(15) 4979	(15) V	(15) —
(16) 16	(16) 0.5	(16) WH	(16) 4978	(16) II	(16) —	(16) AUTOSAR CAN Bus [-] 2 Serial Data	(16) 16	(16) 0.5	(16) WH	(16) 4978	(16) V	(16) —
(17) 17	(17) 0.5	(17) YE / WH	(17) 2377	(17) II	(17) —	(17) Right Rear Middle Parking Assist Sensor Signal	(17) 17	(17) 0.5	(17) YE / WH	(17) 2377	(17) V	(17) —
(18) 18	(18) 0.75	(18) BN / BU	(18) 6993	(18) II	(18) —	(18) Left Rear Park Lamp Control	(18) 18	(18) 0.75	(18) BN / BU	(18) 6993	(18) V	(18) —
(19) 19	(19) 0.75	(19) WH / BK	(19) 7544	(19) II	(19) —	(19) Right Rear Turn Signal Lamp Feedback Signal	(19) 19	(19) 0.35	(19) WH / BK	(19) 7544	(19) V	(19) —
20	—	—	—	—	—	Not Occupied	20	—	—	—	—	—
(21) 21	(21) 0.5	(21) VT	(21) 882	(21) II	(21) —	(21) Right Rear Wheel Speed Sensor Signal	(21) 21	(21) 0.5	(21) VT	(21) 882	(21) V	(21) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(22) 22	(22) 0.5	(22) GY / YE	(22) 7128	(22) II	(22) —	(22) Right Rear Wheel Speed Sensor Control	(22) 22	(22) 0.5	(22) GY / YE	(22) 7128	(22) V	(22) —
(23) 23	(23) 0.5	(23) BU	(23) 884	(23) II	(23) —	(23) Left Rear Wheel Speed Sensor Signal	(23) 23	(23) 0.5	(23) BU	(23) 884	(23) V	(23) —
(24) 24	(24) 0.5	(24) GY / BK	(24) 7127	(24) II	(24) —	(24) Left Rear Wheel Speed Sensor Control	(24) 24	(24) 0.5	(24) GY / BK	(24) 7127	(24) V	(24) —
(25) 25	(25) 0.5	(25) YE	(25) 7115	(25) II	(25) —	(25) Rear Axle Differential Lock Indicator Control	(25) 25	(25) 0.35	(25) YE	(25) 7115	(25) V	(25) —
(26) 26	(26) 0.5	(26) BN / YE	(26) 820	(26) II	(26) —	(26) Center High Mounted Stop Lamp Supply Voltage	(26) 26	(26) 0.5	(26) BN / YE	(26) 820	(26) V	(26) —
(27) 27	(27) —	(27) —	(27) —	(27) —	(27) —	(27) Ground	(27) 27	(27) 2.5	(27) BK	(27) 150	(27) VI	(27) —
(28) 28	(28) 2.5	(28) BU	(28) 47	(28) I	(28) —	(28) Trailer Auxiliary Control	(28) 28	(28) 2	(28) BU	(28) 47	(28) VI	(28) —
(29) 29	(29) 5	(29) GY / BK	(29) 4369	(29) III	(29) —	(29) Left Park Brake Motor Low Reference	(29) 29	(29) 2.5	(29) GY / BK	(29) 4369	(29) IV	(29) —
(30) 30	(30) 2.5	(30) RD / BN	(30) 3640	(30) I	(30) —	(30) Battery Positive Voltage	(30) 30	(30) 2.5	(30) RD / BN	(30) 4142	(30) VI	(30) —
(31) 31	(31) 0.5	(31) VT / RD	(31) 4049	(31) II	(31) —	(31) AC Power Outlet Sensor High Reference	(31) 31	(31) 0.5	(31) VT / RD	(31) 4049	(31) V	(31) —
(32) 32	(32) 0.35	(32) VT / WH	(32) 639	(32) II	(32) —	(32) Run/ Crank Ignition 1 Voltage	(32) 32	(32) 0.5	(32) VT / WH	(32) 639	(32) V	(32) —
(33) 33	(33) 0.5	(33) GY / BU	(33) 7762	(33) II	(33) —	(33) Cargo Lamp Control	(33) 33	(33) 0.5	(33) GY / BU	(33) 7762	(33) V	(33) —
(34) 34	(34) 0.5	(34) YE / BK	(34) 2224	(34) II	(34) —	(34) Trailer Brake Enable Signal	(34) 34	(34) 0.5	(34) YE / BK	(34) 2224	(34) V	(34) —
(35) 35	(35) 0.5	(35) GN / BN	(35) 2266	(35) II	(35) —	(35) DC/AC Inverter Control 2	(35) 35	(35) 0.5	(35) GN / BN	(35) 2266	(35) V	(35) —
(36) 36	(36) 0.5	(36) BN / WH	(36) 2374	(36) II	(36) —	(36) Object Sensor Voltage Reference	(36) 36	(36) 0.5	(36) BN / WH	(36) 2374	(36) V	(36) —
(37) 37	(37) 0.5	(37) YE	(37) 2375	(37) II	(37) —	(37) Left Rear Outer Parking Assist Sensor Signal	(37) 37	(37) 0.5	(37) YE	(37) 2375	(37) V	(37) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(38) 38	(38) 0.5	(38) YE / BU	(38) 2376	(38) II	(38) —	(38) Left Rear Middle Parking Assist Sensor Signal	(38) 38	(38) 0.5	(38) YE / BU	(38) 2376	(38) V	(38) —
(39) 39	(39) 0.5	(39) WH	(39) 4978	(39) II	(39) —	(39) AUTOSAR CAN Bus [-] 2 Serial Data	(39) 39	(39) 0.35	(39) WH	(39) 4978	(39) V	(39) —
(40) 40	(40) 0.5	(40) YE / VT	(40) 2378	(40) II	(40) —	(40) Right Rear Outer Parking Assist Sensor Signal	(40) 40	(40) 0.5	(40) YE / VT	(40) 2378	(40) V	(40) —
(41) 41	(41) 0.5	(41) BK / GY	(41) 2379	(41) II	(41) —	(41) Object Sensor Low Reference	(41) 41	(41) 0.5	(41) BK / GY	(41) 2379	(41) V	(41) —
(42) 42	(42) 0.5	(42) GN / WH	(42) 24	(42) II	(42) —	(42) Backup Lamp Control	(42) 42	(42) 0.5	(42) GN / WH	(42) 24	(42) V	(42) —
(43) 43	(43) 5	(43) GY	(43) 4368	(43) III	(43) —	(43) Right Park Brake Motor Low Reference	(43) 43	(43) 2.5	(43) GY	(43) 4368	(43) IV	(43) —
(44) 44	(44) 0.75	(44) BK / WH	(44) 10120	(44) II	(44) —	(44) AC Outlet 2 Phase A Control	(44) 44	(44) 0.75	(44) BK / WH	(44) 10120	(44) V	(44) —
(45) 45	(45) 0.75	(45) RD / WH	(45) 10121	(45) II	(45) —	(45) AC Outlet 2 Phase B Control	(45) 45	(45) 0.75	(45) RD / WH	(45) 10121	(45) V	(45) —
(46) 46	(46) 0.35	(46) BN	(46) 10119	(46) II	(46) —	(46) AC Outlet 2 Low Reference	(46) 46	(46) 0.35	(46) BN	(46) 10119	(46) V	(46) —
(47) 47	(47) 0.5	(47) VT / GN	(47) 4320	(47) II	(47) —	(47) Powertrain Sensor Bus Enable	(47) 47	(47) 0.5	(47) VT / GN	(47) 4320	(47) V	(47) —
(48) 48	(48) 0.5	(48) VT / GY	(48) 7117	(48) II	(48) —	(48) Front Axle Differential Lock Indicator Control	(48) 48	(48) 0.35	(48) VT / GY	(48) 7117	(48) V	(48) —
(49) 49	(49) 0.5	(49) GN / GY	(49) 465	(49) II	(49) —	(49) Fuel Pump Primary Relay Control	(49) 49	(49) 0.5	(49) GN / GY	(49) 465	(49) V	(49) —
50	—	—	—	—	—	Not Occupied	50	—	—	—	—	—
(51) 51	(51) 0.75	(51) WH / VT	(51) 6567	(51) II	(51) —	(51) Rear Turn Signal Lamp Feedback Signal	(51) 51	(51) 0.35	(51) WH / VT	(51) 6567	(51) V	(51) —
(52) 52	(52) 0.5	(52) GN / YE	(52) 6846	(52) II	(52) —	(52) Rear License Plate Lamp Control	(52) 52	(52) 0.5	(52) GN / YE	(52) 6846	(52) V	(52) —
(53) 53	(53) 0.5	(53) BU / YE	(53) 4979	(53) II	(53) —	(53) AUTOSAR CAN Bus [+] 2 Serial Data	(53) 53	(53) 0.35	(53) BU / YE	(53) 4979	(53) V	(53) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(54) 54	(54) 0.75	(54) BN / GY	(54) 6995	(54) II	(54) —	(54) Right Rear Park Lamp Control	(54) 54	(54) 0.75	(54) BN / GY	(54) 6995	(54) V	(54) —
(55) 55	(55) —	(55) —	(55) —	(55) —	(55) —	(55) Battery Positive Voltage	(55) 55	(55) 6	(55) RD / WH	(55) 1642	(55) IV	(55) —

X412 Assist Step Wire Jumper - Left to Chassis Wiring Harness (BRS)



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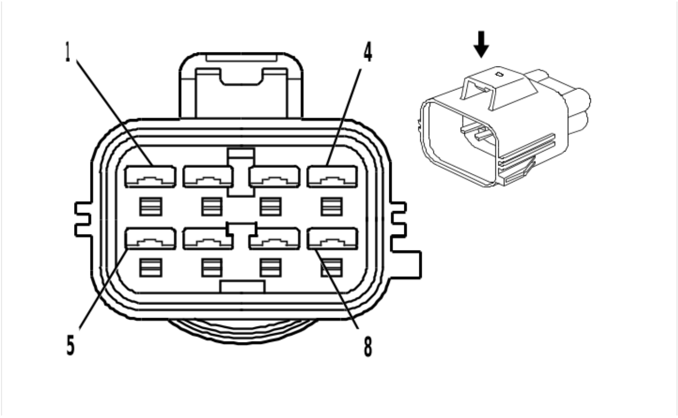


1856785

Connector Part Information
- Harness Type: Assist Step Wire Jumper - Left
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 7282-5574-10
- Service Connector: 19367561
- Description: 8-Way M 2.8 YESC Series, Sealed(D-GY)

Terminal Part Information

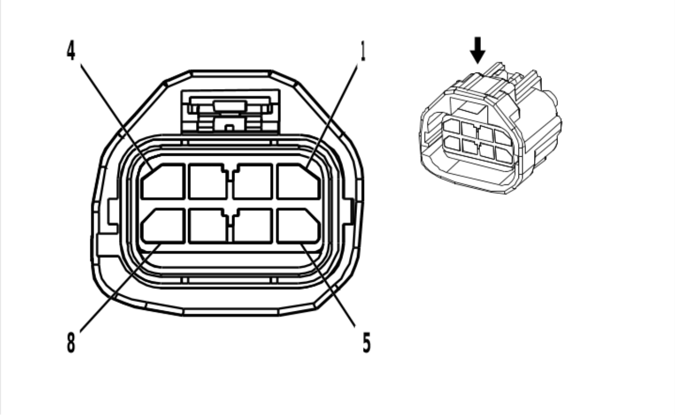
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
II	Not required	J-35616-5 (PU)	No Tool Required

X412 Assist Step Wire Jumper - Left to Chassis Wiring Harness (BRS)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 2	(1) YE	(1) 7472	(1) I	(1) —	(1) Left Running Board Step Motor Control Retract	(1) 1	(1) 2	(1) GY	(1) 7472	(1) II	(1) —
(2) 2	(2) 0.5	(2) OG / WH	(2) 7468	(2) I	(2) —	(2) Left Running Board Step Motor Hall Sensor Voltage Reference	(2) 2	(2) 0.5	(2) VT / RD	(2) 7468	(2) II	(2) —
(3) 3	(3) 0.5	(3) YE / WH	(3) 7467	(3) I	(3) —	(3) Left Running Board Step Motor Hall Sensor Signal	(3) 3	(3) 0.5	(3) YE	(3) 7467	(3) II	(3) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(4) 4	(4) 0.5	(4) BN / WH	(4) 7466	(4) I	(4) —	(4) Left Running Board Step Motor Hall Sensor Low Reference	(4) 4	(4) 0.5	(4) YE / BN	(4) 7466	(4) II	(4) —
(5) 5	(5) 2	(5) WH / BN	(5) 7471	(5) I	(5) —	(5) Left Running Board Step Motor Control Extend	(5) 5	(5) 2	(5) WH / BN	(5) 7471	(5) II	(5) —
6	—	—	—	—	—	Not Occupied	6	—	—	—	—	—
(7) 7	(7) 0.5	(7) RD	(7) 4746	(7) I	(7) —	(7) Running Board Step Left Kick Switch Signal	(7) 7	(7) 0.5	(7) BU / GN	(7) 4746	(7) II	(7) —
(8) 8	(8) 0.5	(8) BK	(8) 1151	(8) I	(8) —	(8) Signal Ground	(8) 8	(8) 0.5	(8) BK / WH	(8) 1151	(8) II	(8) —

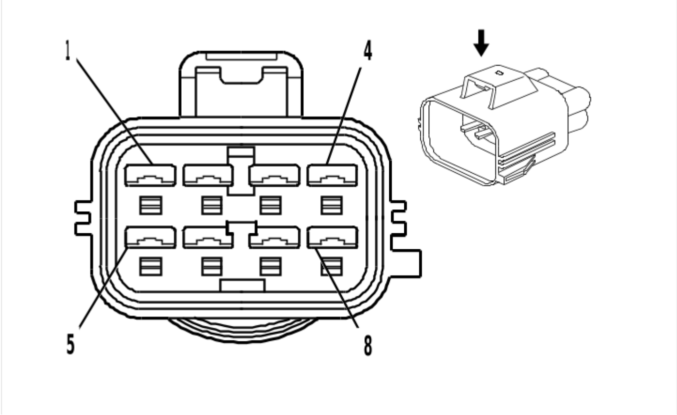
X413 Assist Step Wire Jumper - Right to Chassis Wiring Harness (BRS)



1401778

Connector Part Information

- Harness Type: Assist Step Wire Jumper - Right
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F



1856785

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 7282-5574-10
- Service Connector: 19367561
- Description: 8-Way M 2.8 YESC Series, Sealed(D-GY)

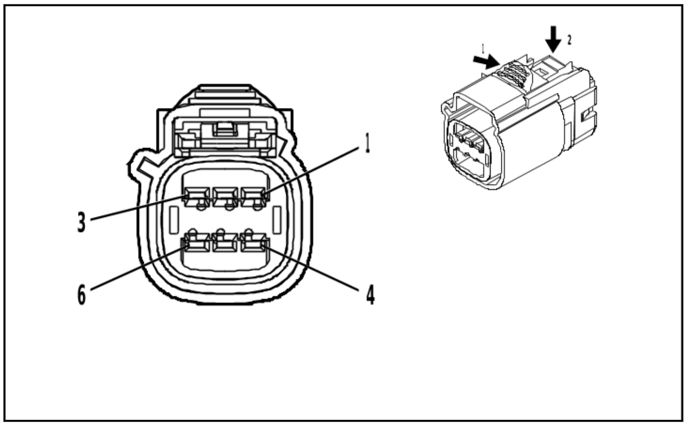
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
II	Not required	J-35616-5 (PU)	No Tool Required

X413 Assist Step Wire Jumper - Right to Chassis Wiring Harness (BRS)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 2	(1) YE	(1) 7469	(1) I	(1) —	(1) Right Left Running Board Step Motor Control Retract	(1) 1	(1) 2	(1) GN	(1) 7469	(1) II	(1) —
(2) 2	(2) 0.5	(2) OG / WH	(2) 7464	(2) I	(2) —	(2) Right Running Board Step Motor Hall Sensor Voltage Reference	(2) 2	(2) 0.5	(2) GN / RD	(2) 7464	(2) II	(2) —
(3) 3	(3) 0.5	(3) YE / WH	(3) 7465	(3) I	(3) —	(3) Right Running Board Step Motor Hall Sensor Signal	(3) 3	(3) 0.5	(3) VT	(3) 7465	(3) II	(3) —
(4) 4	(4) 0.5	(4) BN / WH	(4) 7463	(4) I	(4) —	(4) Right Running Board Step Motor Hall Sensor Low Reference	(4) 4	(4) 0.5	(4) YE / BK	(4) 7463	(4) II	(4) —
(5) 5	(5) 2	(5) WH / BN	(5) 7470	(5) I	(5) —	(5) Right Running Board Step Motor Control Extend	(5) 5	(5) 2	(5) BU	(5) 7470	(5) II	(5) —
6	—	—	—	—	—	Not Occupied	6	—	—	—	—	—
(7) 7	(7) 0.5	(7) RD	(7) 4747	(7) I	(7) —	(7) Running Board Step Right Kick Switch Signal	(7) 7	(7) 0.5	(7) WH	(7) 4747	(7) II	(7) —
(8) 8	(8) 0.5	(8) BK	(8) 1151	(8) I	(8) —	(8) Signal Ground	(8) 8	(8) 0.5	(8) BK / WH	(8) 1151	(8) II	(8) —

X414 Chassis Rear Wiring Harness to Chassis Wiring Harness (KC9 / KCA)



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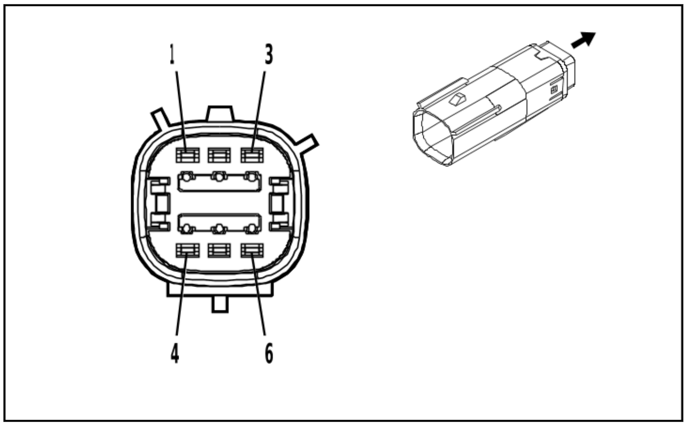


4992963

Connector Part Information
- Harness Type: Chassis Rear Wiring Harness
- OEM Connector: 15513505
- Service Connector: 85669156
- Description: 6-Way F 1.5 OCS Series, Sealed(GY)

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 15513475
- Service Connector: 19371205
- Description: 6-Way M 1.5 OCS Series, Sealed(GY)

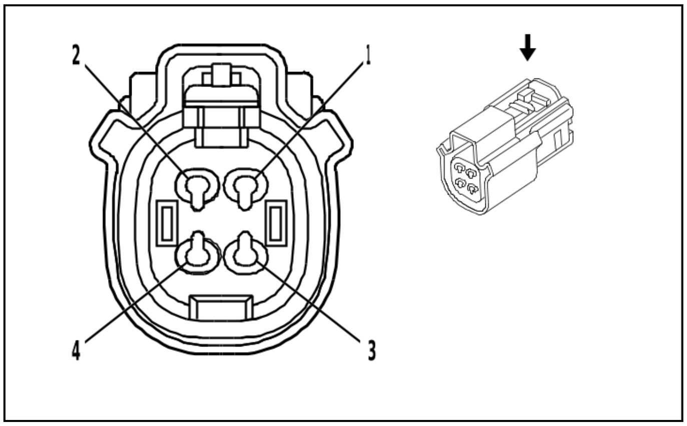
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-3 (GY)	No Tool Required

X414 Chassis Rear Wiring Harness to Chassis Wiring Harness (KC9 / KCA)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BK / WH	(1) 10120	(1) I	(1) —	(1) AC Outlet 2 Phase A Control (1) AC Outlet 2 Phase A Control	(1) 1	(1) 0.75	(1) BK / WH	(1) 10120	(1) II	(1) —
(2) 2	(2) 0.5	(2) BN	(2) 10119	(2) I	(2) —	(2) AC Outlet 2 Low Reference	(2) 2	(2) 0.5	(2) BN	(2) 10119	(2) II	(2) —
(3) 3	(3) 0.5	(3) VT / RD	(3) 4049	(3) I	(3) —	(3) AC Power Outlet Sensor High Reference	(3) 3	(3) 0.5	(3) VT / RD	(3) 4049	(3) II	(3) —
(4) 4	(4) 0.75	(4) RD / WH	(4) 10121	(4) I	(4) —	(4) AC Outlet 2 Phase B Control (4) AC Outlet 2 Phase B Control	(4) 4	(4) 0.75	(4) RD / WH	(4) 10121	(4) II	(4) —
(5) 5	(5) 0.5	(5) GN / BN	(5) 2266	(5) I	(5) —	(5) DC/AC Inverter Control 2	(5) 5	(5) 0.5	(5) GN / BN	(5) 2266	(5) II	(5) —
(6) 6	(6) 0.5	(6) BK	(6) 1750	(6) I	(6) —	(6) Ground	(6) 6	(6) 1.5	(6) BK	(6) 1750	(6) II	(6) —

X415 Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness to Engine Wiring Harness (NP0 / NQH)



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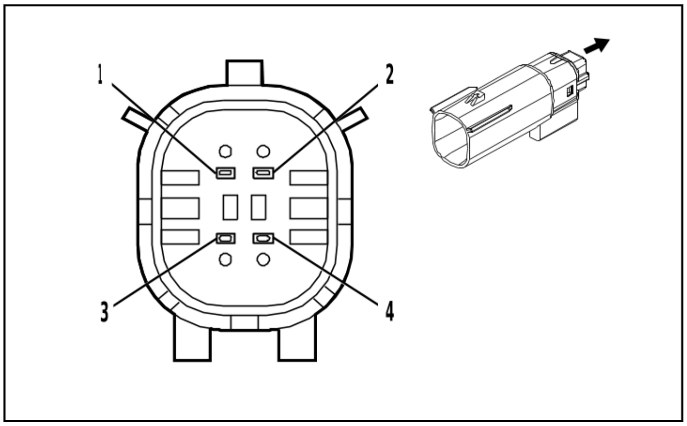


2368875

Connector Part Information

- Harness Type: Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness
- OEM Connector: 33472-4006
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.5 MX Series, Sealed(BK)

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 33482-4001
- Service Connector: 84838880
- Description: 4-Way M 1.5 MX Series, Sealed(BK)

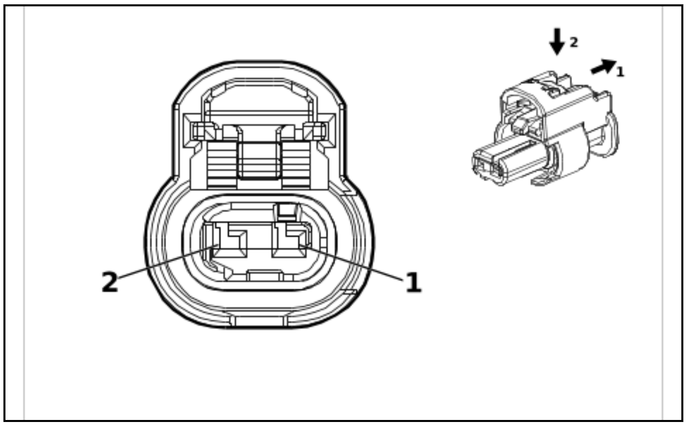
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-3 (GY)	No Tool Required

X415 Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness to Engine Wiring Harness (NP0 / NQH)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) GY / BK	(1) 1570	(1) I	(1) —	(1) Front Axle Actuator Control (1) Front Axle Actuator Control	(1) 1	(1) 0.5	(1) GY / BK	(1) 1570	(1) II	(1) —
(2) 2	(2) 0.5	(2) YE / WH	(2) 1695	(2) I	(2) —	(2) 4WD Locked Range Indicator Control (2) 4WD Locked Range Indicator Control	(2) 2	(2) 0.5	(2) YE / WH	(2) 1695	(2) II	(2) —
(3) 3	(3) 0.5	(3) GN	(3) 8016	(3) I	(3) —	(3) Secondary Axle Motor Control (3) Secondary Axle Motor Control	(3) 3	(3) 0.5	(3) GN	(3) 8016	(3) II	(3) —
(4) 4	(4) 0.5	(4) BK	(4) 450	(4) I	(4) —	(4) Ground (4) Ground	(4) 4	(4) 1 (4) 0.75	(4) BK (4) BK	(4) 450 (4) 450	(4) II (4) II	(4) (L84/L87) + (NP0/NQH) (4) LZ0

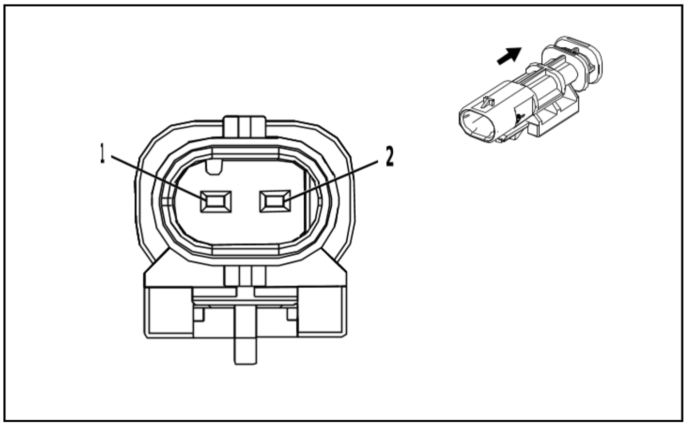
X416A Chassis Wiring Harness to Electronic Suspension Strut Wiring Harness Extension Harness (Z45)



4649903

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: 85761014
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)



2474755

Connector Part Information

- Harness Type: Electronic Suspension Strut Wiring Harness Extension Harness
- OEM Connector: 2203314-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed(BK)

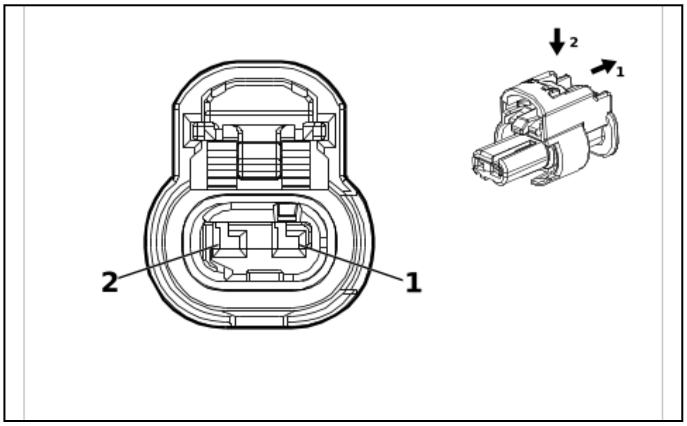
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-13 (BU)	No Tool Required

X416A Chassis Wiring Harness to Electronic Suspension Strut Wiring Harness Extension Harness (Z45)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BN / WH	(1) 1107	(1) I	(1) —	(1) Left Front Shock Absorber Actuator Control	(1) 1	(1) 0.75	(1) BU / WH	(1) 1107	(1) II	(1) —
(2) 2	(2) 0.75	(2) GY / BU	(2) 1113	(2) I	(2) —	(2) Left Front Shock Absorber Actuator Control	(2) 2	(2) 0.75	(2) GY	(2) 1113	(2) II	(2) —

X416B Chassis Wiring Harness to Electronic Suspension Strut Wiring Harness Extension Harness (Z45)



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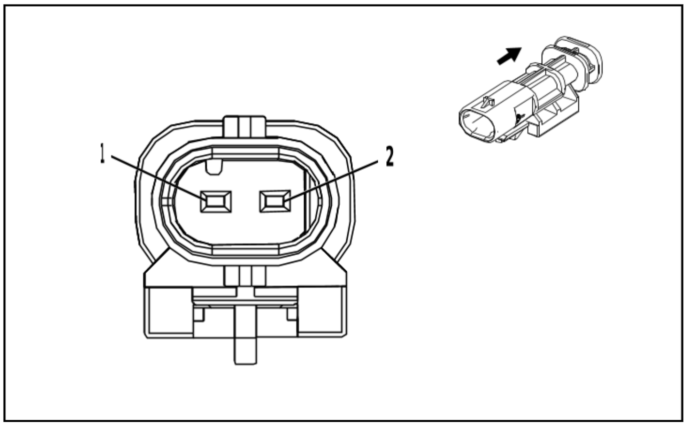


2474755

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: 85761014
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

Connector Part Information

- Harness Type: Electronic Suspension Strut Wiring Harness Extension Harness
- OEM Connector: 2203314-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed(BK)

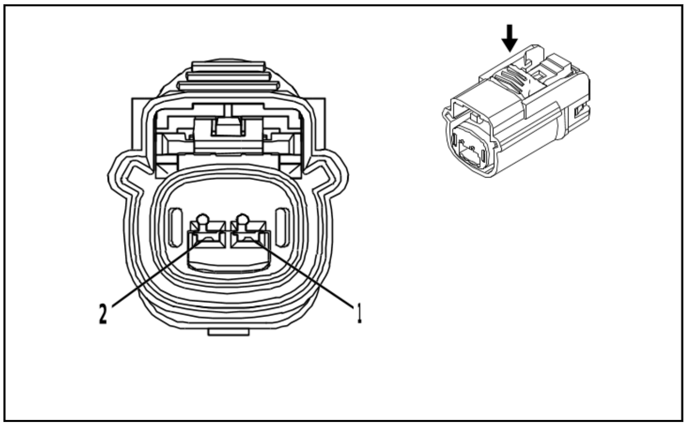
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-13 (BU)	No Tool Required

X416B Chassis Wiring Harness to Electronic Suspension Strut Wiring Harness Extension Harness (Z45)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BN / BU	(1) 1116	(1) I	(1) —	(1) Right Front Shock Absorber Actuator Control	(1) 1	(1) 0.75	(1) BU / WH	(1) 1116	(1) II	(1) —
(2) 2	(2) 0.75	(2) GY / WH	(2) 1117	(2) I	(2) —	(2) Right Front Shock Absorber Actuator Control	(2) 2	(2) 0.75	(2) GY	(2) 1117	(2) II	(2) —

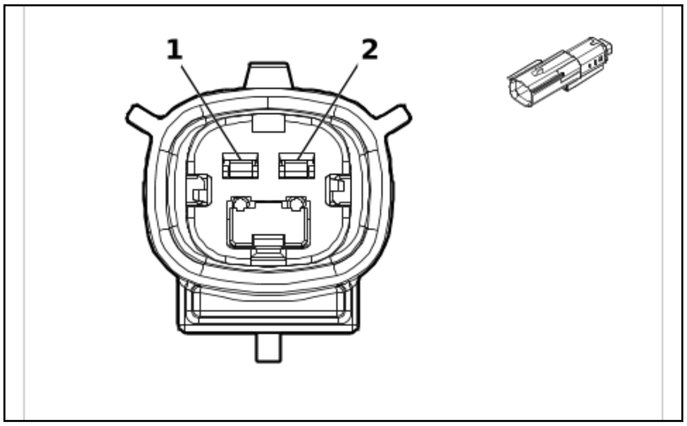
X416C Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness to Chassis Wiring Harness (G93)



4332222

Connector Part Information

- Harness Type: Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness
- OEM Connector: 15514573
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 OCS Series, Sealed(BK)



5921817

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 15514550
- Service Connector: 86825463
- Description: 2-Way M 1.5 OCS Series, Sealed(BK)

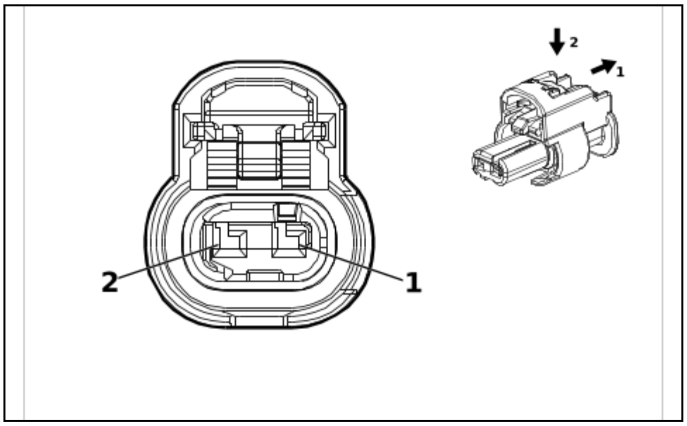
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-3 (GY)	No Tool Required

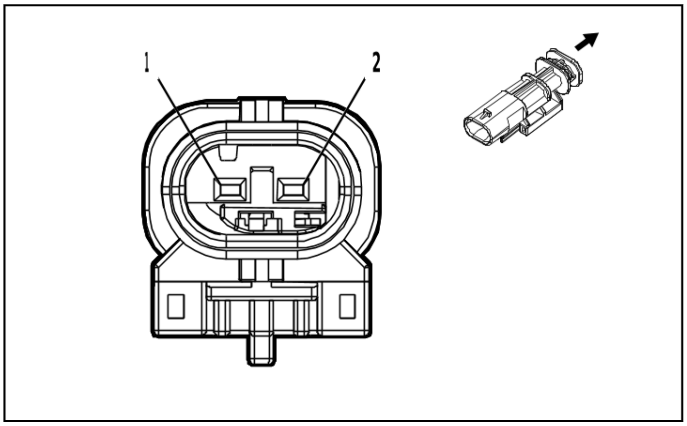
X416C Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness to Chassis Wiring Harness (G93)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) WH / BK	(1) 7254	(1) I	(1) —	(1) Front Differential Lock Actuator Low Control	(1) 1	(1) 0.75	(1) WH / BK	(1) 7254	(1) II	(1) —
(2) 2	(2) 0.75	(2) VT / WH	(2) 7256	(2) I	(2) —	(2) Front Differential Lock Actuator Control	(2) 2	(2) 0.75	(2) VT / WH	(2) 7256	(2) II	(2) —

X417 Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness to Shift Control Switch Wiring Harness Extension Harness (G93)



4649903



4569729

Connector Part Information
- Harness Type: Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed(BK)

Connector Part Information
- Harness Type: Shift Control Switch Wiring Harness Extension Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M (BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	No Tool Required	No Tool Required

X417 Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness to Shift Control Switch Wiring Harness Extension Harness (G93)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) VT / WH	(1) 7256	(1) I	(1) —	(1) Front Differential Lock Actuator Control	(1) 1	(1) 0.75	(1) VT / WH	(1) 7256	(1) II	(1) —
(2) 2	(2) 0.75	(2) WH / BK	(2) 7254	(2) I	(2) —	(2) Front Differential Lock Actuator Low Control	(2) 2	(2) 0.75	(2) WH / BK	(2) 7254	(2) II	(2) —

X418 Assist Step Wire Jumper - Left to Assist Step Wire - Left (BRS)

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Connector Part Information
- Harness Type: Assist Step Wire Jumper - Left
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F

Connector Part Information
- Harness Type: Assist Step Wire - Left
- OEM Connector: anr88724
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
II	Not required	No Tool Required	No Tool Required

X418 Assist Step Wire Jumper - Left to Assist Step Wire - Left (BRS)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 4746	(1) I	(1) —	(1) Running Board Step Left Kick Switch Signal	(1) 1	(1) 0.5	(1) RD	(1) 4746	(1) II	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 1151	(2) I	(2) —	(2) Signal Ground	(2) 2	(2) 0.5	(2) BK	(2) 1151	(2) II	(2) —

X419 Assist Step Wire Jumper - Right to Assist Step Wire - Right (BRS)

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Connector Part Information
- Harness Type: Assist Step Wire Jumper - Right
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F

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Connector Part Information
- Harness Type: Assist Step Wire - Right
- OEM Connector: anr88724
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M

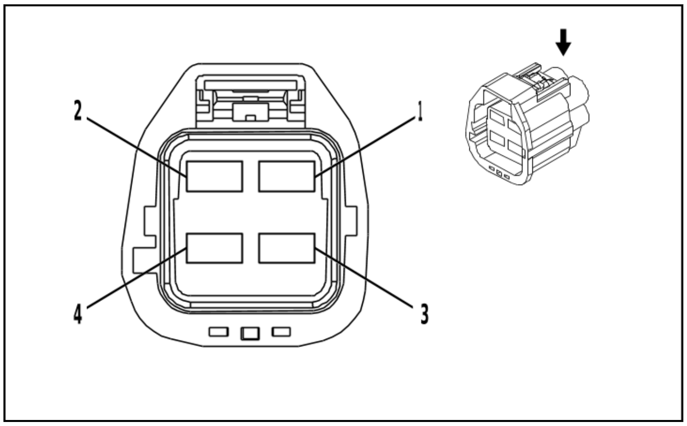
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
II	Not required	No Tool Required	No Tool Required

X419 Assist Step Wire Jumper - Right to Assist Step Wire - Right (BRS)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH	(1) 4747	(1) I	(1) —	(1) Running Board Step Right Kick Switch Signal	(1) 1	(1) 0.5	(1) RD	(1) 4747	(1) II	(1) —
(2) 2	(2) 0.5	(2) BK	(2) 1151	(2) I	(2) —	(2) Signal Ground	(2) 2	(2) 0.5	(2) BK	(2) 1151	(2) II	(2) —

X420A Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness



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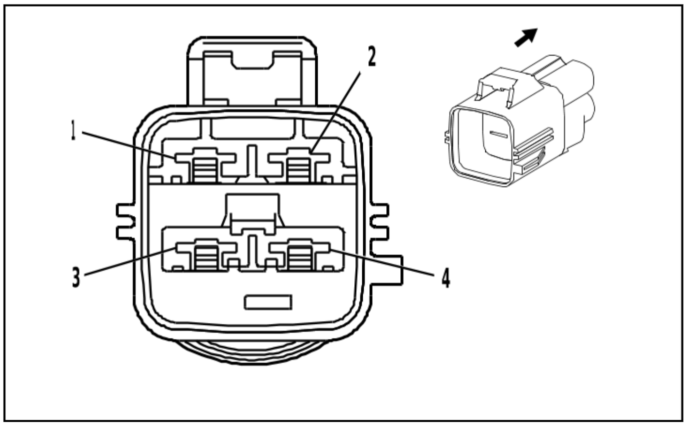


1853524

Connector Part Information
- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 7283-3601-10
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 6.3 Series, Sealed(GY)

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 7288-3029-10
- Service Connector: 19371198
- Description: 4-Way M 6.3 Series, Sealed(GY)

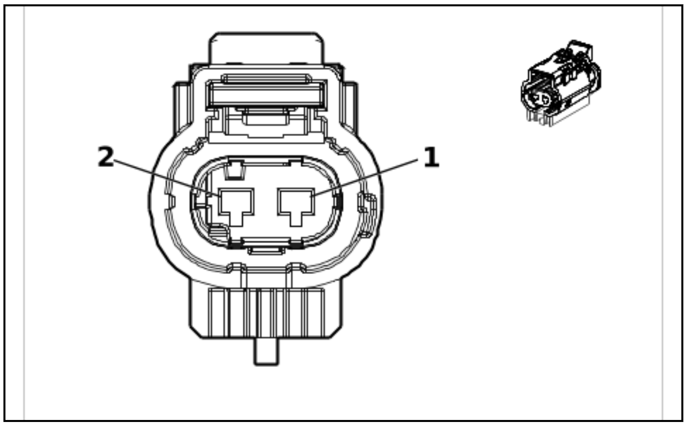
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-42 (RD)	No Tool Required
II	Not required	J-35616-43 (RD)	No Tool Required

X420A Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) WH	(1) 2001	(1) I	(1) - Z45, Z45, G94	(1) Left Park Brake Motor Apply Control	(1) 1	(1) 5	(1) WH	(1) 2001	(1) II	(1) —
(2) 2	(2) 2.5	(2) GY / BK	(2) 4369	(2) I	(2) - Z45, Z45, G94	(2) Left Park Brake Motor Low Reference	(2) 2	(2) 5	(2) GY / BK	(2) 4369	(2) II	(2) —
(3) 3	(3) 2.5	(3) GN / VT	(3) 1988	(3) I	(3) - Z45, Z45, G94	(3) Right Park Brake Motor Apply Control	(3) 3	(3) 5	(3) GN / VT	(3) 1988	(3) II	(3) —
(4) 4	(4) 2.5	(4) GY	(4) 4368	(4) I	(4) - Z45, Z45, G94	(4) Right Park Brake Motor Low Reference	(4) 4	(4) 5	(4) GY	(4) 4368	(4) II	(4) —

X420B Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness (- Z45)



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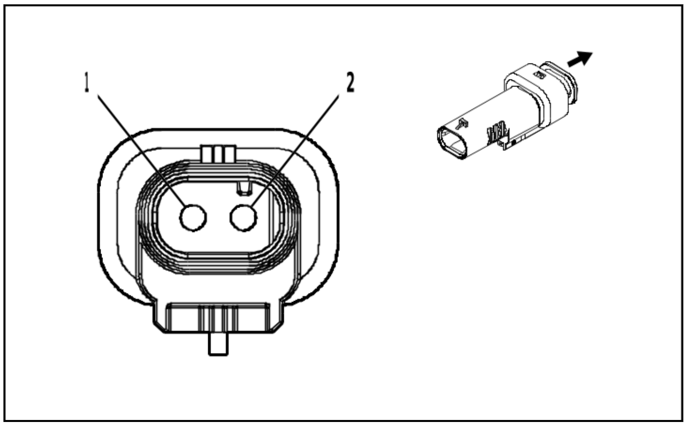


4992757

Connector Part Information

- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 10530494
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MLK Series, Sealed(GY)

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 10094251
- Service Connector: 19371200
- Description: 2-Way M 1.2 MLK Series, Sealed(GY)

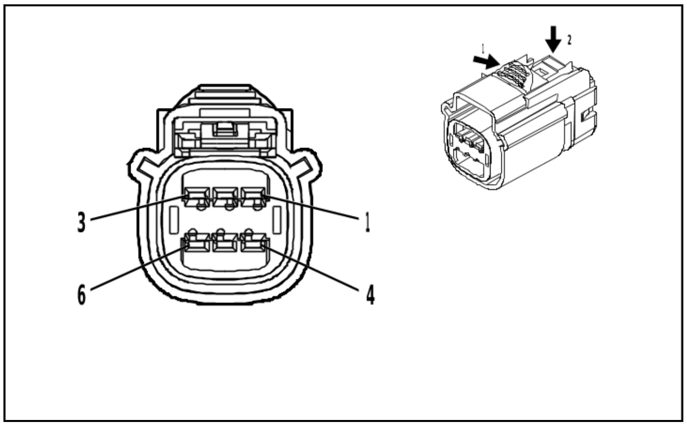
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-17 (L-GN)	No Tool Required

X420B Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness (- Z45)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) GN / YE	(1) 1616	(1) I	(1) - Z45	(1) Rear Brake Pad Wear Sensor Signal	(1) 1	(1) 0.5	(1) GN / YE	(1) 1616	(1) II	(1) —
(2) 2	(2) 0.75	(2) BK / WH	(2) 1951	(2) I	(2) - Z45	(2) Signal Ground	(2) 2	(2) 0.5	(2) BK / WH	(2) 1951	(2) II	(2) —

X420B Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness (Z45)



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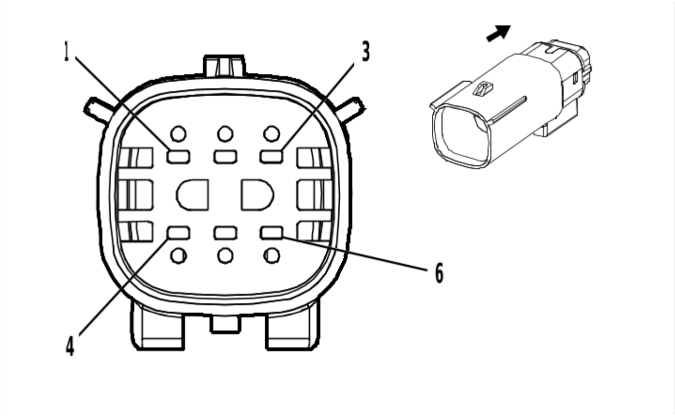


1986159

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 15513504
- Service Connector: 84999473
- Description: 6-Way F 1.5 OCS Series, Sealed(BK)

Connector Part Information

- Harness Type: Chassis Rear Wiring Harness Extension Harness
- OEM Connector: 33482-3601
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way M 1.5 MX Series, Sealed(BK)

Terminal Part Information

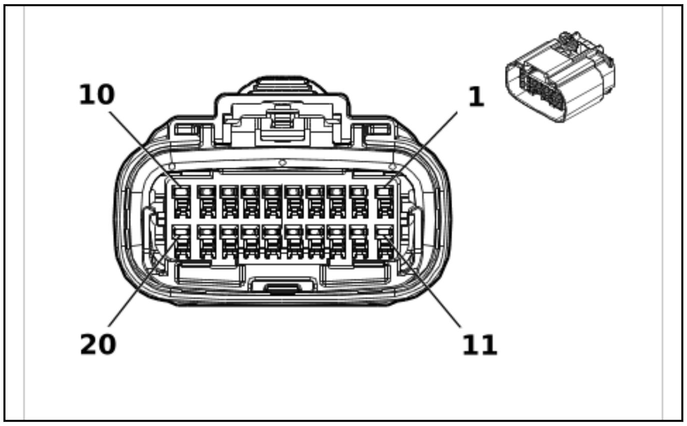
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-3 (GY)	No Tool Required

X420B Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness (Z45)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU / GY	(1) 1114	(1) I	(1) —	(1) Left Rear Shock Absorber Actuator Control	(1) 1	(1) 0.75	(1) BU / GY	(1) 1114	(1) II	(1) —
(2) 2	(2) 0.5	(2) GN / YE	(2) 1616	(2) I	(2) —	(2) Rear Brake Pad Wear Sensor Signal	(2) 2	(2) 0.75	(2) GN / YE	(2) 1616	(2) II	(2) —
(3) 3	(3) 0.75 (3) 0.75	(3) GY / BK (3) BN / GN	(3) 7253 (3) 1118	(3) I (3) I	(3) G94 (3) Z45	(3) Rear Differential Lock Actuator Low Control (3) Right Rear Shock Absorber Actuator Control	(3) 3	(3) 0.75 (3) 0.75	(3) GY / BK (3) BN / GN	(3) 7253 (3) 1118	(3) II (3) II	(3) G94 (3) Z45
(4) 4	(4) 0.75	(4) GN / VT	(4) 1115	(4) I	(4) —	(4) Left Rear Shock Absorber Actuator Control	(4) 4	(4) 0.75	(4) GN / VT	(4) 1115	(4) II	(4) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(5) 5	(5) 0.5	(5) BK / WH	(5) 1951	(5) I	(5) —	(5) Signal Ground	(5) 5	(5) 0.75	(5) BK / WH	(5) 1951	(5) II	(5) —
(6) 6	(6) 0.75 (6) 0.75	(6) VT / BN (6) GN / GY	(6) 7258 (6) 1119	(6) I (6) I	(6) G94 (6) Z45	(6) Rear Differential Lock Actuator Control (6) Right Rear Shock Absorber Actuator Control	(6) 6	(6) 0.75 (6) 0.75	(6) VT / BN (6) GN / GY	(6) 7258 (6) 1119	(6) II (6) II	(6) G94 (6) Z45

X424 Body Wiring Harness to Chassis Wiring Harness



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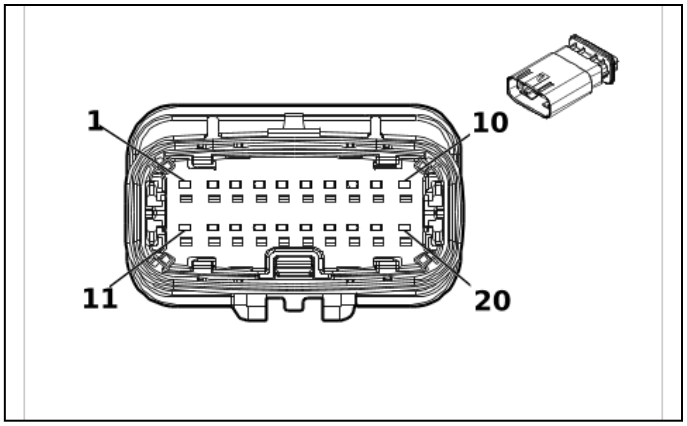


6081336

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 35465658
- Service Connector: 86579559
- Description: 20-Way F 1.2 MCON-CB Series, Sealed(BK)

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 35465720
- Service Connector: 85625526
- Description: 20-Way M 1.2 MCON-CB Series, Sealed(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	19370818	J-35616-12 (BU)	J-38125-553
II	19371217	J-35616-12 (BU)	J-38125-553
III	84867140	J-35616-13 (BU)	J-38125-553
IV	84867141	J-35616-13 (BU)	J-38125-215A

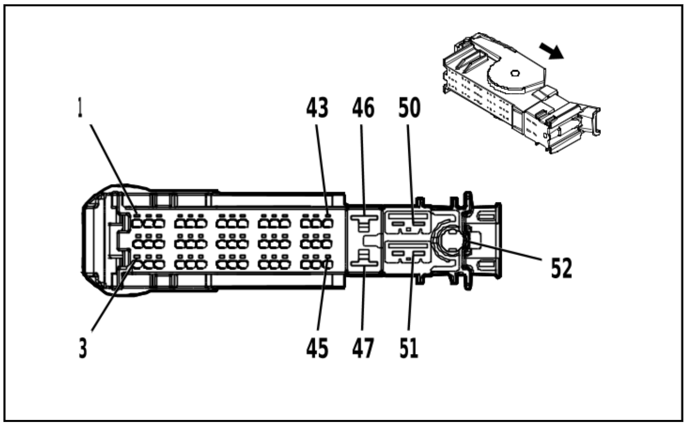
X424 Body Wiring Harness to Chassis Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 1	(1) VT	(1) 7725	(1) II	(1) QK2+QT5	(1) Minor Endgate Motor Control	(1) 1	(1) 1	(1) VT	(1) 7725	(1) IV	(1) QK2+QT5
(2) 2	(2) 0.5	(2) WH	(2) 4986	(2) I	(2) —	(2) AUTOSAR CAN Bus [-] 1 Serial Data	(2) 2	(2) 0.5	(2) WH	(2) 4986	(2) III	(2) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(3) 3	(3) 0.5	(3) WH	(3) 4100	(3) I	(3) —	(3) AUTOSAR CAN Bus [-] 4 Serial Data	(3) 3	(3) 0.5	(3) WH	(3) 4100	(3) III	(3) —
(4) 4	(4) 0.5	(4) BU / VT	(4) 4101	(4) I	(4) —	(4) AUTOSAR CAN Bus [+] 4 Serial Data	(4) 4	(4) 0.5	(4) BU / VT	(4) 4101	(4) III	(4) —
(5) 5	(5) 0.5	(5) WH / GY	(5) 4104	(5) I	(5) —	(5) AUTOSAR CAN Bus [-] 8 Serial Data	(5) 5	(5) 0.5	(5) WH / GY	(5) 4104	(5) III	(5) —
(6) 6	(6) 0.5	(6) BU / GY	(6) 4105	(6) I	(6) —	(6) AUTOSAR CAN Bus [+] 8 Serial Data	(6) 6	(6) 0.5	(6) BU / GY	(6) 4105	(6) III	(6) —
(7) 7	(7) 0.5	(7) WH / GY	(7) 4104	(7) I	(7) —	(7) AUTOSAR CAN Bus [-] 8 Serial Data	(7) 7	(7) 0.5	(7) WH / GY	(7) 4104	(7) III	(7) —
(8) 8	(8) 0.5	(8) BU / GY	(8) 4105	(8) I	(8) —	(8) AUTOSAR CAN Bus [+] 8 Serial Data	(8) 8	(8) 0.5	(8) BU / GY	(8) 4105	(8) III	(8) —
(9) 9	(9) 0.35	(9) YE	(9) 1144	(9) I	(9) —	(9) Endgate Release Switch Discrete Signal Exterior	(9) 9	(9) 0.5	(9) YE	(9) 1144	(9) III	(9) —
(10) 10	(10) 1	(10) GN	(10) 1299	(10) II	(10) —	(10) Major Endgate Motor Control	(10) 10	(10) 1	(10) GN	(10) 1299	(10) IV	(10) —
11	—	—	—	—	—	Not Occupied	11	—	—	—	—	—
(12) 12	(12) 0.5	(12) BU	(12) 4987	(12) I	(12) —	(12) AUTOSAR CAN Bus [+] 1 Serial Data	(12) 12	(12) 0.5	(12) BU	(12) 4987	(12) III	(12) —
(13) 13	(13) 0.35	(13) YE / BU	(13) 7295	(13) I	(13) —	(13) Left Minor Endgate Ajar Signal	(13) 13	(13) 0.75	(13) YE / BU	(13) 7295	(13) III	(13) —
(14) 14	(14) 0.5	(14) BU / GY	(14) 4054	(14) I	(14) —	(14) Private Serial Data Powertrain CAN Bus [-] Serial Data	(14) 14	(14) 0.5	(14) BU / GY	(14) 4054	(14) III	(14) —
(15) 15	(15) 0.5	(15) WH	(15) 4055	(15) I	(15) —	(15) Private Serial Data Powertrain CAN Bus [+] Serial Data	(15) 15	(15) 0.5	(15) WH	(15) 4055	(15) III	(15) —
16	—	—	—	—	—	Not Occupied	16	—	—	—	—	—
(17) 17	(17) 0.5	(17) WH	(17) 4986	(17) I	(17) —	(17) AUTOSAR CAN Bus [-] 1 Serial Data	(17) 17	(17) 0.5	(17) WH	(17) 4986	(17) III	(17) —
(18) 18	(18) 0.5	(18) BU	(18) 4987	(18) I	(18) —	(18) AUTOSAR CAN Bus [+] 1 Serial Data	(18) 18	(18) 0.5	(18) BU	(18) 4987	(18) III	(18) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
19	—	—	—	—	—	Not Occupied	19	—	—	—	—	—
(20) 20	(20) 1	(20) YE / BK	(20) 7730	(20) II	(20) —	(20) Major Endgate Motor Low Reference	(20) 20	(20) 1	(20) YE / BK	(20) 7730	(20) IV	(20) —

X500 Front Side Door Door Wiring Harness - Driver to Body Wiring Harness



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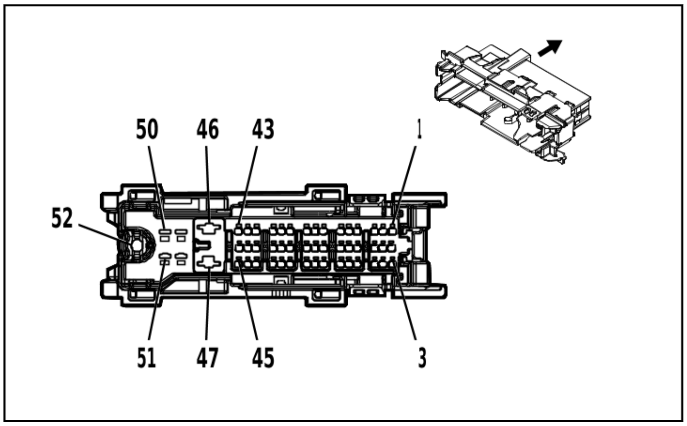

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Connector Part Information
- Harness Type: Front Side Door Door Wiring Harness - Driver
- OEM Connector: 6098-8365
- Service Connector: Service by Harness - See Part Catalog
- Description: 52-Way F 1.2, 2.8, 6.3, Coaxial Series(BK)

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 13527236
- Service Connector: 13527236
- Description: 52-Way M 1.2, 2.8, 6.3, Coaxial Series(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-42 (RD)	No Tool Required
III	Service by Cable	No Tool Required	No Tool Required
IV	19301536	J-35616-43 (RD)	J-38125-11A
V	84616651	J-35616-13 (BU)	J-38125-215A
VI	Service by Cable	No Tool Required	No Tool Required

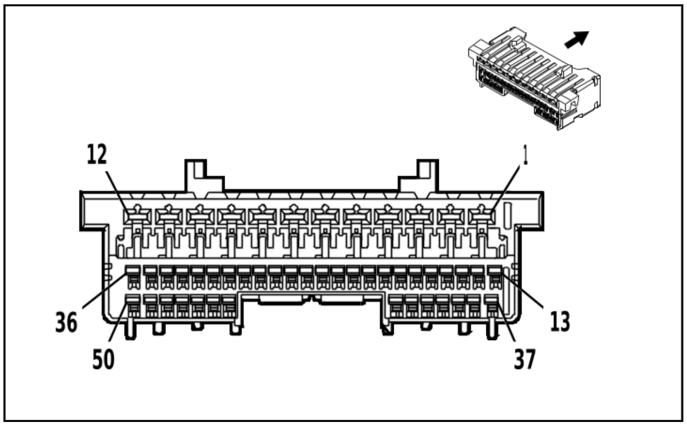
X500 Front Side Door Door Wiring Harness - Driver to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
1	—	—	—	—	—	Not Occupied	1	—	—	—	—	—
(2) 2	(2) 0.5	(2) RD / BU	(2) 1240	(2) I	(2) —	(2) Battery Positive Voltage	(2) 2	(2) 0.5	(2) RD / BU	(2) 1240	(2) V	(2) —
3 - 5	—	—	—	—	—	Not Occupied	3 - 5	—	—	—	—	—
(6) 6	(6) 0.5	(6) BK / OG	(6) 6628	(6) I	(6) —	(6) Left Front Side Impact Sensor Low Reference	(6) 6	(6) 0.5	(6) BK / OG	(6) 6628	(6) V	(6) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(7) 7	(7) 0.75	(7) BN / BU	(7) 118	(7) I	(7) —	(7) Left Front Speaker [-] Control 1	(7) 7	(7) 0.75	(7) BN / BU	(7) 118	(7) V	(7) —
(8) 8	(8) 0.75	(8) BU	(8) 201	(8) I	(8) —	(8) Left Front Speaker 1 [+] Control	(8) 8	(8) 0.75	(8) BU	(8) 201	(8) V	(8) —
(9) 9	(9) 0.5	(9) OG / GN	(9) 2132	(9) I	(9) —	(9) Left Front Side Impact Sensor Signal	(9) 9	(9) 0.5	(9) OG / GN	(9) 2132	(9) V	(9) —
10	—	—	—	—	—	Not Occupied	10	—	—	—	—	—
(11) 11	(11) 0.5	(11) VT	(11) 4301	(11) I	(11) —	(11) Passive Entry Left Antenna Signal High	(11) 11	(11) 0.35	(11) VT	(11) 4301	(11) V	(11) —
(12) 12	(12) 0.5	(12) VT / GY	(12) 4302	(12) I	(12) —	(12) Passive Entry Left Antenna Signal Low	(12) 12	(12) 0.35	(12) VT / WH	(12) 4302	(12) V	(12) —
(13) 13	(13) 0.5	(13) VT / GY	(13) 126	(13) I	(13) —	(13) Left Front Door Open Switch Signal	(13) 13	(13) 0.35	(13) VT / GY	(13) 126	(13) V	(13) —
(14) 14	(14) 0.5	(14) YE / WH	(14) 1690	(14) I	(14) —	(14) Mirror Dimming Signal	(14) 14	(14) 0.35	(14) YE / WH	(14) 1690	(14) V	(14) —
(15) 15	(15) 0.5	(15) BK / YE	(15) 1691	(15) I	(15) —	(15) Automatic Day/Night Mirror Low Reference	(15) 15	(15) 0.35	(15) BK / YE	(15) 1691	(15) V	(15) —
(16) 16	(16) 0.5	(16) WH / GY	(16) 2114	(16) I	(16) —	(16) Left Turn Signal Lamp Control 2	(16) 16	(16) 0.35	(16) WH / GY	(16) 2114	(16) V	(16) —
(17) 17	(17) 0.5	(17) BU	(17) 2675	(17) I	(17) —	(17) Left Front Exterior Door Handle Switch Unlock Signal	(17) 17	(17) 0.35	(17) BU	(17) 2675	(17) V	(17) —
(18) 18	(18) 0.75	(18) WH	(18) 2679	(18) I	(18) —	(18) Lock Actuators Unlock Control 1	(18) 18	(18) 0.75	(18) WH	(18) 2679	(18) V	(18) —
(19) 19	(19) 0.75	(19) GY	(19) 2681	(19) I	(19) —	(19) Left Front Door Lock Actuator Lock Control	(19) 19	(19) 0.75	(19) GY	(19) 2681	(19) V	(19) —
20 - 22	—	—	—	—	—	Not Occupied	20 - 22	—	—	—	—	—
(23) 23	(23) 0.5	(23) WH / GN	(23) 5966	(23) I	(23) —	(23) Approach Lamp Control	(23) 23	(23) 0.5	(23) WH / GN	(23) 5966	(23) V	(23) —
24	—	—	—	—	—	Not Occupied	24	—	—	—	—	—
(25) 25	(25) 0.5	(25) BU / GN	(25) 614	(25) I	(25) —	(25) Seat Memory Switch Set Signal	(25) 25	(25) 0.35	(25) BU / GN	(25) 614	(25) V	(25) —
(26) 26	(26) 0.5	(26) BU / YE	(26) 7761	(26) I	(26) —	(26) Backup Illumination Lamp Control	(26) 26	(26) 0.35	(26) BU / YE	(26) 7761	(26) V	(26) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(27) 27	(27) 0.5	(27) YE	(27) 6817	(27) I	(27) —	(27) LED Backlight Dimming Control 1	(27) 27	(27) 0.5	(27) YE	(27) 6817	(27) V	(27) —
28	—	—	—	—	—	Not Occupied	28	—	—	—	—	—
(29) 29	(29) 0.5	(29) GN / YE	(29) 6134	(29) I	(29) —	(29) Body Control Module LIN Bus 3	(29) 29	(29) 0.35	(29) GN / YE	(29) 6134	(29) V	(29) —
(30) 30	(30) 0.5	(30) BN / GN	(30) 4246	(30) I	(30) —	(30) Identification Lamp Control	(30) 30	(30) 0.5	(30) BN / GN	(30) 4246	(30) V	(30) —
(31) 31	(31) 0.5	(31) BK / WH	(31) 1551	(31) I	(31) —	(31) Signal Ground (31) Signal Ground	(31) 31	(31) 0.75 (31) 0.5	(31) BK (31) BK / WH	(31) 1551 (31) 1551	(31) V (31) V	(31) REGULAR CAB (31) DOUBLE CAB/ CREW CAB
(32) 32	(32) 0.5	(32) YE / GY	(32) 2933	(32) I	(32) —	(32) Task Lamp Control Left	(32) 32	(32) 0.35	(32) YE / GY	(32) 2933	(32) V	(32) —
(33) 33	(33) 0.5	(33) WH	(33) 615	(33) I	(33) —	(33) Seat Memory Switch Signal 1	(33) 33	(33) 0.35	(33) WH	(33) 615	(33) V	(33) —
34 - 45	—	—	—	—	—	Not Occupied	34 - 45	—	—	—	—	—
(46) 46	(46) 2.5	(46) RD / GY	(46) 3540	(46) II	(46) —	(46) Battery Positive Voltage	(46) 46	(46) 2.5	(46) RD / GY	(46) 3540	(46) IV	(46) —
(47) 47	(47) 2.5	(47) BK	(47) 1550	(47) II	(47) —	(47) Ground	(47) 47	(47) 2.5	(47) BK	(47) 1550	(47) IV	(47) —
48 - 51	—	—	—	—	—	Not Occupied	48 - 51	—	—	—	—	—
(52) 52	(52) 0	(52) Coax Cable	(52) 4725	(52) III	(52) —	(52) Left Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal	(52) 52	(52) 0	(52) Coax Cable	(52) 4725	(52) VI	(52) —

X505 Front Side Door Door Wiring Harness - Driver to Front Side Door Door Lock Door Wiring Harness - Driver



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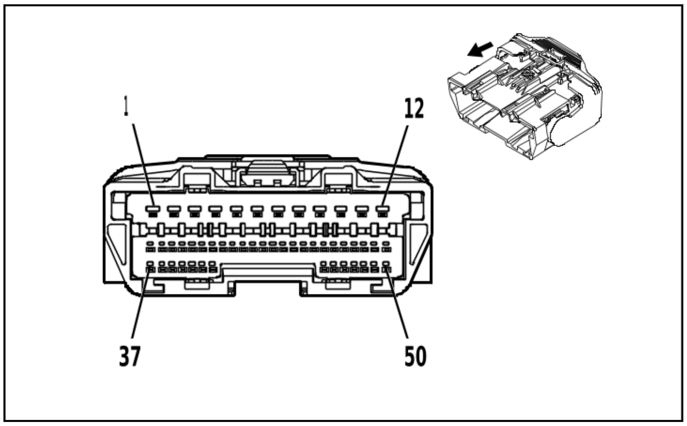


5022037

Connector Part Information
- Harness Type: Front Side Door Door Wiring Harness - Driver
- OEM Connector: 35283943
- Service Connector: Service by Harness - See Part Catalog
- Description: 50-Way F 1.2, 2.8 OCS Series(BK)

Connector Part Information
- Harness Type: Front Side Door Door Lock Door Wiring Harness - Driver
- OEM Connector: 33390111
- Service Connector: Service by Harness - See Part Catalog
- Description: 50-Way M 1.2, 2.8 OCS Series(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-4A (PU)	No Tool Required
III	Not required	J-35616-13 (BU)	No Tool Required
IV	Not required	J-35616-5 (PU)	No Tool Required

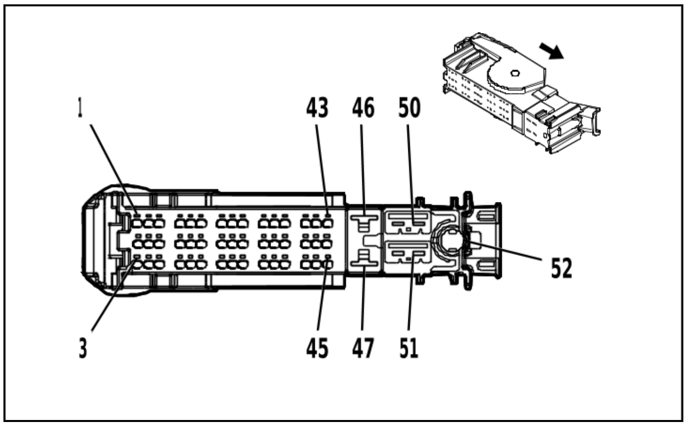
X505 Front Side Door Door Wiring Harness - Driver to Front Side Door Door Lock Door Wiring Harness - Driver

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / BU	(1) 1240	(1) II	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 0.5	(1) RD / BU	(1) 1240	(1) IV	(1) —
(2) 2	(2) 0.5	(2) GY / YE	(2) 1760	(2) II	(2) —	(2) Left Side Object Detection LED Control	(2) 2	(2) 0.35	(2) GY / YE	(2) 1760	(2) IV	(2) —
3	—	—	—	—	—	Not Occupied	3	—	—	—	—	—
(4) 4	(4) 0.5	(4) GY / GN	(4) 2763	(4) II	(4) —	(4) Window Switch Left Front Up Signal	(4) 4	(4) 0.5	(4) GY / GN	(4) 2763	(4) IV	(4) —
5	—	—	—	—	—	Not Occupied	5	—	—	—	—	—
(6) 6	(6) 0.5	(6) WH / BN	(6) 2764	(6) II	(6) —	(6) Window Switch Left Front Down Signal	(6) 6	(6) 0.5	(6) WH / BN	(6) 2764	(6) IV	(6) —
7	—	—	—	—	—	Not Occupied	7	—	—	—	—	—

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(8) 8	(8) 0.5	(8) GN	(8) 2766	(8) II	(8) —	(8) Power Window Switch Left Front Express Signal	(8) 8	(8) 0.5	(8) GN	(8) 2766	(8) IV	(8) —
9 - 11	—	—	—	—	—	Not Occupied	9 - 11	—	—	—	—	—
(12) 12	(12) 0.5	(12) GY / WH	(12) 2785	(12) II	(12) —	(12) Left Front Mirror Motor Fold Out Control	(12) 12	(12) 0.5	(12) GY / WH	(12) 2785	(12) IV	(12) —
(13) 13	(13) 0.5	(13) WH / GN	(13) 2786	(13) I	(13) —	(13) Left Front Mirror Motor Fold In Control	(13) 13	(13) 0.5	(13) WH / GN	(13) 2786	(13) III	(13) —
(14) 14	(14) 0.5	(14) GY / BN	(14) 2787	(14) I	(14) —	(14) Left Front Mirror Position Sensor Up [+] Down [-] Signal	(14) 14	(14) 0.5	(14) GY / BN	(14) 2787	(14) III	(14) —
(15) 15	(15) 0.5	(15) VT / BU	(15) 2788	(15) I	(15) —	(15) Left Front Mirror Motor Up [+] Down [-] Control	(15) 15	(15) 0.5	(15) VT / BU	(15) 2788	(15) III	(15) —
(16) 16	(16) 0.5	(16) YE / BN	(16) 2789	(16) I	(16) —	(16) Left Front Mirror Motor Common Control	(16) 16	(16) 0.5	(16) YE / BN	(16) 2789	(16) III	(16) —
(17) 17	(17) 0.5	(17) BN / BK	(17) 2790	(17) I	(17) —	(17) Left Front Mirror Motor Right [+] Left [-] Control	(17) 17	(17) 0.5	(17) BN / BK	(17) 2790	(17) III	(17) —
(18) 18	(18) 0.5	(18) VT / RD	(18) 2791	(18) I	(18) —	(18) Left Front Mirror Position Sensor High Reference	(18) 18	(18) 0.5	(18) VT / RD	(18) 2791	(18) III	(18) —
(19) 19	(19) 0.5	(19) WH / YE	(19) 2792	(19) I	(19) —	(19) Left Front Mirror Position Sensor Left [-] Right [+] Signal	(19) 19	(19) 0.5	(19) WH / YE	(19) 2792	(19) III	(19) —
(20) 20	(20) 0.5	(20) WH	(20) 606	(20) I	(20) —	(20) Left Outside Rearview Mirror Heater Control	(20) 20	(20) 0.5	(20) WH	(20) 606	(20) III	(20) —
(21) 21	(21) 0.5	(21) GN / YE	(21) 6134	(21) I	(21) —	(21) Body Control Module LIN Bus 3	(21) 21	(21) 0.5	(21) GN / YE	(21) 6134	(21) III	(21) —
(22) 22	(22) 0.5	(22) BU / GN	(22) 614	(22) I	(22) —	(22) Seat Memory Switch Set Signal	(22) 22	(22) 0.5	(22) BU / GN	(22) 614	(22) III	(22) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(23) 23	(23) 0.5	(23) WH	(23) 615	(23) I	(23) —	(23) Seat Memory Switch Signal 1	(23) 23	(23) 0.5	(23) WH	(23) 615	(23) III	(23) —
(24) 24	(24) 0.5	(24) BK / BN	(24) 673	(24) I	(24) —	(24) Left Outside Rearview Mirror Position Sensor Low Reference	(24) 24	(24) 0.5	(24) BK / BN	(24) 673	(24) III	(24) —
(25) 25	(25) 0.5	(25) YE	(25) 6817	(25) I	(25) —	(25) LED Backlight Dimming Control 1	(25) 25	(25) 0.5	(25) YE	(25) 6817	(25) III	(25) —
26	—	—	—	—	—	Not Occupied	26	—	—	—	—	—
(27) 27	(27) 0.5	(27) BK	(27) 1550	(27) I	(27) —	(27) Ground	(27) 27	(27) 0.5	(27) BK	(27) 1550	(27) III	(27) —
(28) 28	(28) 0.5	(28) BK / WH	(28) 1551	(28) I	(28) —	(28) Signal Ground	(28) 28	(28) 0.5	(28) BK / WH	(28) 1551	(28) III	(28) —
(29) 29	(29) 0.5	(29) WH / VT	(29) 4258	(29) I	(29) —	(29) Left Front Door Lock Status Signal	(29) 29	(29) 0.5	(29) WH / VT	(29) 4258	(29) III	(29) —
30 - 50	—	—	—	—	—	Not Occupied	30 - 50	—	—	—	—	—

X600 Front Side Door Door Wiring Harness - Passenger to Body Wiring Harness



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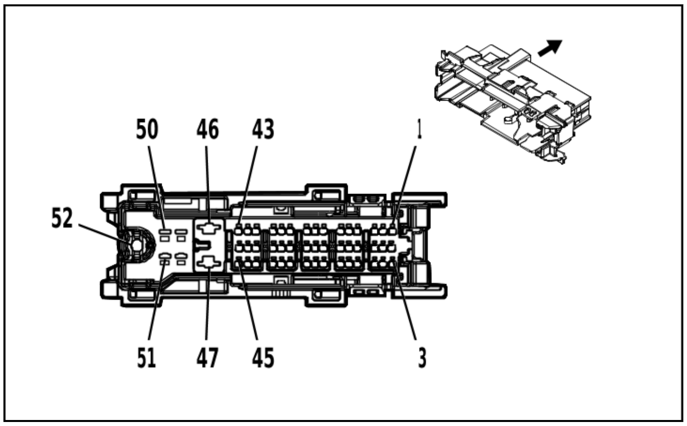

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Connector Part Information
- Harness Type: Front Side Door Door Wiring Harness - Passenger
- OEM Connector: 6098-8365
- Service Connector: Service by Harness - See Part Catalog
- Description: 52-Way F 1.2, 2.8, 6.3, Coaxial Series(BK)

Connector Part Information
- Harness Type: Body Wiring Harness
- OEM Connector: 13527236
- Service Connector: 13527236
- Description: 52-Way M 1.2, 2.8, 6.3, Coaxial Series(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-42 (RD)	No Tool Required

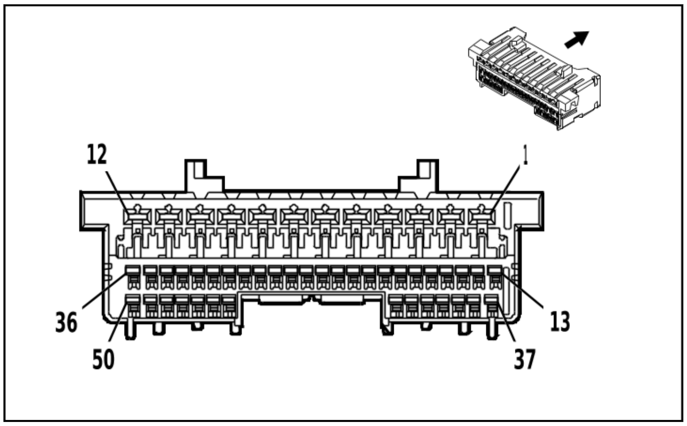
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
III	Service by Cable	No Tool Required	No Tool Required
IV	19301536	J-35616-43 (RD)	J-38125-11A
V	84616651	J-35616-13 (BU)	J-38125-215A
VI	Service by Cable	No Tool Required	No Tool Required

X600 Front Side Door Door Wiring Harness - Passenger to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
1 - 4	—	—	—	—	—	Not Occupied	1 - 4	—	—	—	—	—
(5) 5	(5) 0.75	(5) YE	(5) 200	(5) I	(5) —	(5) Right Front Speaker 1 [+] Control	(5) 5	(5) 0.75	(5) YE	(5) 200	(5) V	(5) —
(6) 6	(6) 0.75	(6) YE / BK	(6) 117	(6) I	(6) —	(6) Right Front Speaker [-] Control 1	(6) 6	(6) 0.75	(6) YE / BK	(6) 117	(6) V	(6) —
7	—	—	—	—	—	Not Occupied	7	—	—	—	—	—
(8) 8	(8) 0.5	(8) BN / OG	(8) 2134	(8) I	(8) —	(8) Right Front Side Impact Sensor Signal	(8) 8	(8) 0.5	(8) BN / OG	(8) 2134	(8) V	(8) —
(9) 9	(9) 0.5	(9) BK / OG	(9) 6629	(9) I	(9) —	(9) Right Front Side Impact Sensor Low Reference	(9) 9	(9) 0.5	(9) BK / OG	(9) 6629	(9) V	(9) —
(10) 10	(10) 0.5	(10) GN / YE	(10) 4303	(10) I	(10) —	(10) Passive Entry Right Antenna Signal High	(10) 10	(10) 0.35	(10) GN / YE	(10) 4303	(10) V	(10) —
(11) 11	(11) 0.5	(11) GN / BK	(11) 4304	(11) I	(11) —	(11) Passive Entry Right Antenna Signal Low	(11) 11	(11) 0.35	(11) GN / BK	(11) 4304	(11) V	(11) —
12	—	—	—	—	—	Not Occupied	12	—	—	—	—	—
(13) 13	(13) 0.5	(13) GN / GY	(13) 2115	(13) I	(13) —	(13) Right Turn Signal Lamp Control 2	(13) 13	(13) 0.35	(13) GN / GY	(13) 2115	(13) V	(13) —
(14) 14	(14) 0.5	(14) GY / VT	(14) 2676	(14) I	(14) —	(14) Right Front Door Exterior Switch Unlock Signal	(14) 14	(14) 0.35	(14) GY / VT	(14) 2676	(14) V	(14) —
(15) 15	(15) 0.75	(15) GY / BK	(15) 2680	(15) I	(15) —	(15) Lock Actuators Unlock Control 2	(15) 15	(15) 0.75	(15) GY / BK	(15) 2680	(15) V	(15) —
(16) 16	(16) 0.75	(16) YE / GN	(16) 2682	(16) I	(16) —	(16) Right Front Door Lock Actuator Lock Control	(16) 16	(16) 0.75	(16) YE / GN	(16) 2682	(16) V	(16) —
17 - 19	—	—	—	—	—	Not Occupied	17 - 19	—	—	—	—	—

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(20) 20	(20) 0.5	(20) WH / GN	(20) 5966	(20) I	(20) —	(20) Approach Lamp Control	(20) 20	(20) 0.5	(20) WH / GN	(20) 5966	(20) V	(20) —
21	—	—	—	—	—	Not Occupied	21	—	—	—	—	—
(22) 22	(22) 0.5	(22) BK / GY	(22) 626	(22) I	(22) —	(22) Engine Control Vehicle Sensors Low Reference 1	(22) 22	(22) 0.5	(22) BK / GY	(22) 626	(22) V	(22) —
(23) 23	(23) 0.5	(23) BU / GY	(23) 636	(23) I	(23) —	(23) Ambient Air Temperature Sensor Signal	(23) 23	(23) 0.5	(23) BU / GY	(23) 636	(23) V	(23) —
(24) 24	(24) 0.5	(24) YE	(24) 6817	(24) I	(24) —	(24) LED Backlight Dimming Control 1	(24) 24	(24) 0.5	(24) YE	(24) 6817	(24) V	(24) —
25	—	—	—	—	—	Not Occupied	25	—	—	—	—	—
(26) 26	(26) 0.5	(26) BU / YE	(26) 7761	(26) I	(26) —	(26) Backup Illumination Lamp Control	(26) 26	(26) 0.35	(26) BU / YE	(26) 7761	(26) V	(26) —
27	—	—	—	—	—	Not Occupied	27	—	—	—	—	—
(28) 28	(28) 0.5	(28) BK / WH	(28) 1451	(28) I	(28) —	(28) Signal Ground	(28) 28	(28) 0.75	(28) BK / WH	(28) 1451	(28) V	(28) —
(29) 29	(29) 0.5	(29) GN / YE	(29) 6134	(29) I	(29) —	(29) Body Control Module LIN Bus 3	(29) 29	(29) 0.35	(29) GN / YE	(29) 6134	(29) V	(29) —
(30) 30	(30) 0.5	(30) YE / WH	(30) 2934	(30) I	(30) —	(30) Task Lamp Control Right	(30) 30	(30) 0.35	(30) YE / WH	(30) 2934	(30) V	(30) —
(31) 31	(31) 0.5	(31) BN / GN	(31) 4246	(31) I	(31) —	(31) Identification Lamp Control	(31) 31	(31) 0.5	(31) BN / GN	(31) 4246	(31) V	(31) —
32 - 45	—	—	—	—	—	Not Occupied	32 - 45	—	—	—	—	—
(46) 46	(46) 2.5	(46) RD / BN	(46) 4240	(46) II	(46) —	(46) Battery Positive Voltage	(46) 46	(46) 2.5	(46) RD / BN	(46) 4240	(46) IV	(46) —
(47) 47	(47) 2.5	(47) BK	(47) 1350	(47) II	(47) —	(47) Ground	(47) 47	(47) 2.5	(47) BK	(47) 1350	(47) IV	(47) —
48 - 51	—	—	—	—	—	Not Occupied	48 - 51	—	—	—	—	—
(52) 52	(52) 0	(52) Coax Cable	(52) 4724	(52) III	(52) —	(52) Right Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal	(52) 52	(52) 0	(52) Coax Cable	(52) 4724	(52) VI	(52) —

X605 Front Side Door Door Wiring Harness - Passenger to Front Side Door Door Lock Door Wiring Harness - Passenger



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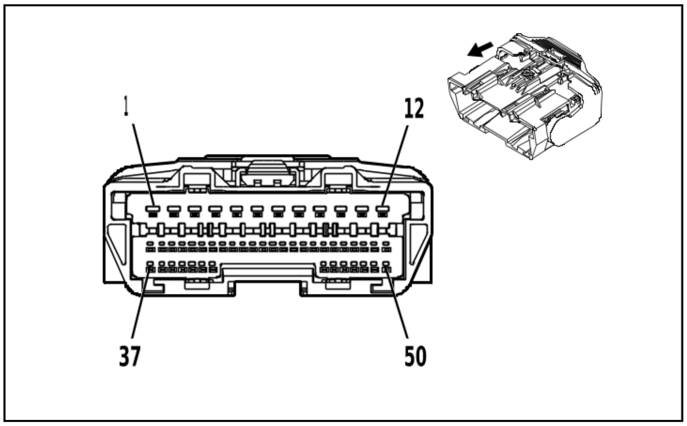


5022037

Connector Part Information

- Harness Type: Front Side Door Door Wiring Harness - Passenger
- OEM Connector: 35283943
- Service Connector: Service by Harness - See Part Catalog
- Description: 50-Way F 1.2, 2.8 OCS Series(BK)

Connector Part Information

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Passenger
- OEM Connector: 33390111
- Service Connector: Service by Harness - See Part Catalog
- Description: 50-Way M 1.2, 2.8 OCS Series(BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-4A (PU)	No Tool Required
III	Not required	J-35616-13 (BU)	No Tool Required
IV	Not required	J-35616-5 (PU)	No Tool Required

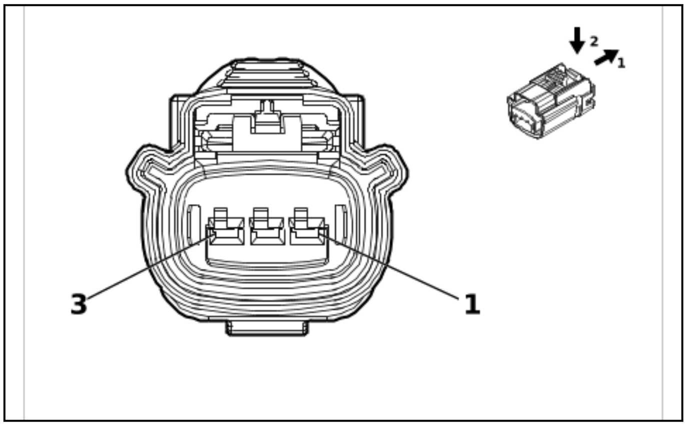
X605 Front Side Door Door Wiring Harness - Passenger to Front Side Door Door Lock Door Wiring Harness - Passenger

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) RD / BN	(1) 4240	(1) II	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 2.5	(1) RD / BN	(1) 4240	(1) IV	(1) —
(2) 2	(2) 0.5	(2) GN	(2) 1184	(2) II	(2) —	(2) Window Switch Right Front Up Signal	(2) 2	(2) 0.5	(2) GN	(2) 1184	(2) IV	(2) —
(3) 3	(3) 0.5	(3) GY	(3) 1761	(3) II	(3) —	(3) Right Side Object Detection LED Control	(3) 3	(3) 0.35	(3) GY	(3) 1761	(3) IV	(3) —
4	—	—	—	—	—	Not Occupied	4	—	—	—	—	—
(5) 5	(5) 0.5	(5) VT / GY	(5) 2765	(5) II	(5) —	(5) Window Switch Right Front Express Signal	(5) 5	(5) 0.5	(5) VT / GY	(5) 2765	(5) IV	(5) —
6 - 7	—	—	—	—	—	Not Occupied	6 - 7	—	—	—	—	—

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(8) 8	(8) 0.5	(8) YE / WH	(8) 2793	(8) II	(8) —	(8) Right Front Mirror Motor Fold Out Control	(8) 8	(8) 0.5	(8) YE / WH	(8) 2793	(8) IV	(8) —
(9) 9	(9) 0.5	(9) BU / GY	(9) 2794	(9) II	(9) —	(9) Right Front Mirror Motor Fold In Control	(9) 9	(9) 0.5	(9) BU / GY	(9) 2794	(9) IV	(9) —
(10) 10	(10) 2.5	(10) BK	(10) 1350	(10) II	(10) —	(10) Ground	(10) 10	(10) 2.5	(10) BK	(10) 1350	(10) IV	(10) —
(11) 11	(11) 2	(11) GN / GY	(11) 666	(11) II	(11) —	(11) Right Front Window Motor Up Control	(11) 11	(11) 2.5	(11) GN / GY	(11) 666	(11) IV	(11) —
(12) 12	(12) 2	(12) YE / BU	(12) 667	(12) II	(12) —	(12) Right Front Window Motor Down Control	(12) 12	(12) 2.5	(12) YE / BU	(12) 667	(12) IV	(12) —
(13) 13	(13) 0.5	(13) GN / BK	(13) 2798	(13) I	(13) —	(13) Right Front Mirror Motor Right [+] Left [-] Control	(13) 13	(13) 0.5	(13) GN / BK	(13) 2798	(13) III	(13) —
(14) 14	(14) 0.5	(14) YE / RD	(14) 2799	(14) I	(14) —	(14) Right Front Mirror Position Sensor High Reference	(14) 14	(14) 0.5	(14) YE / RD	(14) 2799	(14) III	(14) —
(15) 15	(15) 0.5	(15) VT / WH	(15) 2800	(15) I	(15) —	(15) Right Front Mirror Position Sensor Left [-] Right [+] Signal	(15) 15	(15) 0.5	(15) VT / WH	(15) 2800	(15) III	(15) —
(16) 16	(16) 0.5	(16) BN	(16) 5295	(16) I	(16) —	(16) Window Switch Right Front Down Signal	(16) 16	(16) 0.5	(16) BN	(16) 5295	(16) III	(16) —
(17) 17	(17) 0.5	(17) BN / VT	(17) 607	(17) I	(17) —	(17) Right Outside Rearview Mirror Heater Control	(17) 17	(17) 0.5	(17) BN / VT	(17) 607	(17) III	(17) —
(18) 18	(18) 0.5	(18) GN / YE	(18) 6134	(18) I	(18) —	(18) Body Control Module LIN Bus 3	(18) 18	(18) 0.5	(18) GN / YE	(18) 6134	(18) III	(18) —
19 - 20	—	—	—	—	—	Not Occupied	19 - 20	—	—	—	—	—
(21) 21	(21) 0.5	(21) BK / GN	(21) 675	(21) I	(21) —	(21) Right Outside Rearview Mirror Position Sensor Low Reference	(21) 21	(21) 0.5	(21) BK / GN	(21) 675	(21) III	(21) —
(22) 22	(22) 0.5	(22) YE	(22) 6817	(22) I	(22) —	(22) LED Backlight Dimming Control 1	(22) 22	(22) 0.5	(22) YE	(22) 6817	(22) III	(22) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
23 - 46	—	—	—	—	—	Not Occupied	23 - 46	—	—	—	—	—
(47) 47	(47) 0.5	(47) GY	(47) 746	(47) I	(47) —	(47) Right Front Door Ajar Switch Signal	(47) 47	(47) 0.5	(47) GY	(47) 746	(47) III	(47) —
(48) 48	(48) 0.5	(48) BU / YE	(48) 2795	(48) I	(48) —	(48) Right Front Mirror Position Sensor Up [+] Down [-] Signal	(48) 48	(48) 0.5	(48) BU / YE	(48) 2795	(48) III	(48) —
(49) 49	(49) 0.5	(49) YE / VT	(49) 2796	(49) I	(49) —	(49) Right Front Mirror Motor Up [+] Down [-] Control	(49) 49	(49) 0.5	(49) YE / VT	(49) 2796	(49) III	(49) —
(50) 50	(50) 0.5	(50) WH	(50) 2797	(50) I	(50) —	(50) Right Front Mirror Motor Common Control	(50) 50	(50) 0.5	(50) WH	(50) 2797	(50) III	(50) —

X618A Engine Wiring Harness to Active Grille Air Shutter Actuator Wiring Harness (VTI / WMI)



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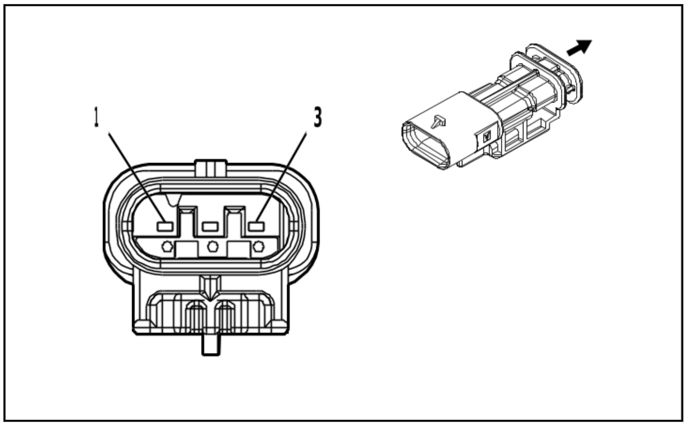


5068799

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 15514762
- Service Connector: 85535179
- Description: 3-Way F 1.5 YESC Series, Sealed(BK)

Connector Part Information
- Harness Type: Active Grille Air Shutter Actuator Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way M (BK)

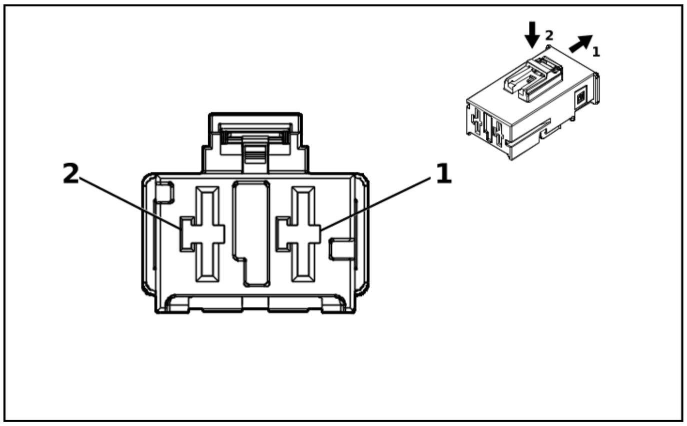
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	No Tool Required	No Tool Required

X618A Engine Wiring Harness to Active Grille Air Shutter Actuator Wiring Harness (VTI / WMI)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) VT / BU	(1) 5705	(1) I	(1) —	(1) Powertrain Main Relay Control	(1) 1	(1) 0.5	(1) VT / BU	(1) 5705	(1) II	(1) —
(2) 2	(2) 0.5	(2) GN / VT	(2) 4621	(2) I	(2) —	(2) Engine Control Module LIN Bus 1	(2) 2	(2) 0.5	(2) GN / VT	(2) 4621	(2) II	(2) —
(3) 3	(3) 1 (3) 0.5 (3) 0.5	(3) BK (3) BK (3) BK	(3) 450 (3) 450 (3) 6550	(3) I (3) I (3) I	(3) (L84/ L87) + (VTI/ WMI) (3) L3B+ (VTI/ WMI) (3) LZ0+ (VTI/ WMI)	(3) Ground (3) Ground (3) Ground	(3) 3	(3) 1 (3) 0.5 (3) 0.5	(3) BK (3) BK (3) BK	(3) 450 (3) 450 (3) 6550	(3) II (3) II (3) II	(3) (L84/ L87) + (VTI/ WMI) (3) L3B+ (VTI/ WMI) (3) LZ0+ (VTI/ WMI)

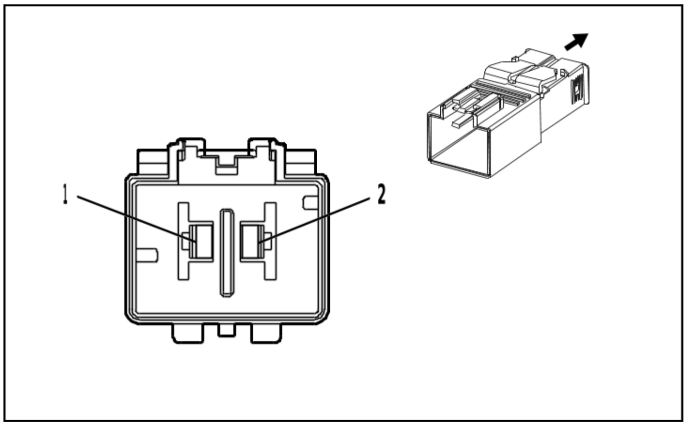
X630 Auxiliary Fuse Block Wiring Harness to Auxiliary Fuse Block Wiring Harness (9L7)



5187955

Connector Part Information

- Harness Type: Auxiliary Fuse Block Wiring Harness
- OEM Connector: 2317368-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 9.5 MCON-LL Series(BK)



4891120

Connector Part Information

- Harness Type: Auxiliary Fuse Block Wiring Harness
- OEM Connector: 2317373-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 9.5 MCON-LL Series(BK)

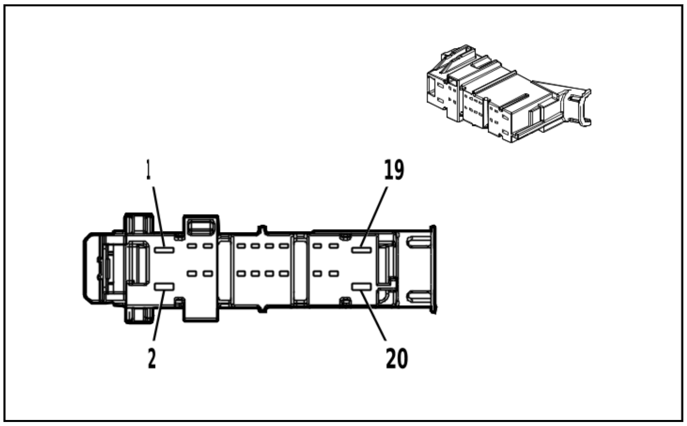
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-22 (RD)	No Tool Required
II	Not required	J-35616-21 (RD)	No Tool Required

X630 Auxiliary Fuse Block Wiring Harness to Auxiliary Fuse Block Wiring Harness (9L7)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 10	(1) RD / VT	(1) 542	(1) I	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 10	(1) RD / VT	(1) 542	(1) II	(1) —
2	—	—	—	—	—	Not Occupied	2	—	—	—	—	—

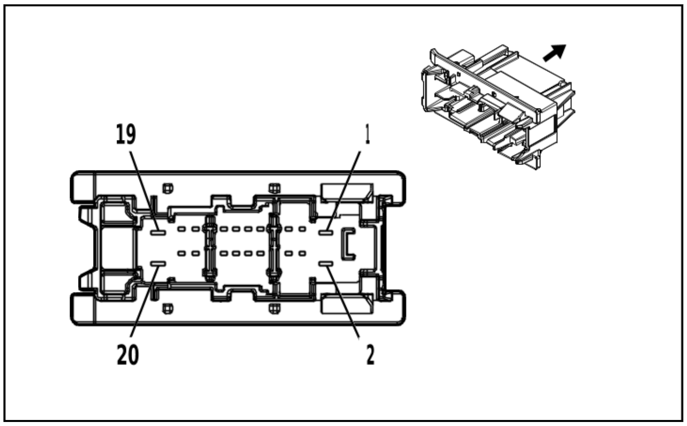
X700 Rear Side Door Door Wiring Harness - Left Rear to Body Wiring Harness



4650257

Connector Part Information

- Harness Type: Rear Side Door Door Wiring Harness - Left Rear
- OEM Connector: 6098-8196
- Service Connector: Service by Harness - See Part Catalog
- Description: 20-Way F 1.2 MCON, 2.8 MCP Series(BK)



4663657

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 6098-8887
- Service Connector: 13527239
- Description: 20-Way M 1.2 MCON, 2.8 MCP Series(BK)

Terminal Part Information

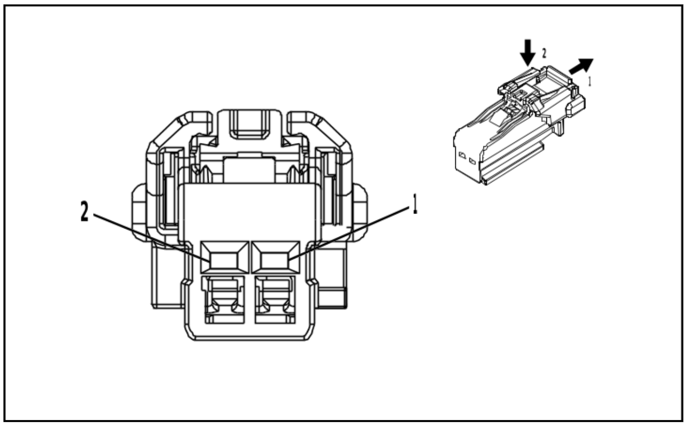
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-35 (VT)	No Tool Required
III	13586064	J-35616-5 (PU)	J-38125-212
IV	84616651	J-35616-13 (BU)	J-38125-215A
V	84726946	J-35616-13 (BU)	J-38125-215A

X700 Rear Side Door Door Wiring Harness - Left Rear to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) RD / BU	(1) 3240	(1) II	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 2.5	(1) RD / BU	(1) 3240	(1) III	(1) —
2 - 5	—	—	—	—	—	Not Occupied	2 - 5	—	—	—	—	—
(6) 6	(6) 0.75	(6) WH	(6) 2679	(6) I	(6) —	(6) Lock Actuators Unlock Control 1	(6) 6	(6) 0.75	(6) WH	(6) 2679	(6) IV	(6) —
(7) 7	(7) 0.75	(7) BU / YE	(7) 1091	(7) I	(7) —	(7) Left Rear Door Lock Actuator Lock Control	(7) 7	(7) 0.75	(7) BU / YE	(7) 1091	(7) IV	(7) —
8	—	—	—	—	—	Not Occupied	8	—	—	—	—	—
(9) 9	(9) 0.5	(9) BK / OG	(9) 6623	(9) I	(9) —	(9) Left Rear Side Impact Sensor Low Reference	(9) 9	(9) 0.5	(9) BK / OG	(9) 6623	(9) IV	(9) —
10	—	—	—	—	—	Not Occupied	10	—	—	—	—	—

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(11) 11	(11) 0.5	(11) O G / BU	(11) 66 22	(11) I	(11) —	(11) Left Rear Side Impact Sensor Signal	(11) 11	(11) 0.5	(11) O G / BU	(11) 66 22	(11) IV	(11) —
(12) 12	(12) 0.5	(12) G N / GY	(12) 61 35	(12) I	(12) —	(12) Body Control Module LIN Bus 4	(12) 12	(12) 0.35	(12) G N / GY	(12) 61 35	(12) IV	(12) —
13 - 16	—	—	—	—	—	Not Occupied	13 - 16	—	—	—	—	—
(17) 17	(17) 0.75	(17) G N	(17) 19 9	(17) I	(17) —	(17) Left Rear Speaker [+] Control (17) Left Rear Speaker [+] Control	(17) 17	(17) 1.5 (17) 0.75	(17) G N (17) G N	(17) 19 9 (17) 19 9	(17) V (17) IV	(17) UQS (17) UQA/ UQF
(18) 18	(18) 0.75	(18) G N / BK	(18) 11 6	(18) I	(18) —	(18) Left Rear Speaker [-] Control (18) Left Rear Speaker [-] Control	(18) 18	(18) 1.5 (18) 0.75	(18) G N / BK (18) G N / BK	(18) 11 6 (18) 11 6	(18) V (18) IV	(18) UQS (18) UQA/ UQF
19	—	—	—	—	—	Not Occupied	19	—	—	—	—	—
(20) 20	(20) 2.5	(20) B K	(20) 15 50	(20) II	(20) —	(20) Ground	(20) 20	(20) 2.5	(20) B K	(20) 15 50	(20) III	(20) —

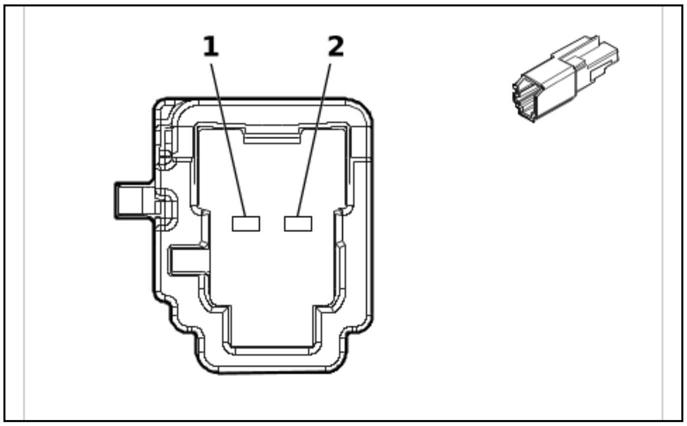
X701 Rear Side Door Door Wiring Harness - Left Rear to Rear Side Door Door Wiring Harness - Jumper (UQS)



4373379

Connector Part Information

- Harness Type: Rear Side Door Door Wiring Harness - Left Rear
- OEM Connector: 6098-8989
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(GY)



6529127

Connector Part Information

- Harness Type: Rear Side Door Door Wiring Harness - Jumper
- OEM Connector: 6099-0611
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MBS Series(GY)

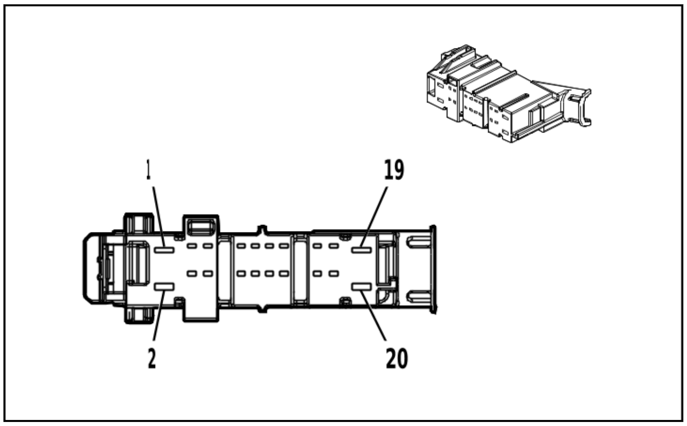
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-13 (BU)	No Tool Required

X701 Rear Side Door Door Wiring Harness - Left Rear to Rear Side Door Door Wiring Harness - Jumper (UQS)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) GN / BK	(1) 116	(1) I	(1) —	(1) Left Rear Speaker [-] Control	(1) 1	(1) 0.75	(1) GN / BK	(1) 116	(1) II	(1) —
(2) 2	(2) 0.75	(2) GN	(2) 199	(2) I	(2) —	(2) Left Rear Speaker [+] Control	(2) 2	(2) 0.75	(2) GN	(2) 199	(2) II	(2) —

X800 Rear Side Door Door Wiring Harness - Right Rear to Body Wiring Harness



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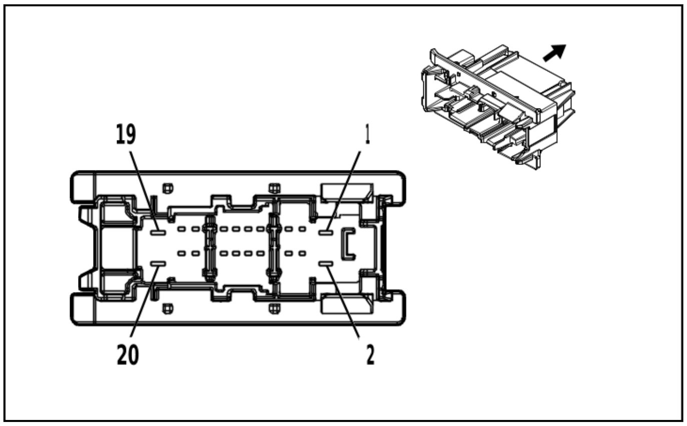


4663657

Connector Part Information

- Harness Type: Rear Side Door Door Wiring Harness - Right Rear
- OEM Connector: 6098-8196
- Service Connector: Service by Harness - See Part Catalog
- Description: 20-Way F 1.2 MCON, 2.8 MCP Series(BK)

Connector Part Information

- Harness Type: Body Wiring Harness
- OEM Connector: 6098-8887
- Service Connector: 13527239
- Description: 20-Way M 1.2 MCON, 2.8 MCP Series(BK)

Terminal Part Information

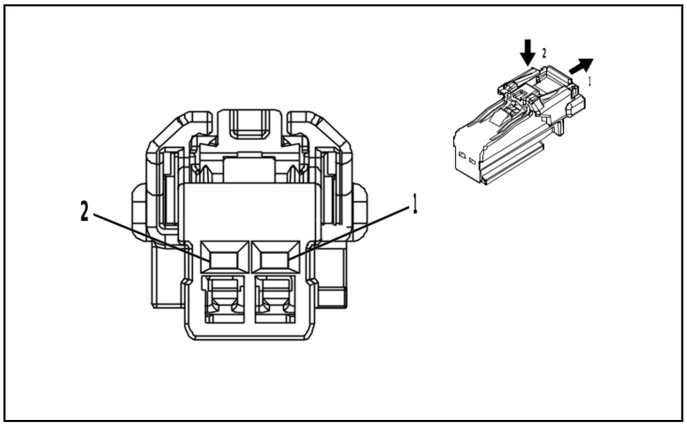
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-35 (VT)	No Tool Required
III	13586064	J-35616-5 (PU)	J-38125-212
IV	84616651	J-35616-13 (BU)	J-38125-215A
V	84726946	J-35616-13 (BU)	J-38125-215A

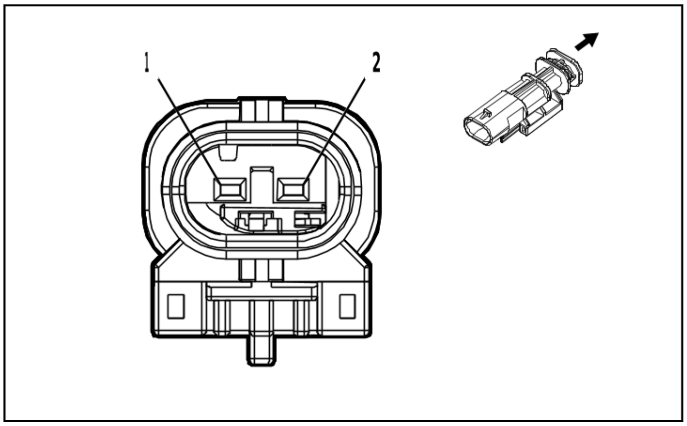
X800 Rear Side Door Door Wiring Harness - Right Rear to Body Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 2.5	(1) YE / BK	(1) 4840	(1) II	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 2.5	(1) RD / GY	(1) 4840	(1) III	(1) —
2 - 5	—	—	—	—	—	Not Occupied	2 - 5	—	—	—	—	—

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(6) 6	(6) 0.75	(6) GY / BK	(6) 2680	(6) I	(6) —	(6) Lock Actuators Unlock Control 2	(6) 6	(6) 0.75	(6) GY / BK	(6) 2680	(6) IV	(6) —
(7) 7	(7) 0.75	(7) VT / WH	(7) 1094	(7) I	(7) —	(7) Right Rear Door Lock Actuator Lock Control	(7) 7	(7) 0.75	(7) VT / WH	(7) 1094	(7) IV	(7) —
8	—	—	—	—	—	Not Occupied	8	—	—	—	—	—
(9) 9	(9) 0.5	(9) BK / OG	(9) 6627	(9) I	(9) —	(9) Right Rear Side Impact Sensor Low Reference	(9) 9	(9) 0.5	(9) BK / OG	(9) 6627	(9) IV	(9) —
10	—	—	—	—	—	Not Occupied	10	—	—	—	—	—
(11) 11	(11) 0.5	(11) OG / WH	(11) 6626	(11) I	(11) —	(11) Right Rear Side Impact Sensor Signal	(11) 11	(11) 0.5	(11) OG / WH	(11) 6626	(11) IV	(11) —
(12) 12	(12) 0.5	(12) GN / GY	(12) 6135	(12) I	(12) —	(12) Body Control Module LIN Bus 4	(12) 12	(12) 0.35	(12) GN / GY	(12) 6135	(12) IV	(12) —
13 - 16	—	—	—	—	—	Not Occupied	13 - 16	—	—	—	—	—
(17) 17	(17) 0.75	(17) WH	(17) 46	(17) I	(17) —	(17) Right Rear Speaker [+] Control (17) Right Rear Speaker [+] Control	(17) 17	(17) 1.5 (17) 0.75	(17) WH (17) WH	(17) 46 (17) 46	(17) V (17) IV	(17) UQS (17) UQA/ UQF
(18) 18	(18) 0.75	(18) BU / BK	(18) 115	(18) I	(18) —	(18) Right Rear Speaker [-] Control (18) Right Rear Speaker [-] Control	(18) 18	(18) 1.5 (18) 0.75	(18) BU / BK (18) BU / BK	(18) 115 (18) 115	(18) V (18) IV	(18) UQS (18) UQA/ UQF
19	—	—	—	—	—	Not Occupied	19	—	—	—	—	—
(20) 20	(20) 2.5	(20) BK	(20) 1350	(20) II	(20) —	(20) Ground	(20) 20	(20) 2.5	(20) BK	(20) 1350	(20) III	(20) —

X801 Rear Side Door Door Wiring Harness - Right Rear to Rear Side Door Door Wiring Harness - Left (UQS)





Connector Part Information
- Harness Type: Rear Side Door Door Wiring Harness - Right Rear
- OEM Connector: 6098-8989
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series(GY)

Connector Part Information
- Harness Type: Rear Side Door Door Wiring Harness - Left
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M (GY)

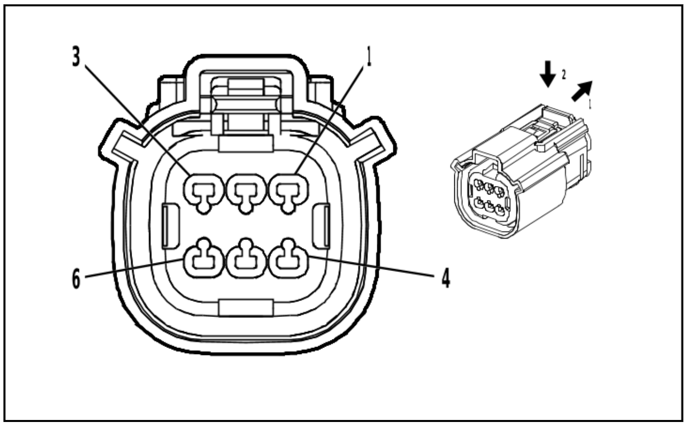
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	No Tool Required	No Tool Required

X801 Rear Side Door Door Wiring Harness - Right Rear to Rear Side Door Door Wiring Harness - Left (UQS)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.75	(1) BU / BK	(1) 115	(1) I	(1) —	(1) Right Rear Speaker [-] Control	(1) 1	(1) 0.75	(1) GN / BK	(1) 115	(1) II	(1) —
(2) 2	(2) 0.75	(2) WH	(2) 46	(2) I	(2) —	(2) Right Rear Speaker [+] Control	(2) 2	(2) 0.75	(2) WH	(2) 46	(2) II	(2) —

X910 Rear Body Structure Stop Lamp to Chassis Wiring Harness



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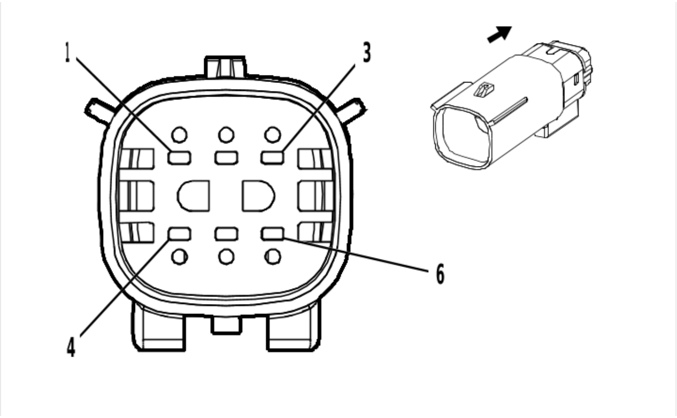


1986159

Connector Part Information

- Harness Type: Rear Body Structure Stop Lamp
- OEM Connector: 33472-0681
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.5 MX Series, Sealed(BK)

Connector Part Information

- Harness Type: Chassis Wiring Harness
- OEM Connector: 33482-3601
- Service Connector: 19367742
- Description: 6-Way M 1.5 MX Series, Sealed(BK)

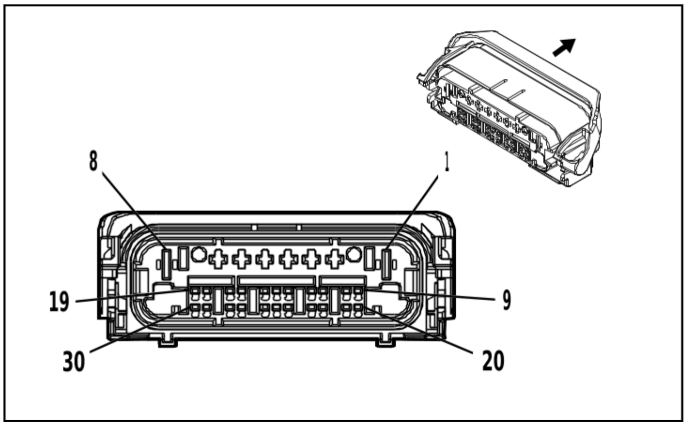
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-3 (GY)	No Tool Required

X910 Rear Body Structure Stop Lamp to Chassis Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 18	(1) BN	(1) 6993	(1) I	(1) —	(1) Left Rear Park Lamp Control	(1) 1	(1) 0.75	(1) BN / BU	(1) 6993	(1) II	(1) —
(2) 2	(2) 18	(2) RD	(2) 6567	(2) I	(2) —	(2) Rear Turn Signal Lamp Feedback Signal	(2) 2	(2) 0.75	(2) WH / VT	(2) 6567	(2) II	(2) —
(3) 3	(3) 18	(3) BU	(3) 7762	(3) I	(3) —	(3) Cargo Lamp Control	(3) 3	(3) 0.5	(3) GY / BU	(3) 7762	(3) II	(3) —
(4) 4	(4) 18	(4) GN	(4) 24	(4) I	(4) —	(4) Backup Lamp Control	(4) 4	(4) 0.5	(4) GN / WH	(4) 24	(4) II	(4) —
(5) 5	(5) 18	(5) GN	(5) 1334	(5) I	(5) —	(5) Left Rear Turn Signal Lamp Control 2	(5) 5	(5) 0.75	(5) BU / WH	(5) 1334	(5) II	(5) —
(6) 6	(6) 18	(6) BK	(6) 1951	(6) I	(6) —	(6) Signal Ground	(6) 6	(6) 0.75	(6) BK	(6) 1951	(6) II	(6) —

X918 Endgate Wiring Harness to Chassis Wiring Harness



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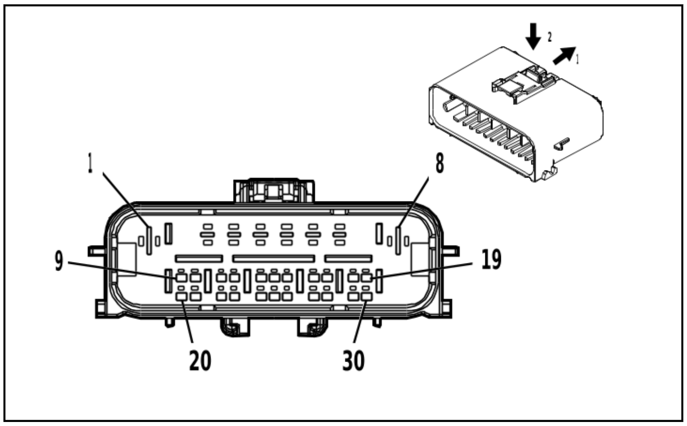


4817393

Connector Part Information
- Harness Type: Endgate Wiring Harness
- OEM Connector: 35573111
- Service Connector: Service by Harness - See Part Catalog
- Description: 30-Way F 1.2 MCON, 2.8, 6.3 MCP Series, Sealed(BK)

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 2301461-1
- Service Connector: 19371177
- Description: 30-Way M 1.2 MCON, 2.8, 6.3 MCP Series, Sealed(BK)

Terminal Part Information

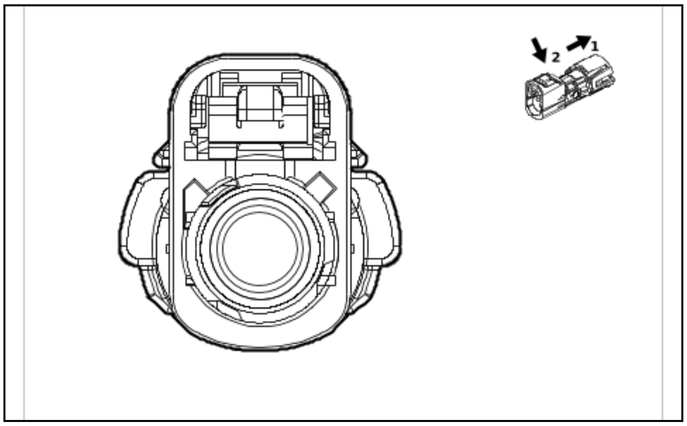
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-12 (BU)	No Tool Required
II	Not required	J-35616-35 (VT)	No Tool Required
III	Not required	J-35616-4A (PU)	No Tool Required
IV	13578827	J-35616-5 (PU)	J-38125-36
V	19330704	J-35616-13 (BU)	J-38125-215A

X918 Endgate Wiring Harness to Chassis Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
1	—	—	—	—	—	Not Occupied	1	—	—	—	—	—
(2) 2	(2) 2.5	(2) RD / VT	(2) 4442	(2) II	(2) —	(2) Primary Fused Battery Positive Voltage	(2) 2	(2) 2.5	(2) RD / VT	(2) 4442	(2) IV	(2) —
(3) 3	(3) 2.5	(3) BK	(3) 1850	(3) II	(3) —	(3) Ground	(3) 3	(3) 2.5	(3) BK	(3) 1850	(3) IV	(3) —
(4) 4	(4) 1	(4) VT	(4) 7725	(4) III	(4) —	(4) Minor Endgate Motor Control	(4) 4	(4) 1	(4) VT	(4) 7725	(4) IV	(4) —
(5) 5	(5) 1	(5) YE / BK	(5) 7730	(5) III	(5) —	(5) Major Endgate Motor Low Reference	(5) 5	(5) 1	(5) YE / BK	(5) 7730	(5) IV	(5) —
(6) 6	(6) 1	(6) GN	(6) 1299	(6) III	(6) —	(6) Major Endgate Motor Control	(6) 6	(6) 1	(6) GN	(6) 1299	(6) IV	(6) —
7 - 8	—	—	—	—	—	Not Occupied	7 - 8	—	—	—	—	—

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(9) 9	(9) 0.5	(9) WH / VT	(9) 1430	(9) I	(9) —	(9) Exterior Courtesy Lamp Control	(9) 9	(9) 0.5	(9) WH / VT	(9) 1430	(9) V	(9) —
(10) 10	(10) 0.5	(10) YE	(10) 7294	(10) I	(10) —	(10) Minor Endgate Release Switch Discrete Signal Exterior	(10) 10	(10) 0.5	(10) YE	(10) 7294	(10) V	(10) —
(11) 11	(11) 0.75	(11) YE / BU	(11) 7295	(11) I	(11) —	(11) Left Minor Endgate Ajar Signal	(11) 11	(11) 0.75	(11) YE / BU	(11) 7295	(11) V	(11) —
12 - 17	—	—	—	—	—	Not Occupied	12 - 17	—	—	—	—	—
(18) 18	(18) 0.5	(18) BU / VT	(18) 4101	(18) I	(18) —	(18) AUTOSAR CAN Bus [+] 4 Serial Data	(18) 18	(18) 0.5	(18) BU / VT	(18) 4101	(18) V	(18) —
(19) 19	(19) 0.5	(19) WH	(19) 4100	(19) I	(19) —	(19) AUTOSAR CAN Bus [-] 4 Serial Data	(19) 19	(19) 0.5	(19) WH	(19) 4100	(19) V	(19) —
(20) 20	(20) 0.5	(20) YE	(20) 1144	(20) I	(20) —	(20) Endgate Release Switch Discrete Signal Exterior	(20) 20	(20) 0.5	(20) YE	(20) 1144	(20) V	(20) —
(21) 21	(21) 0.5	(21) GY	(21) 7292	(21) I	(21) —	(21) Major Endgate Release Switch Signal Exterior	(21) 21	(21) 0.5	(21) GY	(21) 7292	(21) V	(21) —
22 - 28	—	—	—	—	—	Not Occupied	22 - 28	—	—	—	—	—
(29) 29	(29) 0.5	(29) WH	(29) 4100	(29) I	(29) —	(29) AUTOSAR CAN Bus [-] 4 Serial Data	(29) 29	(29) 0.5	(29) WH	(29) 4100	(29) V	(29) —
(30) 30	(30) 0.5	(30) BU / VT	(30) 4101	(30) I	(30) —	(30) AUTOSAR CAN Bus [+] 4 Serial Data	(30) 30	(30) 0.5	(30) BU / VT	(30) 4101	(30) V	(30) —

X919 Endgate Wiring Harness to Chassis Wiring Harness (UV2 / UVB)



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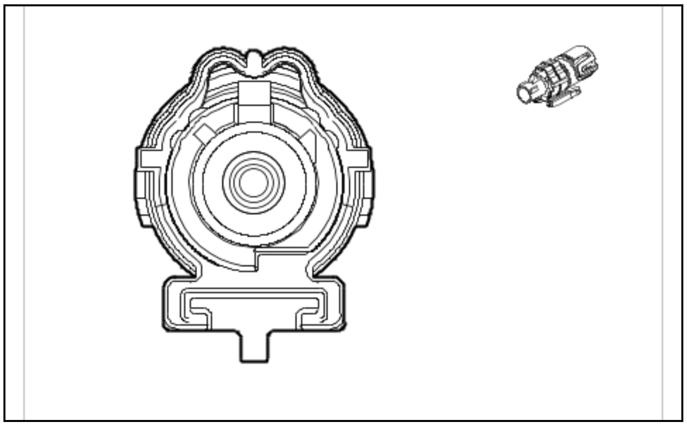


5757466

Connector Part Information
- Harness Type: Endgate Wiring Harness COAX
- OEM Connector: 35187033
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(WH)

Connector Part Information
- Harness Type: Chassis Wiring Harness COAX
- OEM Connector: 33338240
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type, Sealed(WH)

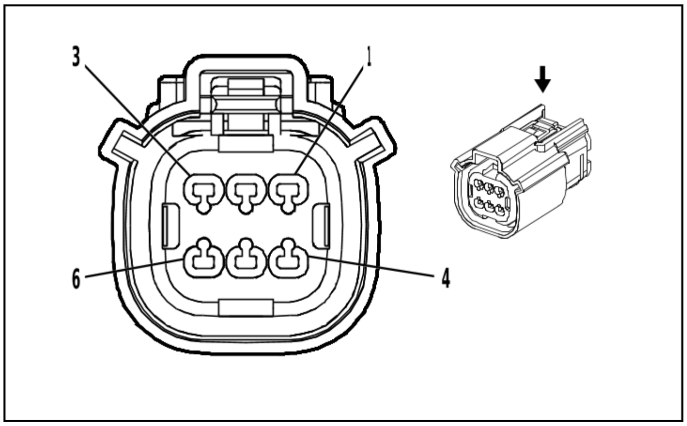
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

X919 Endgate Wiring Harness to Chassis Wiring Harness (UV2 / UVB)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	Coax Cable	—	I	—	Rear Vision Camera Coaxial Video Signal	—	—	Coax Cable	—	I	—

X920 Rear Body Structure Stop Lamp to Chassis Wiring Harness



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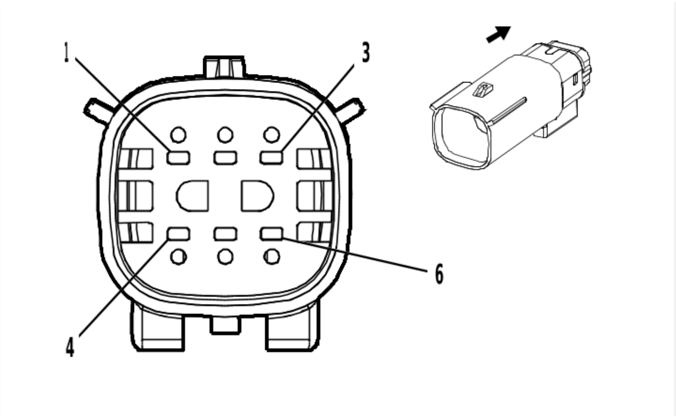


1986159

Connector Part Information
- Harness Type: Rear Body Structure Stop Lamp
- OEM Connector: 33472-0606
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.5 MX Series, Sealed(BK)

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 33482-3601
- Service Connector: 19367742
- Description: 6-Way M 1.5 MX Series, Sealed(BK)

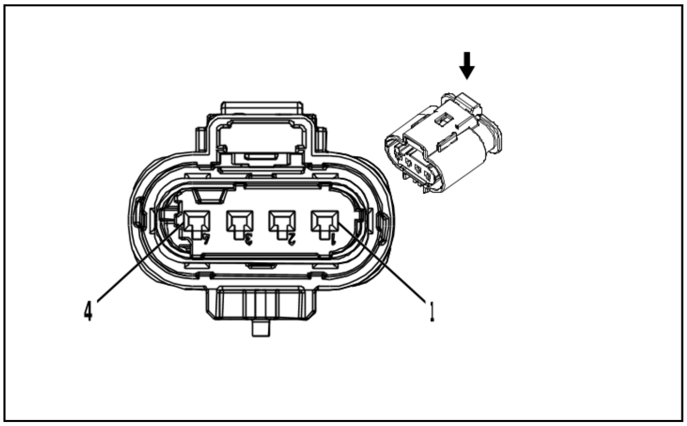
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-3 (GY)	No Tool Required

X920 Rear Body Structure Stop Lamp to Chassis Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 18	(1) BN	(1) 6995	(1) I	(1) —	(1) Right Rear Park Lamp Control	(1) 1	(1) 0.75	(1) BN / GY	(1) 6995	(1) II	(1) —
(2) 2	(2) 18	(2) RD	(2) 7544	(2) I	(2) —	(2) Right Rear Turn Signal Lamp Feedback Signal	(2) 2	(2) 0.75	(2) WH / BK	(2) 7544	(2) II	(2) —
(3) 3	(3) 18	(3) BU	(3) 7762	(3) I	(3) —	(3) Cargo Lamp Control	(3) 3	(3) 0.5	(3) GY / BU	(3) 7762	(3) II	(3) —
(4) 4	(4) 18	(4) GN	(4) 24	(4) I	(4) —	(4) Backup Lamp Control	(4) 4	(4) 0.5	(4) GN / WH	(4) 24	(4) II	(4) —
(5) 5	(5) 18	(5) GN	(5) 1335	(5) I	(5) —	(5) Right Rear Turn Signal Lamp Control 2	(5) 5	(5) 0.75	(5) BU / VT	(5) 1335	(5) II	(5) —
(6) 6	(6) 18	(6) BK	(6) 1850	(6) I	(6) —	(6) Ground	(6) 6	(6) 0.75	(6) BK	(6) 1850	(6) II	(6) —

X944 Engine Wiring Harness to Engine Coolant Temperature Sensor Harness (LZ0)



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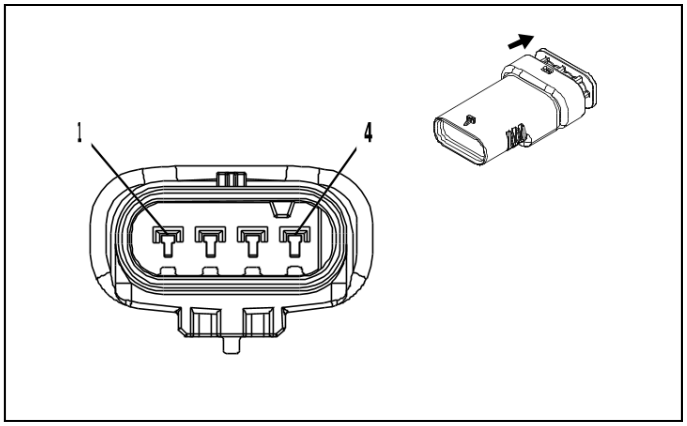

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Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: 10010346
- Service Connector: 85877329
- Description: 4-Way F 1.2 Multilock Series, Sealed(BK)

Connector Part Information
- Harness Type: Engine Coolant Temperature Sensor Harness
- OEM Connector: 13503594
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 Multilock Series, Sealed(GY)

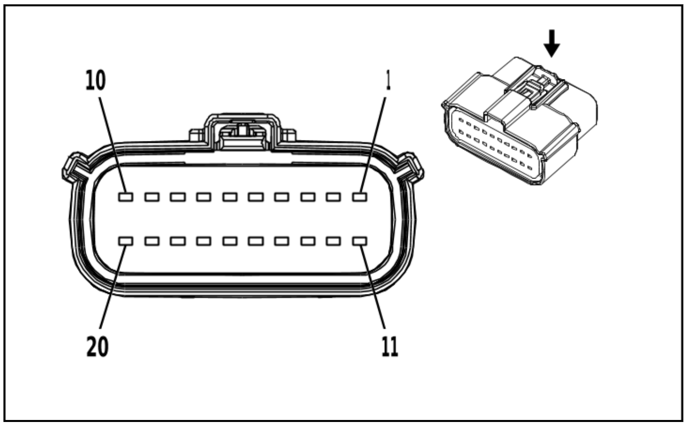
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-16 (L-GN)	No Tool Required
II	Not required	J-35616-13 (BU)	No Tool Required

X944 Engine Wiring Harness to Engine Coolant Temperature Sensor Harness (LZ0)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
1 - 2	—	—	—	—	—	Not Occupied	1 - 2	—	—	—	—	—
(3) 3	(3) 0.5	(3) VT	(3) 2988	(3) I	(3) —	(3) Engine Outlet Coolant Temperature Signal	(3) 3	(3) 0.5	(3) VT	(3) 2988	(3) II	(3) —
(4) 4	(4) 0.5	(4) BK / GY	(4) 626	(4) I	(4) —	(4) Engine Control Vehicle Sensors Low Reference 1	(4) 4	(4) 0.5	(4) BK / GY	(4) 626	(4) II	(4) —

X950 Rear Object Alarm Sensor Wiring Harness to Chassis Wiring Harness



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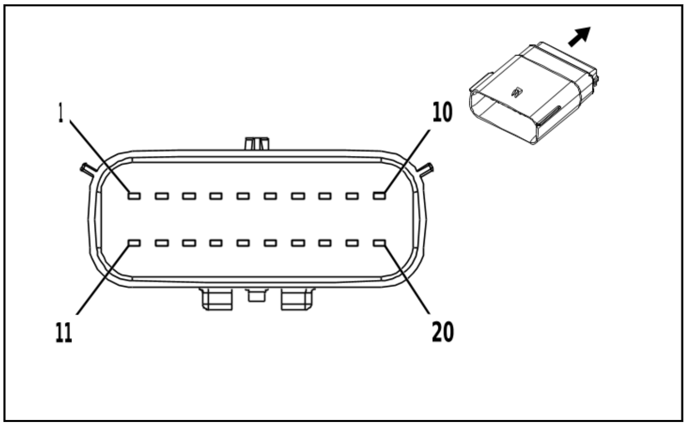

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Connector Part Information
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 33472-2006
- Service Connector: Service by Harness - See Part Catalog
- Description: 20-Way F 1.5 MX Series, Sealed(BK)

Connector Part Information
- Harness Type: Chassis Wiring Harness
- OEM Connector: 13598210
- Service Connector: 19351705
- Description: 20-Way M 1.5 MX Series, Sealed(BK)

Terminal Part Information

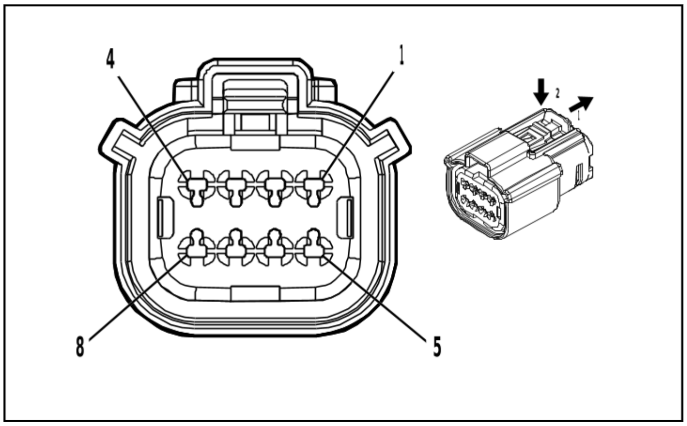
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	86800300	J-35616-3 (GY)	J-38125-217

X950 Rear Object Alarm Sensor Wiring Harness to Chassis Wiring Harness

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) RD / GN	(1) 6940	(1) I	(1) —	(1) Battery Positive Voltage	(1) 1	(1) 0.5	(1) RD / GN	(1) 6940	(1) II	(1) —
(2) 2	(2) 0.5	(2) RD / BU	(2) 5240	(2) I	(2) —	(2) Battery Positive Voltage	(2) 2	(2) 0.5	(2) RD / BU	(2) 5240	(2) II	(2) —
(3) 3	(3) 0.5	(3) WH	(3) 4100	(3) I	(3) —	(3) AUTOSAR CAN Bus [-] 4 Serial Data	(3) 3	(3) 0.5	(3) WH	(3) 4100	(3) II	(3) —
(4) 4	(4) 0.5	(4) BU / VT	(4) 4101	(4) I	(4) —	(4) AUTOSAR CAN Bus [+] 4 Serial Data	(4) 4	(4) 0.5	(4) BU / VT	(4) 4101	(4) II	(4) —
(5) 5	(5) 0.5	(5) WH / GY	(5) 4104	(5) I	(5) —	(5) AUTOSAR CAN Bus [-] 8 Serial Data	(5) 5	(5) 0.5	(5) WH / GY	(5) 4104	(5) II	(5) —
(6) 6	(6) 0.5	(6) BU / GY	(6) 4105	(6) I	(6) —	(6) AUTOSAR CAN Bus [+] 8 Serial Data	(6) 6	(6) 0.5	(6) BU / GY	(6) 4105	(6) II	(6) —
(7) 7	(7) 0.5	(7) WH / GY	(7) 4104	(7) I	(7) —	(7) AUTOSAR CAN Bus [-] 8 Serial Data	(7) 7	(7) 0.5	(7) WH / GY	(7) 4104	(7) II	(7) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(8) 8	(8) 0.5	(8) BU / GY	(8) 4105	(8) I	(8) —	(8) AUTOSAR CAN Bus [+] 8 Serial Data	(8) 8	(8) 0.5	(8) BU / GY	(8) 4105	(8) II	(8) —
(9) 9	(9) 0.5	(9) BN / WH	(9) 2374	(9) I	(9) —	(9) Object Sensor Voltage Reference	(9) 9	(9) 0.5	(9) BN / WH	(9) 2374	(9) II	(9) —
(10) 10	(10) 0.5	(10) YE	(10) 2375	(10) I	(10) —	(10) Left Rear Outer Parking Assist Sensor Signal	(10) 10	(10) 0.5	(10) YE	(10) 2375	(10) II	(10) —
(11) 11	(11) 0.5	(11) YE / BU	(11) 2376	(11) I	(11) —	(11) Left Rear Middle Parking Assist Sensor Signal	(11) 11	(11) 0.5	(11) YE / BU	(11) 2376	(11) II	(11) —
(12) 12	(12) 0.5	(12) YE / WH	(12) 2377	(12) I	(12) —	(12) Right Rear Middle Parking Assist Sensor Signal	(12) 12	(12) 0.5	(12) YE / WH	(12) 2377	(12) II	(12) —
(13) 13	(13) 0.5	(13) YE / VT	(13) 2378	(13) I	(13) —	(13) Right Rear Outer Parking Assist Sensor Signal	(13) 13	(13) 0.5	(13) YE / VT	(13) 2378	(13) II	(13) —
(14) 14	(14) 0.5	(14) BK / GY	(14) 2379	(14) I	(14) —	(14) Object Sensor Low Reference	(14) 14	(14) 0.5	(14) BK / GY	(14) 2379	(14) II	(14) —
(15) 15	(15) 0.5	(15) GN / YE	(15) 6846	(15) I	(15) —	(15) Rear License Plate Lamp Control	(15) 15	(15) 0.5	(15) GN / YE	(15) 6846	(15) II	(15) —
(16) 16	(16) 0.75	(16) BK	(16) 1850	(16) I	(16) —	(16) Ground	(16) 16	(16) 0.75	(16) BK	(16) 1850	(16) II	(16) —
(17) 17	(17) 0.5	(17) BK / WH	(17) 1951	(17) I	(17) —	(17) Signal Ground	(17) 17	(17) 0.5	(17) BK / WH	(17) 1951	(17) II	(17) —
18 - 20	—	—	—	—	—	Not Occupied	18 - 20	—	—	—	—	—

X961 Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness (L84 / L87)



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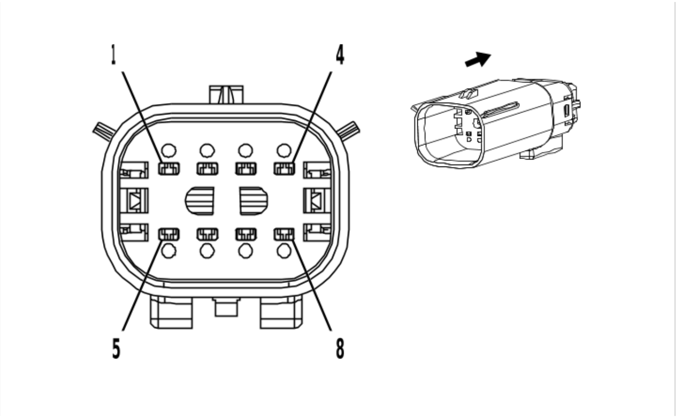


2667653

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 13520069
- Service Connector: 84928314
- Description: 8-Way F 1.5 MX Series, Sealed(BK)

Connector Part Information

- Harness Type: Valve Rocker Arm Oil Control Valve Extension Harness
- OEM Connector: 33482-4801
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way M 1.5 MX Series, Sealed(BK)

Terminal Part Information

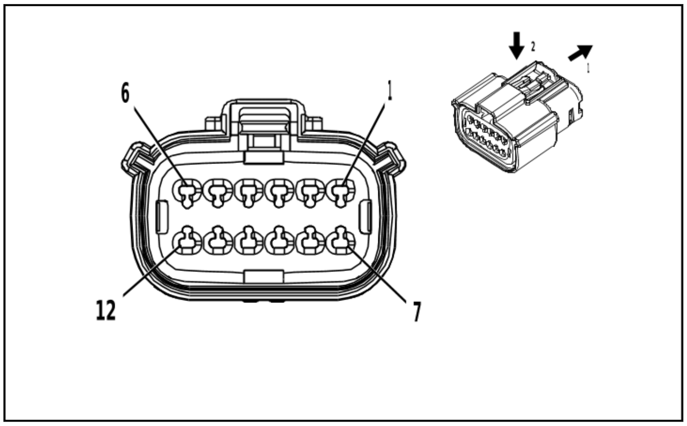
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-14 (GN)	No Tool Required
II	Not required	J-35616-3 (GY)	No Tool Required

X961 Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness (L84 / L87)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / GN	(1) 2492	(1) I	(1) —	(1) Cylinder Shutoff Solenoid Enable Signal 2	(1) 1	(1) 0.5	(1) WH / GN	(1) 2492	(1) II	(1) —
(2) 2	(2) 0.5	(2) GN	(2) 5492	(2) I	(2) —	(2) Cylinder Deactivation Solenoid Valve Control 2	(2) 2	(2) 0.5	(2) GN	(2) 5492	(2) II	(2) —
(3) 3	(3) 0.5	(3) YE / GY	(3) 2493	(3) I	(3) —	(3) Cylinder Shutoff Solenoid Enable Signal 3	(3) 3	(3) 0.5	(3) YE / GY	(3) 2493	(3) II	(3) —
(4) 4	(4) 0.5	(4) GY	(4) 5493	(4) I	(4) —	(4) Cylinder Deactivation Solenoid Valve Control 3	(4) 4	(4) 0.5	(4) GY	(4) 5493	(4) II	(4) —
(5) 5	(5) 0.5	(5) WH / VT	(5) 2495	(5) I	(5) —	(5) Cylinder Shutoff Solenoid Enable Signal 5	(5) 5	(5) 0.5	(5) WH / VT	(5) 2495	(5) II	(5) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(6) 6	(6) 0.5	(6) VT	(6) 5495	(6) I	(6) —	(6) Cylinder Deactivation Solenoid Valve Control 5	(6) 6	(6) 0.5	(6) VT	(6) 5495	(6) II	(6) —
(7) 7	(7) 0.5	(7) WH / YE	(7) 2498	(7) I	(7) —	(7) Cylinder Shutoff Solenoid Enable Signal 8	(7) 7	(7) 0.5	(7) WH / YE	(7) 2498	(7) II	(7) —
(8) 8	(8) 0.5	(8) YE	(8) 5498	(8) I	(8) —	(8) Cylinder Deactivation Solenoid Valve Control 8	(8) 8	(8) 0.5	(8) YE	(8) 5498	(8) II	(8) —

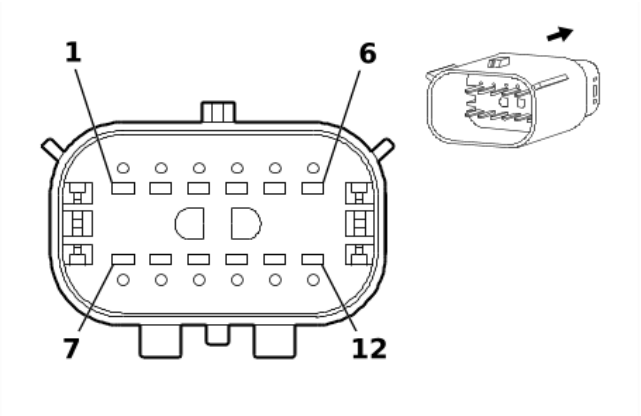
X962 Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness (L84 / L87)



2871860

Connector Part Information

- Harness Type: Engine Wiring Harness
- OEM Connector: 33472-1266
- Service Connector: 19352907
- Description: 12-Way F 1.5 MX Series, Sealed(BK)



1825167

Connector Part Information

- Harness Type: Valve Rocker Arm Oil Control Valve Extension Harness
- OEM Connector: 33482-6260
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way M 1.5 MX Series, Sealed(BK)

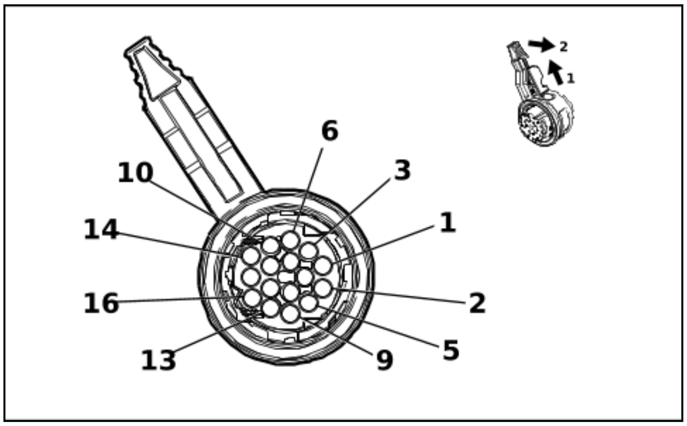
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	85528055	J-35616-2A (GY)	J-38125-217
II	Not required	J-35616-3 (GY)	No Tool Required

X962 Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness (L84 / L87)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / BU	(1) 2491	(1) I	(1) —	(1) Cylinder Shutoff Solenoid Enable Signal 1	(1) 1	(1) 0.5	(1) WH / BU	(1) 2491	(1) II	(1) —
(2) 2	(2) 0.5	(2) BU / VT	(2) 5491	(2) I	(2) —	(2) Cylinder Deactivation Solenoid Valve Control 1	(2) 2	(2) 0.5	(2) BU	(2) 5491	(2) II	(2) —
(3) 3	(3) 0.5	(3) YE / GN	(3) 2494	(3) I	(3) —	(3) Cylinder Shutoff Solenoid Enable Signal 4	(3) 3	(3) 0.5	(3) YE / GN	(3) 2494	(3) II	(3) —
(4) 4	(4) 0.5	(4) YE / BU	(4) 5494	(4) I	(4) —	(4) Cylinder Deactivation Solenoid Valve Control 4	(4) 4	(4) 0.5	(4) YE / BU	(4) 5494	(4) II	(4) —
(5) 5	(5) 0.5	(5) YE / BN	(5) 2496	(5) I	(5) —	(5) Cylinder Shutoff Solenoid Enable Signal 6	(5) 5	(5) 0.5	(5) YE / BN	(5) 2496	(5) II	(5) —
(6) 6	(6) 0.5	(6) BN	(6) 5496	(6) I	(6) —	(6) Cylinder Deactivation Solenoid Valve Control 6	(6) 6	(6) 0.5	(6) BN	(6) 5496	(6) II	(6) —
(7) 7	(7) 0.5	(7) GN / GY	(7) 2497	(7) I	(7) —	(7) Cylinder Shutoff Solenoid Enable Signal 7	(7) 7	(7) 0.5	(7) GN / GY	(7) 2497	(7) II	(7) —
(8) 8	(8) 0.5	(8) WH	(8) 5497	(8) I	(8) —	(8) Cylinder Deactivation Solenoid Valve Control 7	(8) 8	(8) 0.5	(8) WH	(8) 5497	(8) II	(8) —
(9) 9	(9) 0.5	(9) BU	(9) 410	(9) I	(9) —	(9) Engine Coolant Temperature Sensor Signal	(9) 9	(9) 0.5	(9) BU	(9) 410	(9) II	(9) —
(10) 10	(10) 0.5	(10) BK / GY	(10) 626	(10) I	(10) —	(10) Engine Control Vehicle Sensors Low Reference 1	(10) 10	(10) 0.5	(10) BK / YE	(10) 626	(10) II	(10) —
11 - 12	—	—	—	—	—	Not Occupied	11 - 12	—	—	—	—	—

X963 Valve Rocker Arm Oil Control Valve Extension Harness to Valve Rocker Arm Oil Control Valve Harness (L84 / L87)



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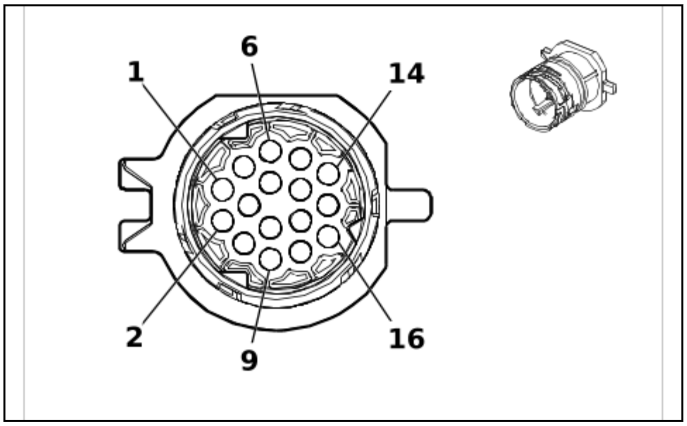


5575849

Connector Part Information

- Harness Type: Valve Rocker Arm Oil Control Valve Extension Harness
- OEM Connector: 13550229
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 1.5 RK Series, Sealed(BK)

Connector Part Information

- Harness Type: Valve Rocker Arm Oil Control Valve Harness
- OEM Connector: 10140573
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way M 1.5 RK Series, Sealed(BK)

Terminal Part Information

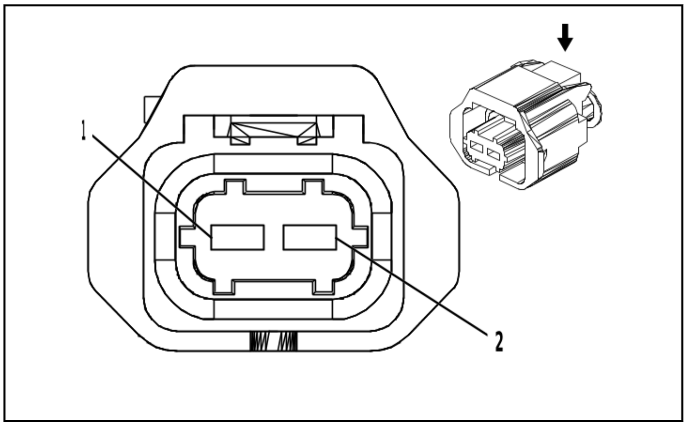
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	J-35616-2A (GY)	No Tool Required
II	Not required	J-35616-3 (GY)	No Tool Required

X963 Valve Rocker Arm Oil Control Valve Extension Harness to Valve Rocker Arm Oil Control Valve Harness (L84 / L87)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) WH / GN	(1) 2492	(1) I	(1) —	(1) Cylinder Shutoff Solenoid Enable Signal 2	(1) 1	(1) 0.5	(1) WH / GN	(1) 2492	(1) II	(1) —
(2) 2	(2) 0.5	(2) GN	(2) 5492	(2) I	(2) —	(2) Cylinder Deactivation Solenoid Valve Control 2	(2) 2	(2) 0.5	(2) GN	(2) 5492	(2) II	(2) —
(3) 3	(3) 0.5	(3) YE / GY	(3) 2493	(3) I	(3) —	(3) Cylinder Shutoff Solenoid Enable Signal 3	(3) 3	(3) 0.5	(3) YE / GY	(3) 2493	(3) II	(3) —
(4) 4	(4) 0.5	(4) GY	(4) 5493	(4) I	(4) —	(4) Cylinder Deactivation Solenoid Valve Control 3	(4) 4	(4) 0.5	(4) GY	(4) 5493	(4) II	(4) —
(5) 5	(5) 0.5	(5) WH / VT	(5) 2495	(5) I	(5) —	(5) Cylinder Shutoff Solenoid Enable Signal 5	(5) 5	(5) 0.5	(5) WH / VT	(5) 2495	(5) II	(5) —

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(6) 6	(6) 0.5	(6) VT	(6) 5495	(6) I	(6) —	(6) Cylinder Deactivation Solenoid Valve Control 5	(6) 6	(6) 0.5	(6) VT	(6) 5495	(6) II	(6) —
(7) 7	(7) 0.5	(7) WH / YE	(7) 2498	(7) I	(7) —	(7) Cylinder Shutoff Solenoid Enable Signal 8	(7) 7	(7) 0.5	(7) WH / YE	(7) 2498	(7) II	(7) —
(8) 8	(8) 0.5	(8) YE	(8) 5498	(8) I	(8) —	(8) Cylinder Deactivation Solenoid Valve Control 8	(8) 8	(8) 0.5	(8) YE	(8) 5498	(8) II	(8) —
(9) 9	(9) 0.5	(9) WH / BU	(9) 2491	(9) I	(9) —	(9) Cylinder Shutoff Solenoid Enable Signal 1	(9) 9	(9) 0.5	(9) WH / BU	(9) 2491	(9) II	(9) —
(10) 10	(10) 0.5	(10) BU	(10) 5491	(10) I	(10) —	(10) Cylinder Deactivation Solenoid Valve Control 1	(10) 10	(10) 0.5	(10) BU	(10) 5491	(10) II	(10) —
(11) 11	(11) 0.5	(11) YE / GN	(11) 2494	(11) I	(11) —	(11) Cylinder Shutoff Solenoid Enable Signal 4	(11) 11	(11) 0.5	(11) YE / GN	(11) 2494	(11) II	(11) —
(12) 12	(12) 0.5	(12) YE / BU	(12) 5494	(12) I	(12) —	(12) Cylinder Deactivation Solenoid Valve Control 4	(12) 12	(12) 0.5	(12) YE / BU	(12) 5494	(12) II	(12) —
(13) 13	(13) 0.5	(13) YE / BN	(13) 2496	(13) I	(13) —	(13) Cylinder Shutoff Solenoid Enable Signal 6	(13) 13	(13) 0.5	(13) YE / BN	(13) 2496	(13) II	(13) —
(14) 14	(14) 0.5	(14) BN	(14) 5496	(14) I	(14) —	(14) Cylinder Deactivation Solenoid Valve Control 6	(14) 14	(14) 0.5	(14) BN	(14) 5496	(14) II	(14) —
(15) 15	(15) 0.5	(15) GN / GY	(15) 2497	(15) I	(15) —	(15) Cylinder Shutoff Solenoid Enable Signal 7	(15) 15	(15) 0.5	(15) GN / GY	(15) 2497	(15) II	(15) —
(16) 16	(16) 0.5	(16) WH	(16) 5497	(16) I	(16) —	(16) Cylinder Deactivation Solenoid Valve Control 7	(16) 16	(16) 0.5	(16) WH	(16) 5497	(16) II	(16) —

X977 Engine Wiring Harness to Accessory Wiring Harness (VYU)



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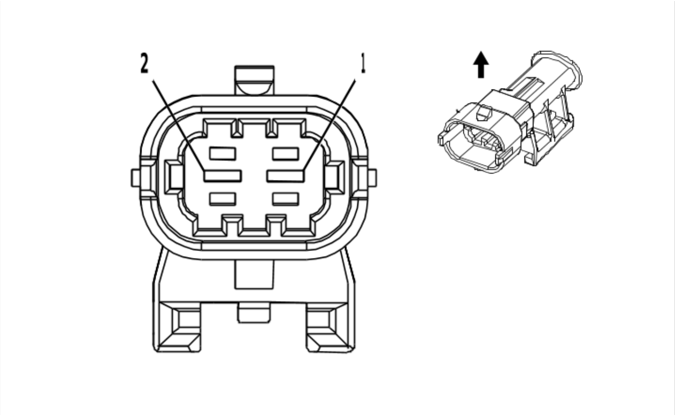


2667643

Connector Part Information
- Harness Type: Engine Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F

Connector Part Information
- Harness Type: Accessory Wiring Harness
- OEM Connector: 1 928 404 226
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 2.8 Timer Series, Sealed(BK)

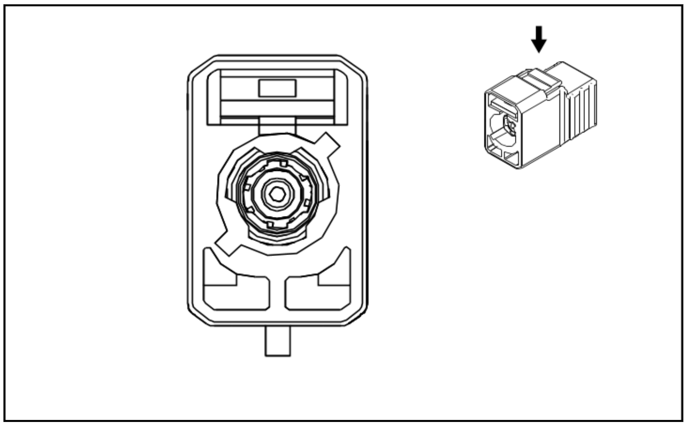
Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required
II	Not required	J-35616-5 (PU)	No Tool Required

X977 Engine Wiring Harness to Accessory Wiring Harness (VYU)

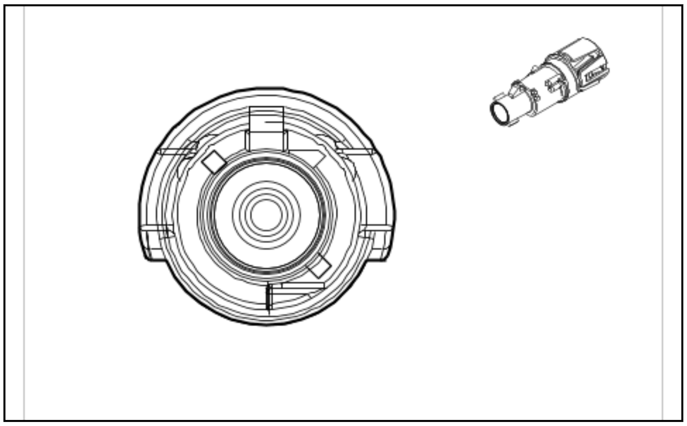
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
(1) 1	(1) 0.5	(1) BN	(1) 25	(1) I	(1) —	(1) Charge Indicator Control	(1) 1	(1) 0.5	(1) BN	(1) 25	(1) II	(1) —
(2) 2	(2) 0.5	(2) GY	(2) 23	(2) I	(2) —	(2) Generator Field Duty Cycle Signal	(2) 2	(2) 0.5	(2) GY	(2) 23	(2) II	(2) —

X985 Rearview Driver Information Camera Rear Closure Coaxial Cable to Inside Rearview Mirror Wiring Harness - Jumper (DRZ)


3293625

Connector Part Information

- Harness Type: Rearview Driver Information Camera Rear Closure Coaxial Cable COAX
- OEM Connector: 13583914
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type(BU)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Connector Part Information

- Harness Type: Inside Rearview Mirror Wiring Harness - Jumper COAX
- OEM Connector: 13516808
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type, Sealed(BU)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool
I	Not required	No Tool Required	No Tool Required

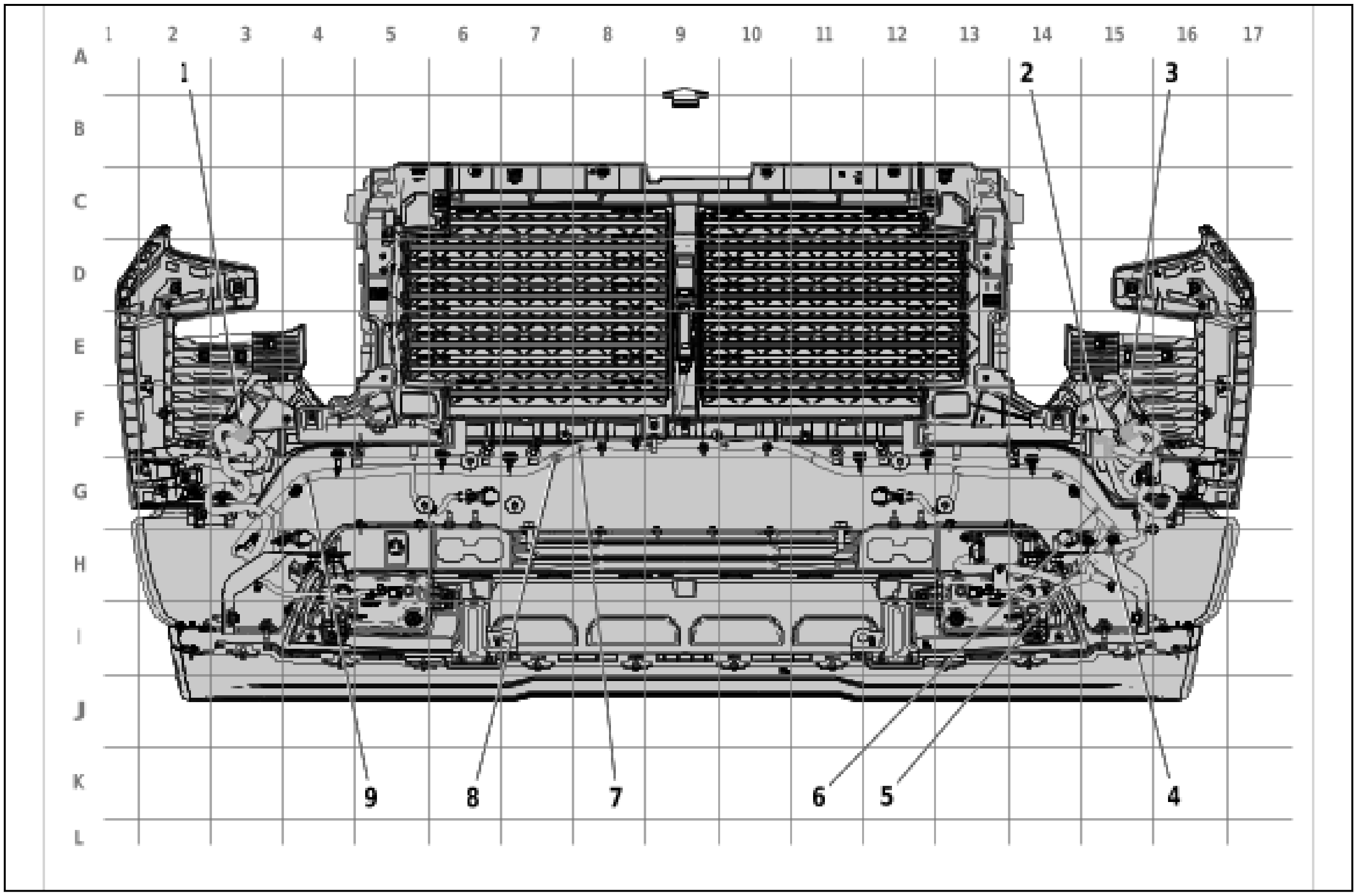
X985 Rearview Driver Information Camera Rear Closure Coaxial Cable to Inside Rearview Mirror Wiring Harness - Jumper (DRZ)

Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
—	—	Coax Cable	—	I	—	Full Display Mirror Rear Camera Coaxial Video Signal	—	—	Coax Cable	—	I	—

Electrical Component Locator and Harness Routing Views

Schematic and Routing Diagrams

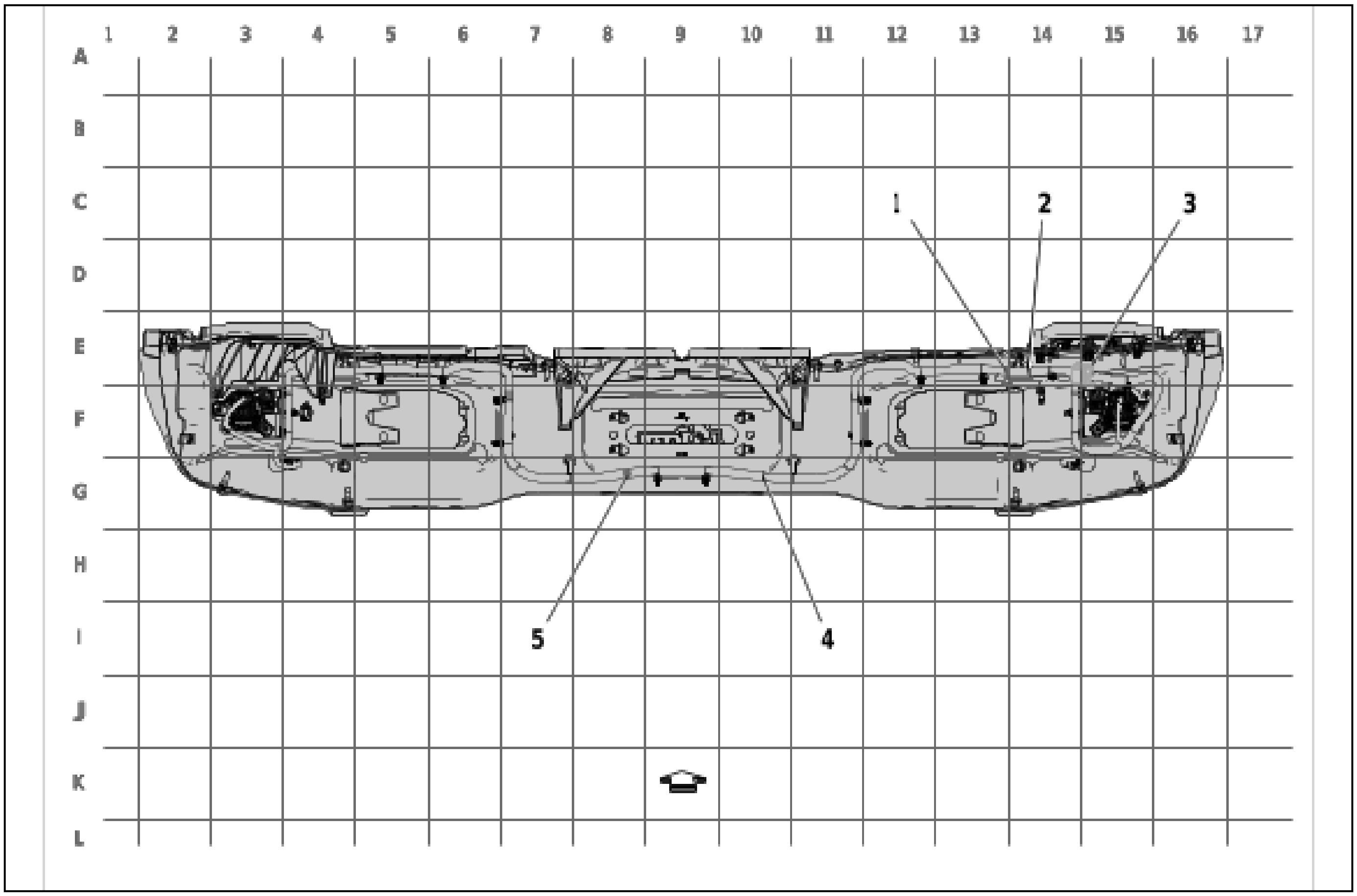
Front of Vehicle - Front Object Alarm Sensor Wiring Harness (- VHU)



6309779

Items
(1) X162 Front Object Alarm Sensor Wiring Harness to Front Object Alarm Sensor Wiring Harness (UKL)
(2) X150 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness (Regular Cab / Double Cab / Crew Cab)
(3) X165 Front Object Alarm Sensor Wiring Harness to Front Object Alarm Sensor Wiring Harness (UKL)
(4) J105 Front Object Alarm Sensor Wiring Harness (UKL)
(5) J104 Front Object Alarm Sensor Wiring Harness (UKL)
(6) J100 Front Object Alarm Sensor Wiring Harness
(7) J102 Front Object Alarm Sensor Wiring Harness
(8) J101 Front Object Alarm Sensor Wiring Harness
(9) J103 Front Object Alarm Sensor Wiring Harness

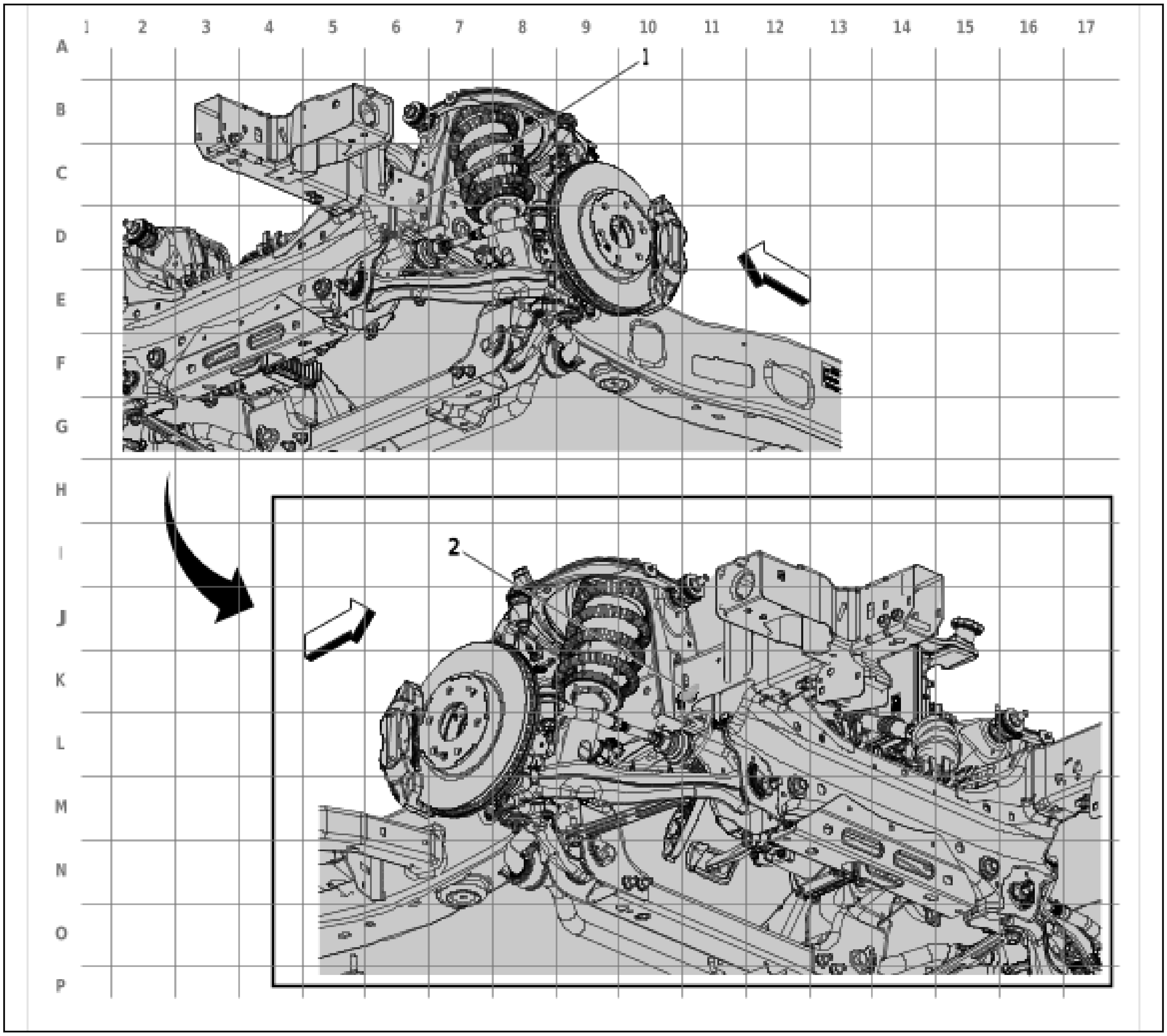
Front of Vehicle - Front Object Alarm Sensor Wiring Harness (VHU)



6142586

Items
(1) J103 Front Object Alarm Sensor Wiring Harness
(2) J100 Front Object Alarm Sensor Wiring Harness
(3) X150 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness (Regular Cab / Double Cab / Crew Cab)
(4) J101 Front Object Alarm Sensor Wiring Harness
(5) J102 Front Object Alarm Sensor Wiring Harness

Vehicle Underbody - Electronic Suspension Strut Wiring Harness Extension Harness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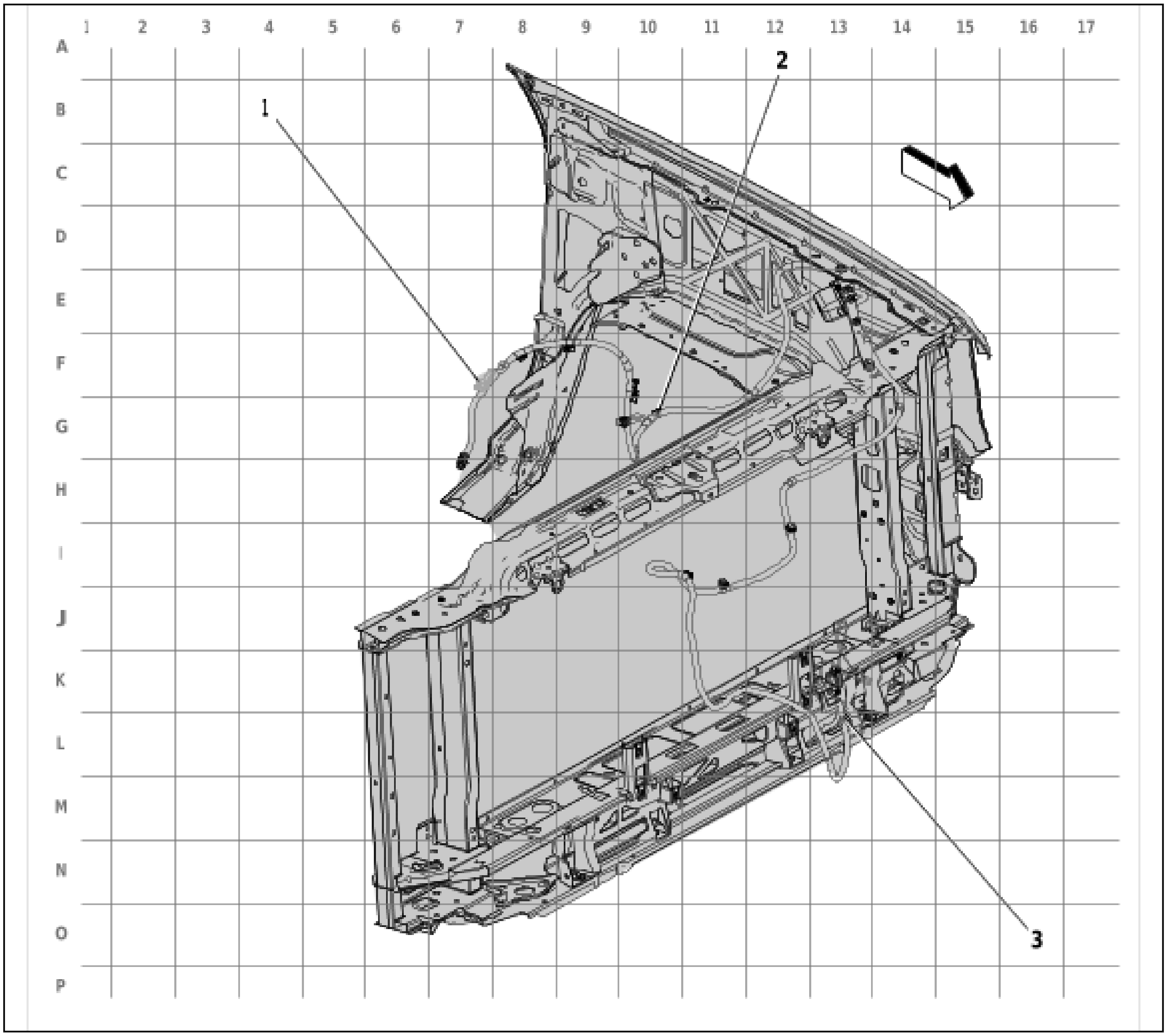
5978822

Items
(1) X416A Chassis Wiring Harness to Electronic Suspension Strut Wiring Harness Extension Harness (Z45)
(2) X416B Chassis Wiring Harness to Electronic Suspension Strut Wiring Harness Extension Harness (Z45)

Engine Compartment - Accessory Wiring Harness (VYU)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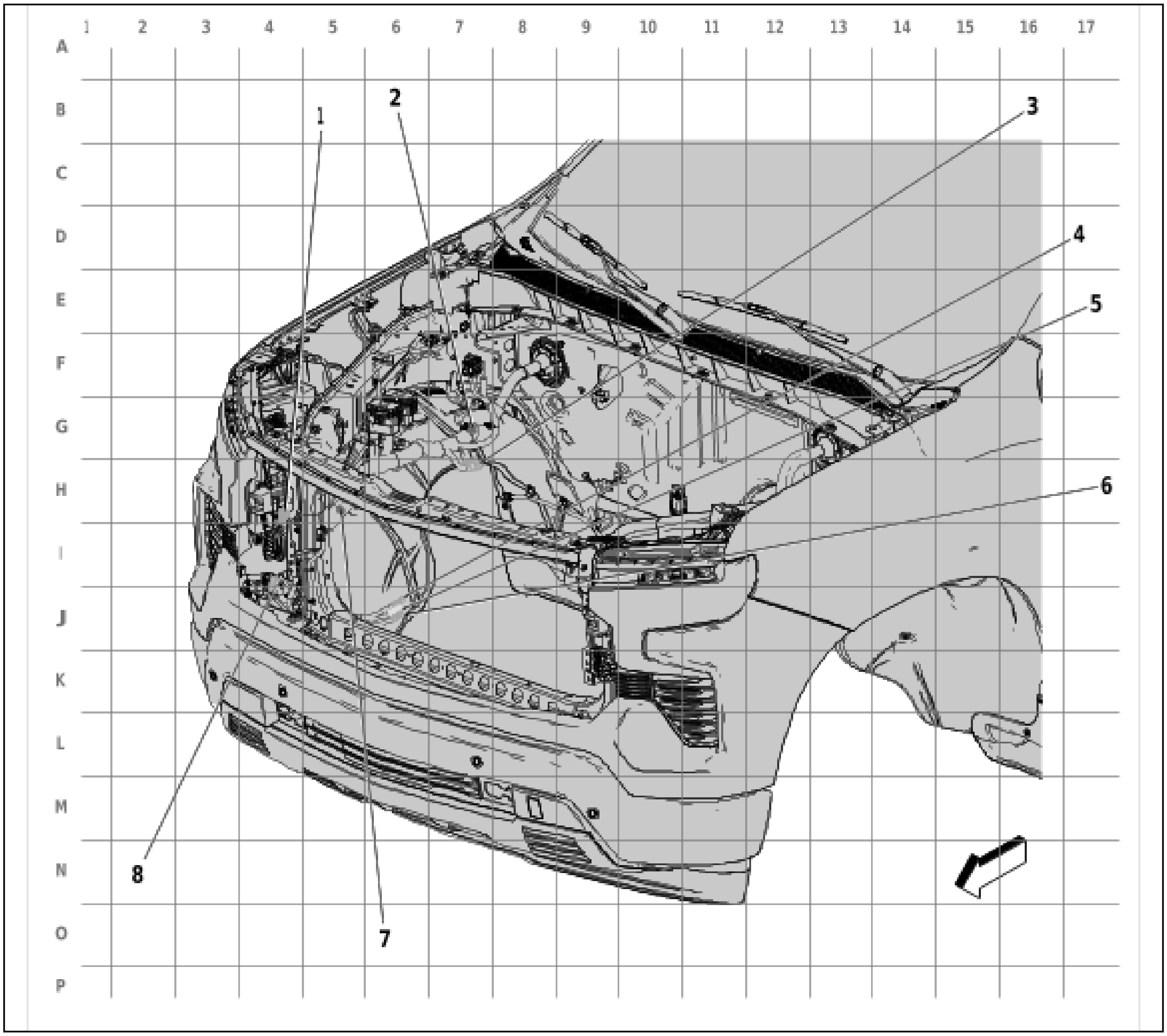
5978829

Items
(1) X977 Engine Wiring Harness to Accessory Wiring Harness (VYU)
(2) J141 Accessory Wiring Harness (VYU)
(3) J140 Accessory Wiring Harness (VYU)

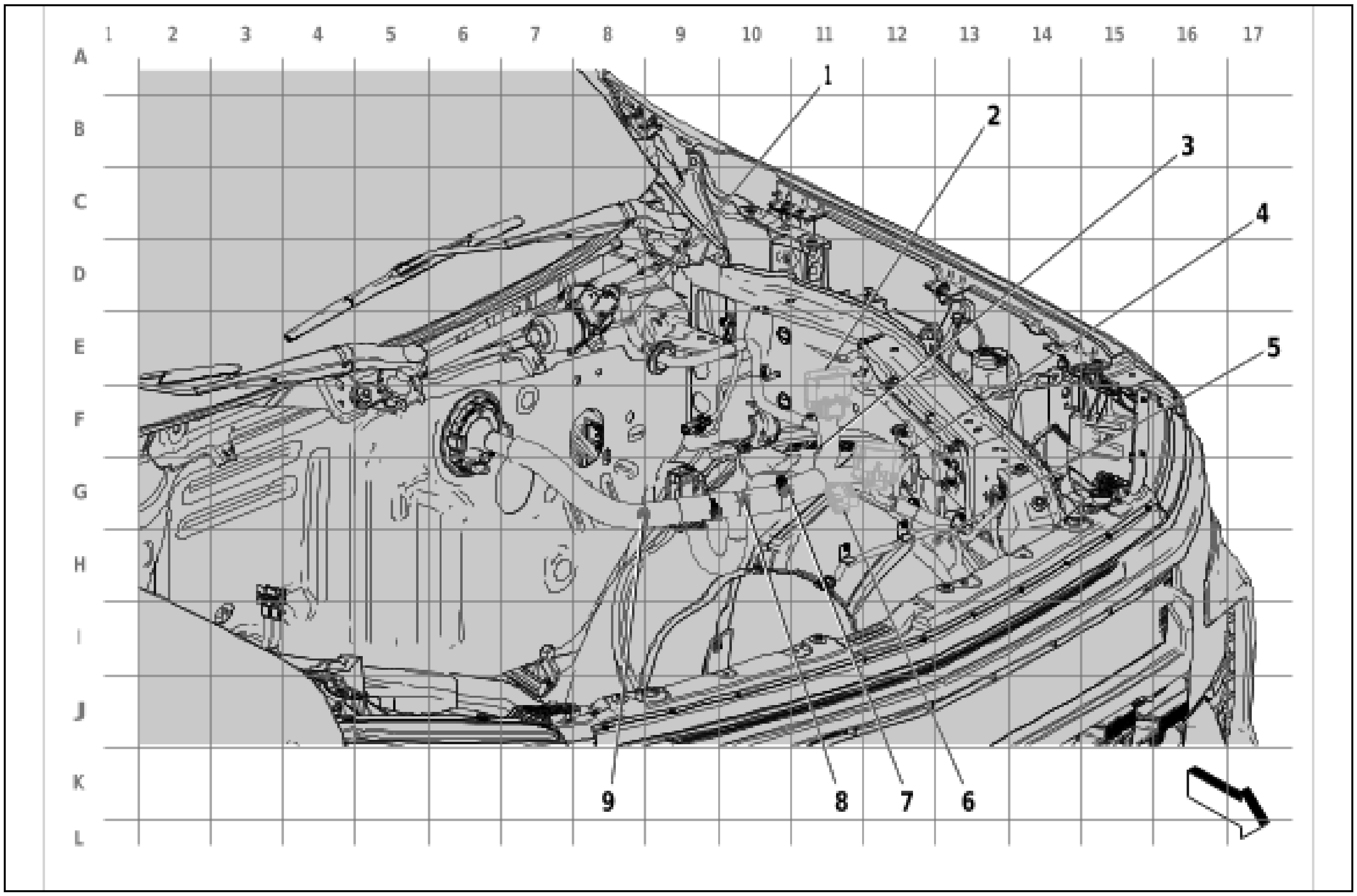
Engine Compartment - Body Wiring Harness - Right



5978831

Items
(1) X122 Front View Camera Switch Wiring Harness to Body Wiring Harness (UV2)
(2) J132 Body Wiring Harness
(3) X424 Body Wiring Harness to Chassis Wiring Harness (FHS)
(4) X402B Body Wiring Harness to Chassis Wiring Harness (UV2)
(5) X402C Body Wiring Harness to Chassis Wiring Harness (UV2)
(6) X402A Body Wiring Harness to Chassis Wiring Harness (UV2)
(7) J131 Body Wiring Harness
(8) X150 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness (Regular Cab / Double Cab / Crew Cab)

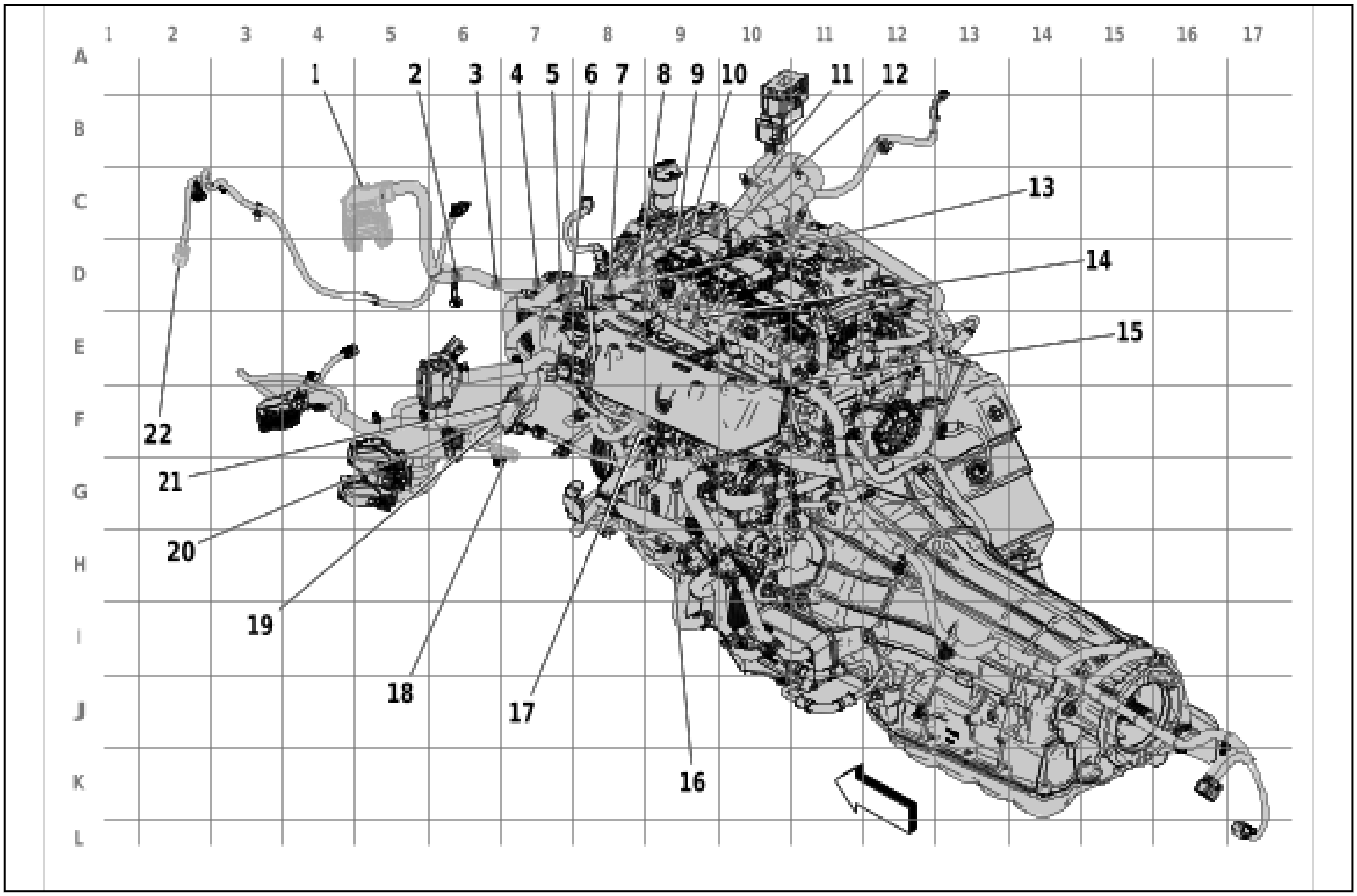
Engine Compartment - Body Wiring Harness - Left



5978833

Items
(1) J127 Body Wiring Harness
(2) X410 Chassis Wiring Harness to Body Wiring Harness
(3) J126 Body Wiring Harness
(4) X125 Engine Wiring Harness to Body Wiring Harness
(5) J125 Body Wiring Harness
(6) X400 Body Wiring Harness to Chassis Wiring Harness (Regular Cab / Double Cab / Crew Cab)
(7) J128 Body Wiring Harness
(8) J129 Body Wiring Harness
(9) J130 Body Wiring Harness

Engine Compartment - Engine Wiring Harness - Left Rear (L3B)

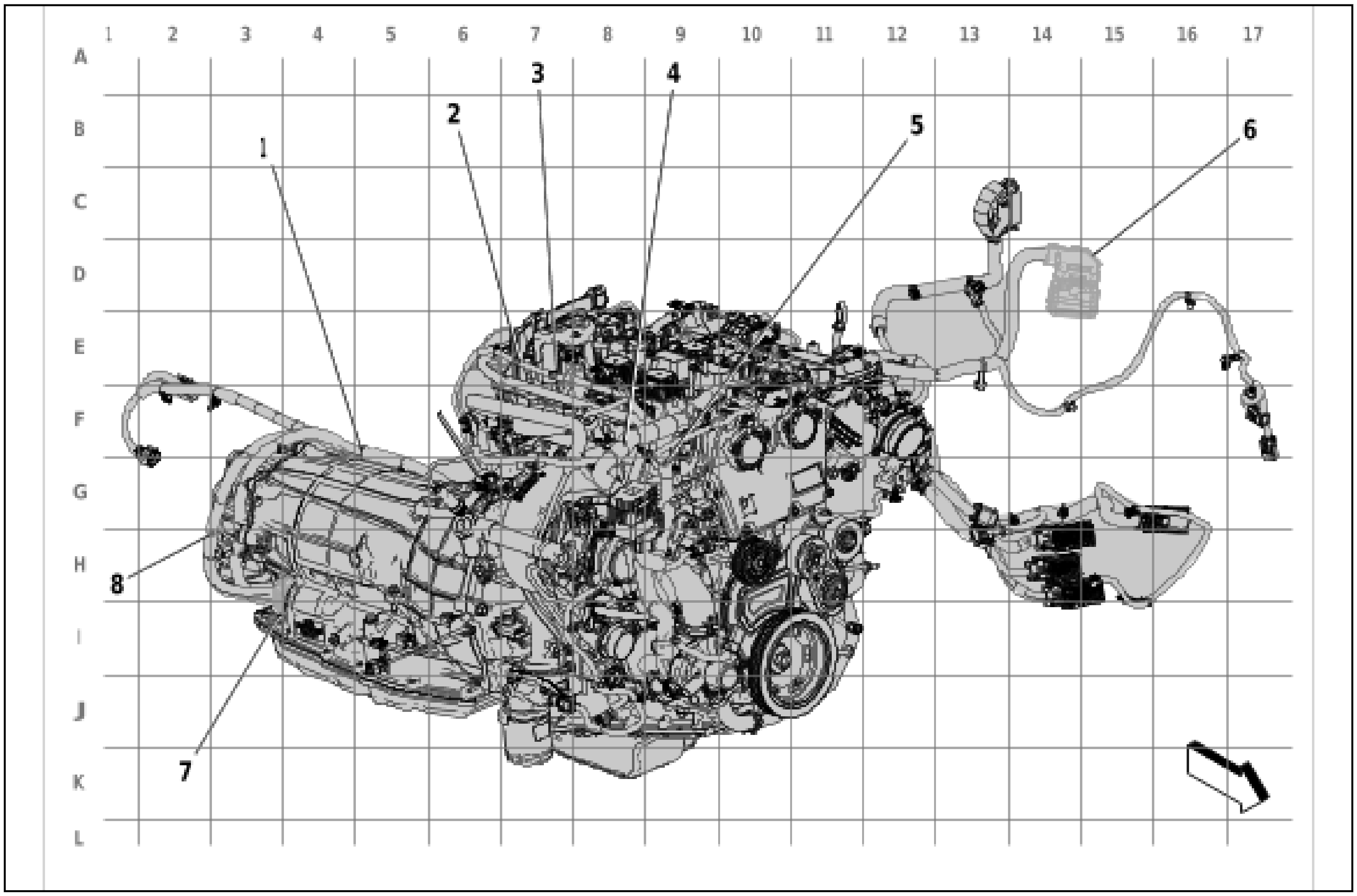


5970771

Items
(1) X125 Engine Wiring Harness to Body Wiring Harness
(2) J150 Engine Wiring Harness
(3) J157 Engine Wiring Harness
(4) J151 Engine Wiring Harness (L3B / L84 / L87 / LZ0)
(5) J168 Engine Wiring Harness (L3B)
(6) J169 Engine Wiring Harness (L3B)
(7) J170 Engine Wiring Harness (L3B)
(8) J164 Engine Wiring Harness (L3B / L84 / L87 / LZ0)
(9) J172 Engine Wiring Harness (L3B)
(10) J173 Engine Wiring Harness (L3B)
(11) J174 Engine Wiring Harness (L3B)
(12) J175 Engine Wiring Harness (L3B)
(13) J156 Engine Wiring Harness (L3B / L84 / L87)
(14) J158 Engine Wiring Harness (L3B / L84 / L87)
(15) J171 Engine Wiring Harness (L3B)
(16) X129 Engine Wiring Harness to Oil Pump Flow Control Solenoid Valve Harness (L3B / L87 / LZ0)
(17) X160 Engine Wiring Harness to Fuel Injector Wiring Harness
(18) X415B
(19) J153 Engine Wiring Harness

Items
(20) J167 Engine Wiring Harness (L3B)
(21) J155 Engine Wiring Harness (L3B / L84 / L87)
(22) X618A Engine Wiring Harness to Active Grille Air Shutter Wiring Harness (VTI / WMI)

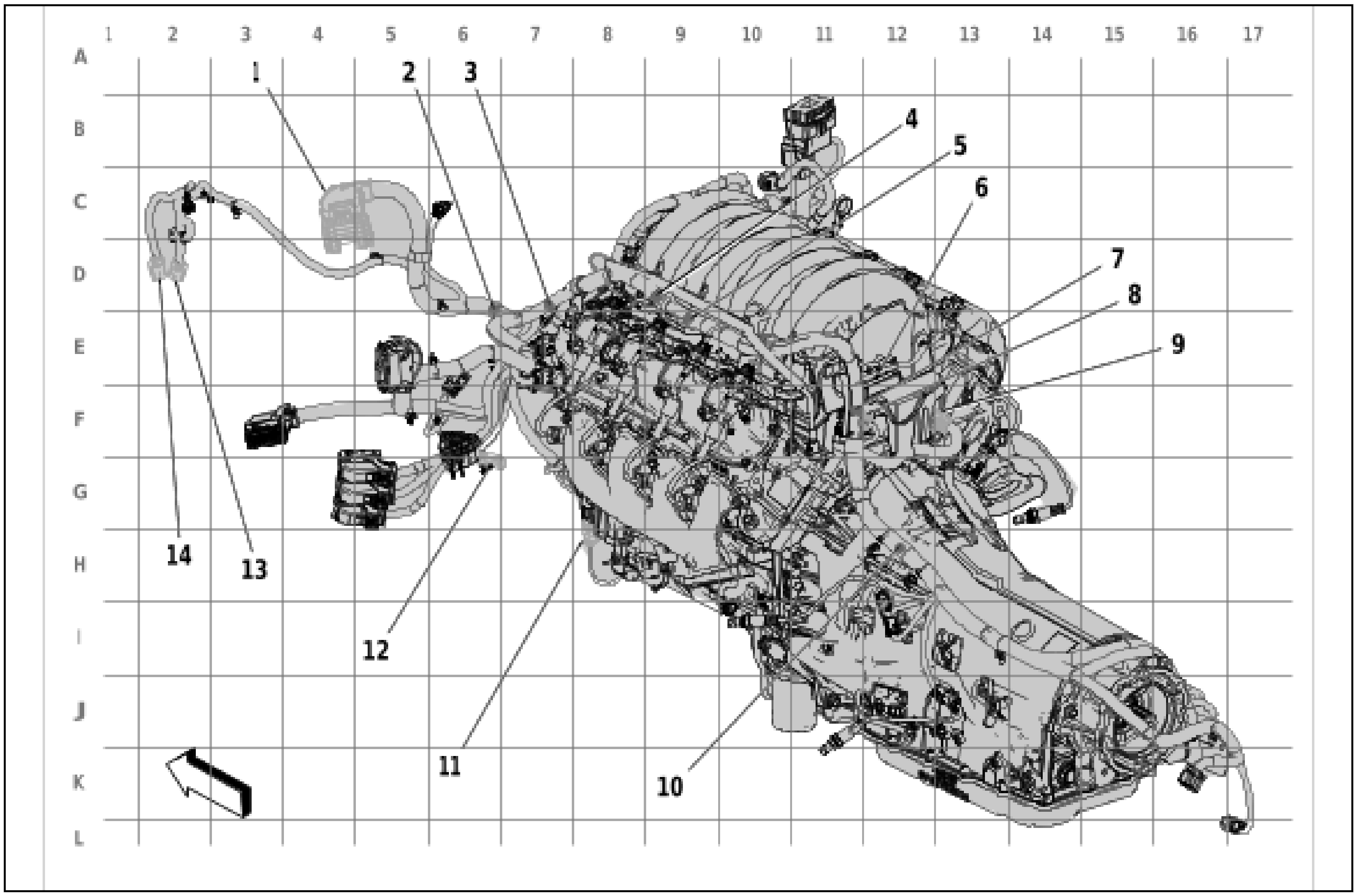
Engine Compartment - Engine Wiring Harness - Right Front (L3B)



5970772

Items
(1) J154 Engine Wiring Harness
(2) J177 Engine Wiring Harness (L3B)
(3) J163 Engine Wiring Harness (L3B / L84 / L87)
(4) J152 Engine Wiring Harness (L3B / L84 / L87 / LZ0)
(5) J179 Engine Wiring Harness (L3B)
(6) X125 Engine Wiring Harness to Body Wiring Harness
(7) X175 Engine Wiring Harness to Automatic Transmission Wiring Harness (MQC / MFC)
(8) J165 Engine Wiring Harness (L3B)

Engine Compartment - Engine Wiring Harness - Left Rear (L84 / L87)



5970773

Items

(1) X125 Engine Wiring Harness to Body Wiring Harness

(2) J154 Engine Wiring Harness

(3) J153 Engine Wiring Harness

(4) J158 Engine Wiring Harness (L3B / L84 / L87)

(5) J159 Engine Wiring Harness (L84 / L87)

(6) J160 Engine Wiring Harness (L84 / L87)

(7) J163 Engine Wiring Harness (L3B / L84 / L87)

(8) X160 Engine Wiring Harness to Fuel Injector Wiring Harness

(9) X161 Engine Wiring Harness to Fuel Injector Wiring Harness - Bank 2 (L84 / L87)

(10) J164 Engine Wiring Harness (L3B / L84 / L87 / LZ0)

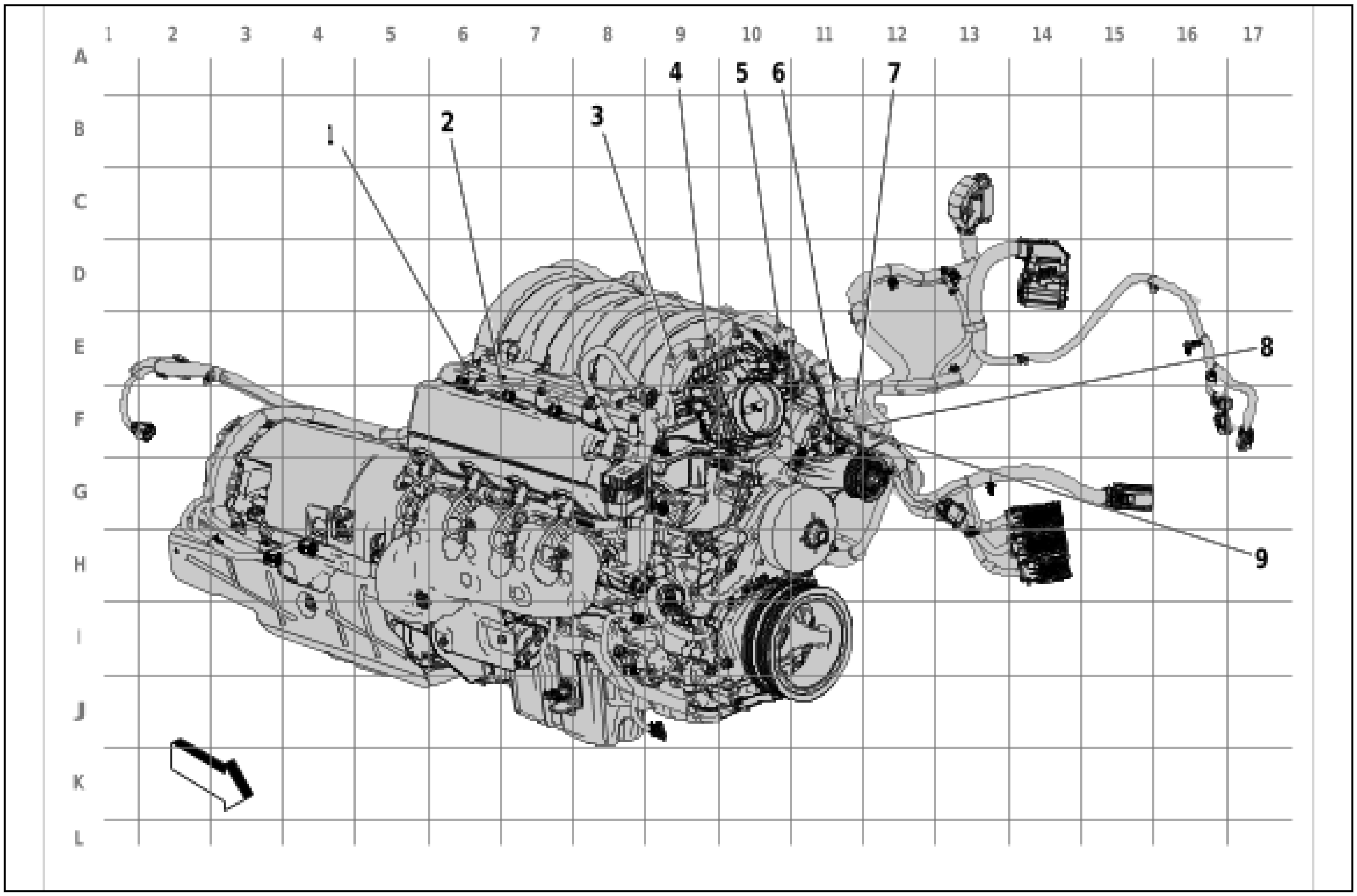
(11) X128 Engine Wiring Harness to Camshaft Position Sensor Wire (L84 / L87)

(12) X415B

(13) X618A Engine Wiring Harness to Active Grille Air Shutter Wiring Harness (VTI / WMI)

(14) X618L Active Grille Air Shutter Jumper Wiring Harness to Active Grille Air Shutter Wiring Harness (WMI)

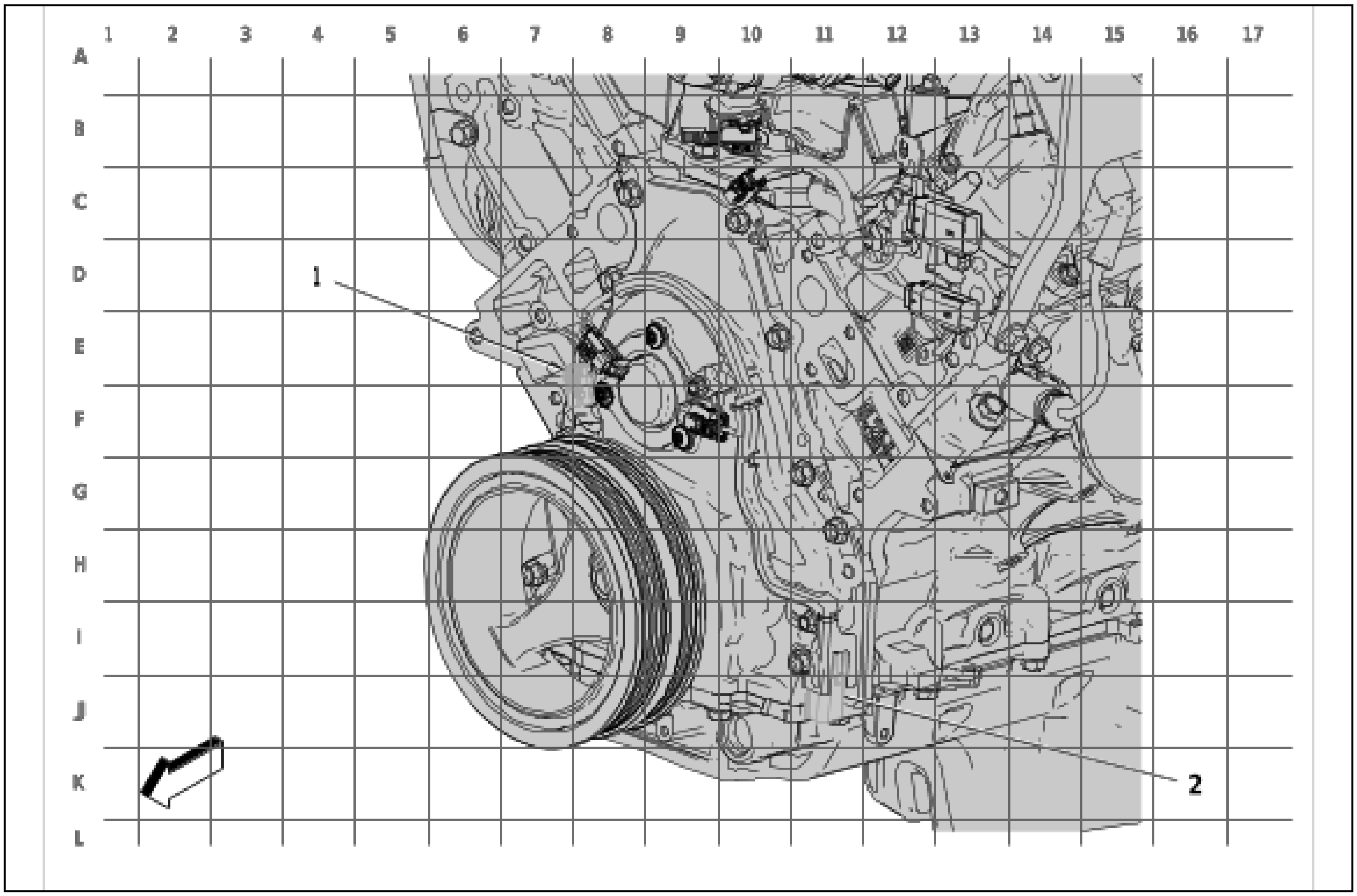
Engine Compartment - Engine Wiring Harness - Right Front (L84 / L87)



6825473

Items
(1) J161 Engine Wiring Harness (L84 / L87)
(2) J162 Engine Wiring Harness (L84 / L87)
(3) J157 Engine Wiring Harness
(4) J156 Engine Wiring Harness (L3B / L84 / L87)
(5) J155 Engine Wiring Harness (L3B / L84 / L87)
(6) J152 Engine Wiring Harness (L3B / L84 / L87 / LZ0)
(7) X962 Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness (L84 / L87)
(8) J151 Engine Wiring Harness (L3B / L84 / L87 / LZ0)
(9) J148 Engine Wiring Harness ((L84 / L87)+(VTI / WMI))

Engine Compartment - Camshaft Position Sensor Wire (L84 / L87)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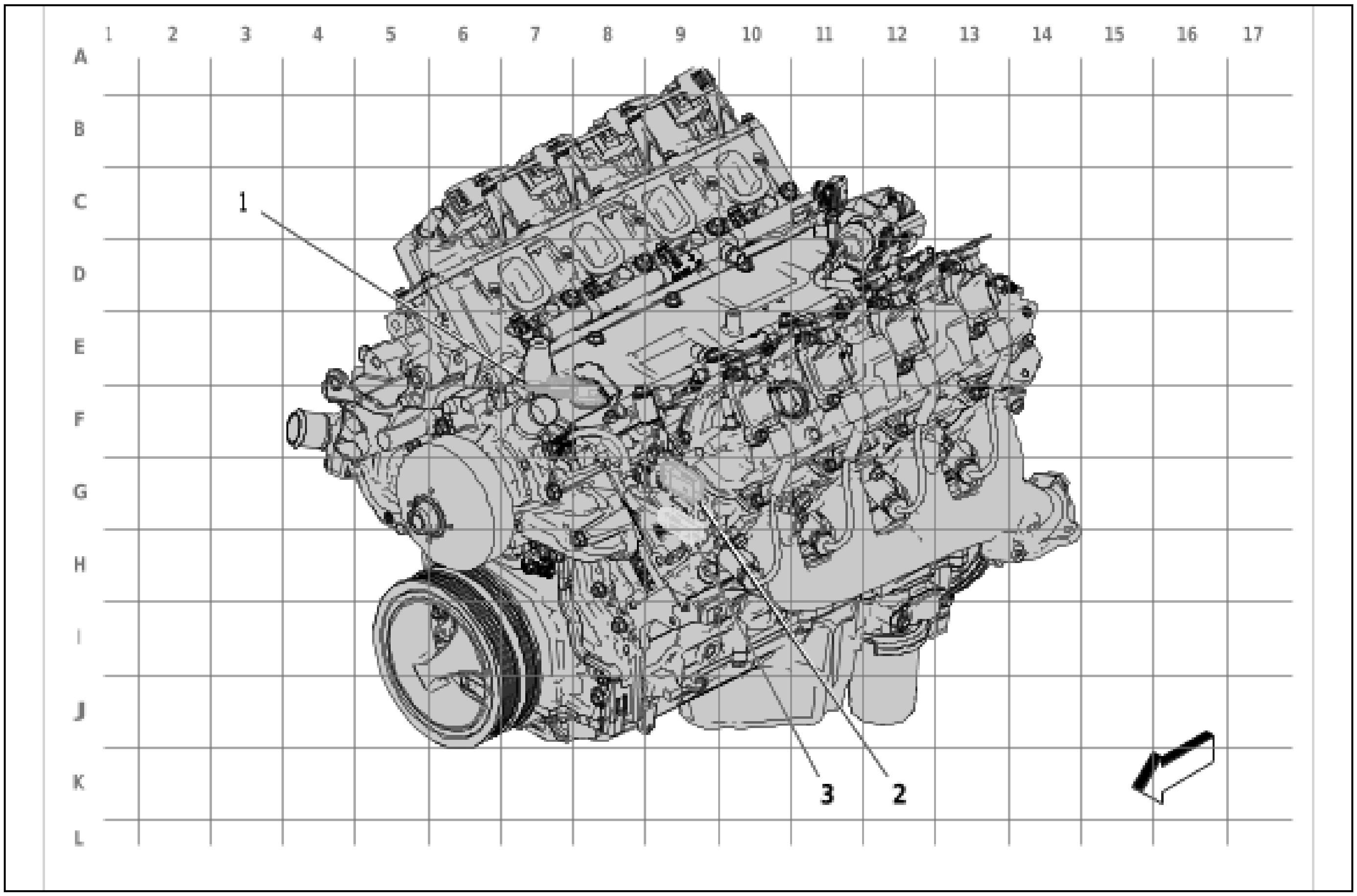
6050071

Items
(1) X129 Engine Wiring Harness to Oil Pump Flow Control Solenoid Valve Harness (L3B / L87 / LZ0)
(2) X128 Engine Wiring Harness to Camshaft Position Sensor Wire (L84 / L87)

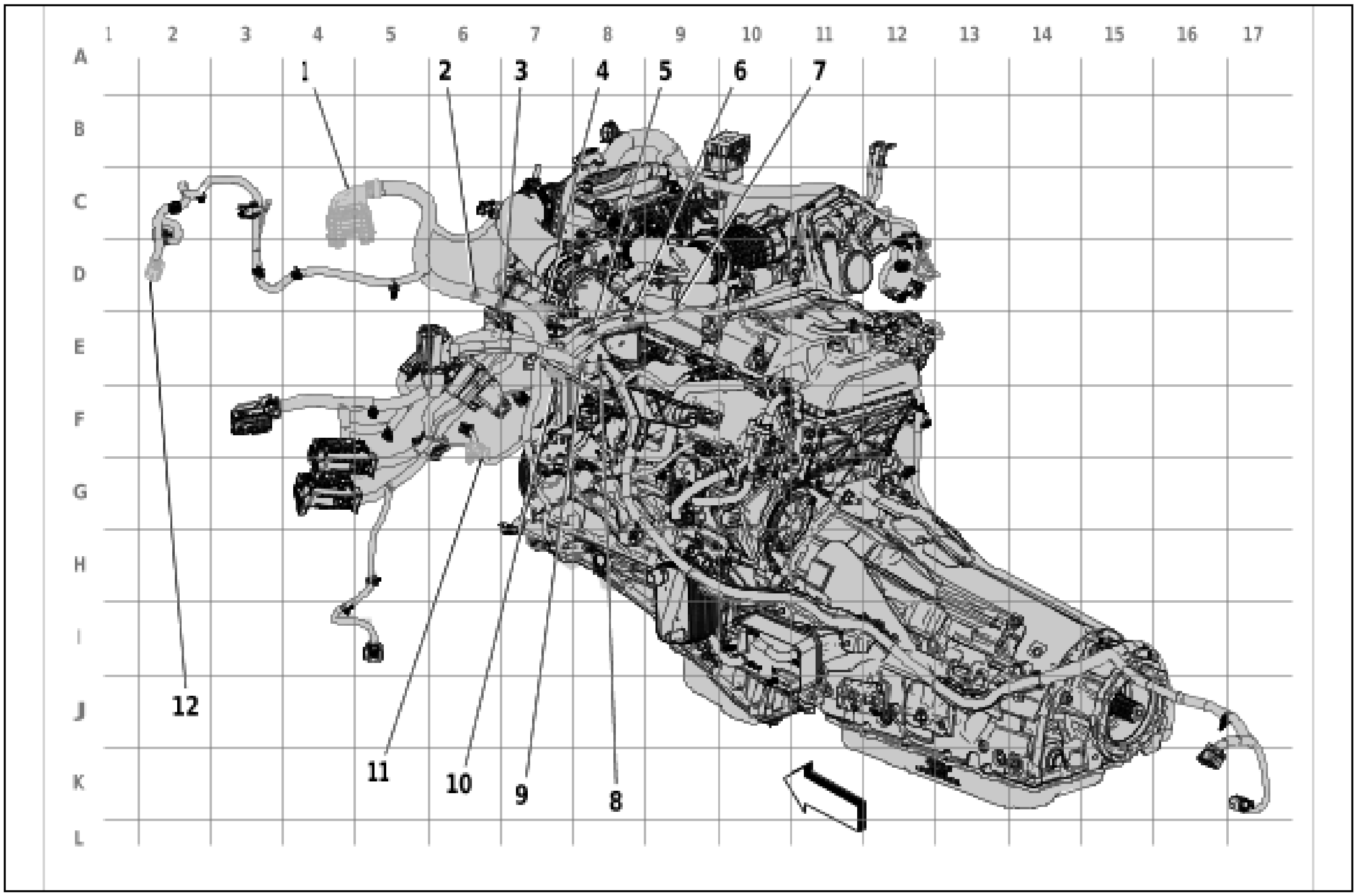
Engine Compartment - Valve Rocker Arm Oil Valve Extension Harness (L84 / L87)



6050073

Items
(1) X963 Valve Rocker Arm Oil Control Valve Extension Harness to Valve Rocker Arm Oil Control Valve Harness (L84 / L87)
(2) X962 Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness (L84 / L87)
(3) X961 Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness (L84 / L87)

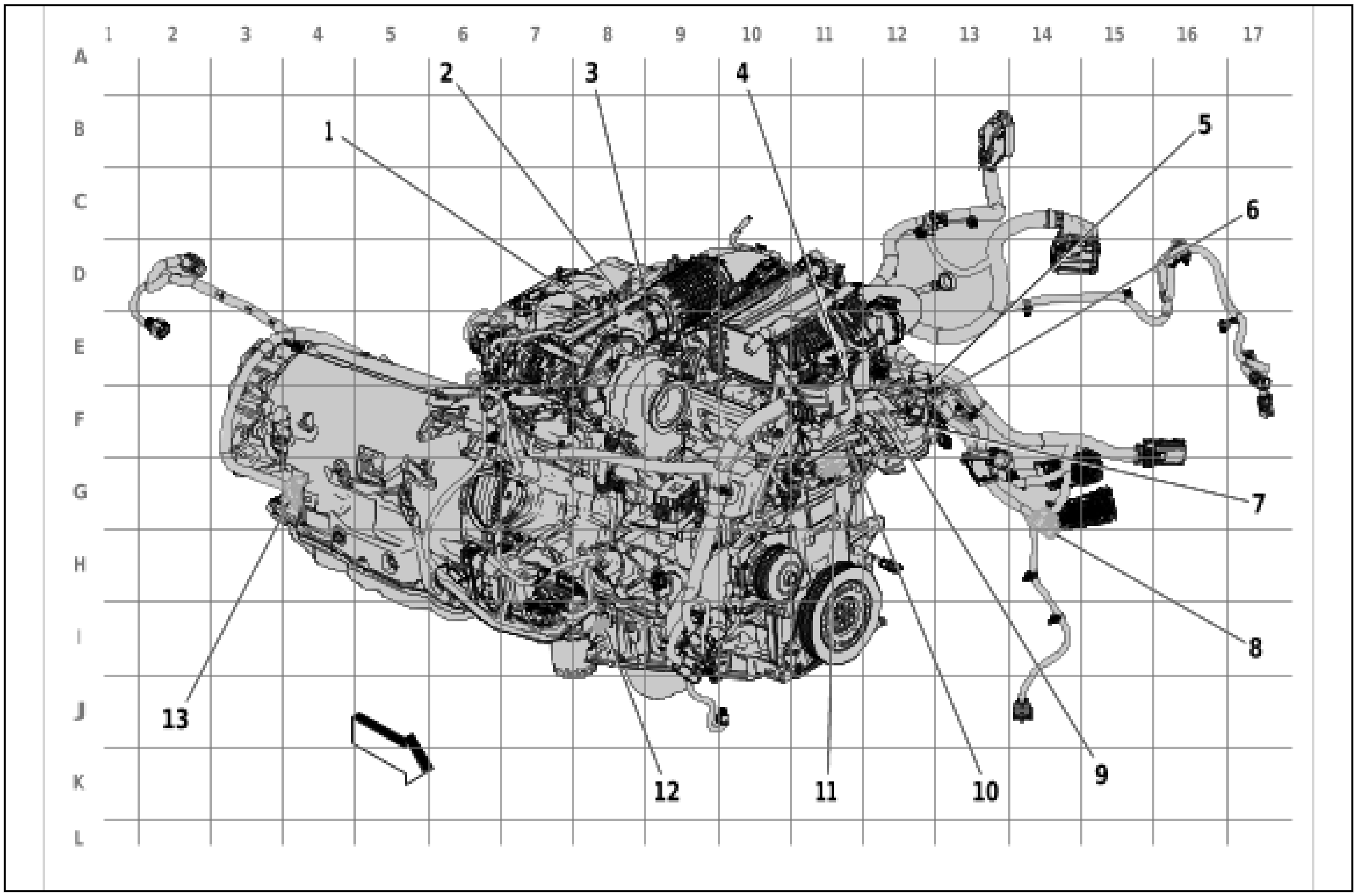
Engine Compartment - Engine Wiring Harness - Left Rear (LZ0)



6962546

Items
(1) X125 Engine Wiring Harness to Body Wiring Harness
(2) J153 Engine Wiring Harness
(3) J181 Engine Wiring Harness (LZ0)
(4) X163 Engine Wiring Harness to Diesel Glow Plug Wiring Harness (LZ0)
(5) J188 Engine Wiring Harness (LZ0)
(6) J191 Engine Wiring Harness (LZ0)
(7) J157 Engine Wiring Harness
(8) J151 Engine Wiring Harness (L3B / L84 / L87 / LZ0)
(9) J180 Engine Wiring Harness (LZ0)
(10) X944 Engine Wiring Harness to Engine Coolant Temperature Sensor Harness (LZ0)
(11) X415 Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness to Engine Wiring Harness
(12) X618A Engine Wiring Harness to Active Grille Air Shutter Wiring Harness (VTI / WMI)

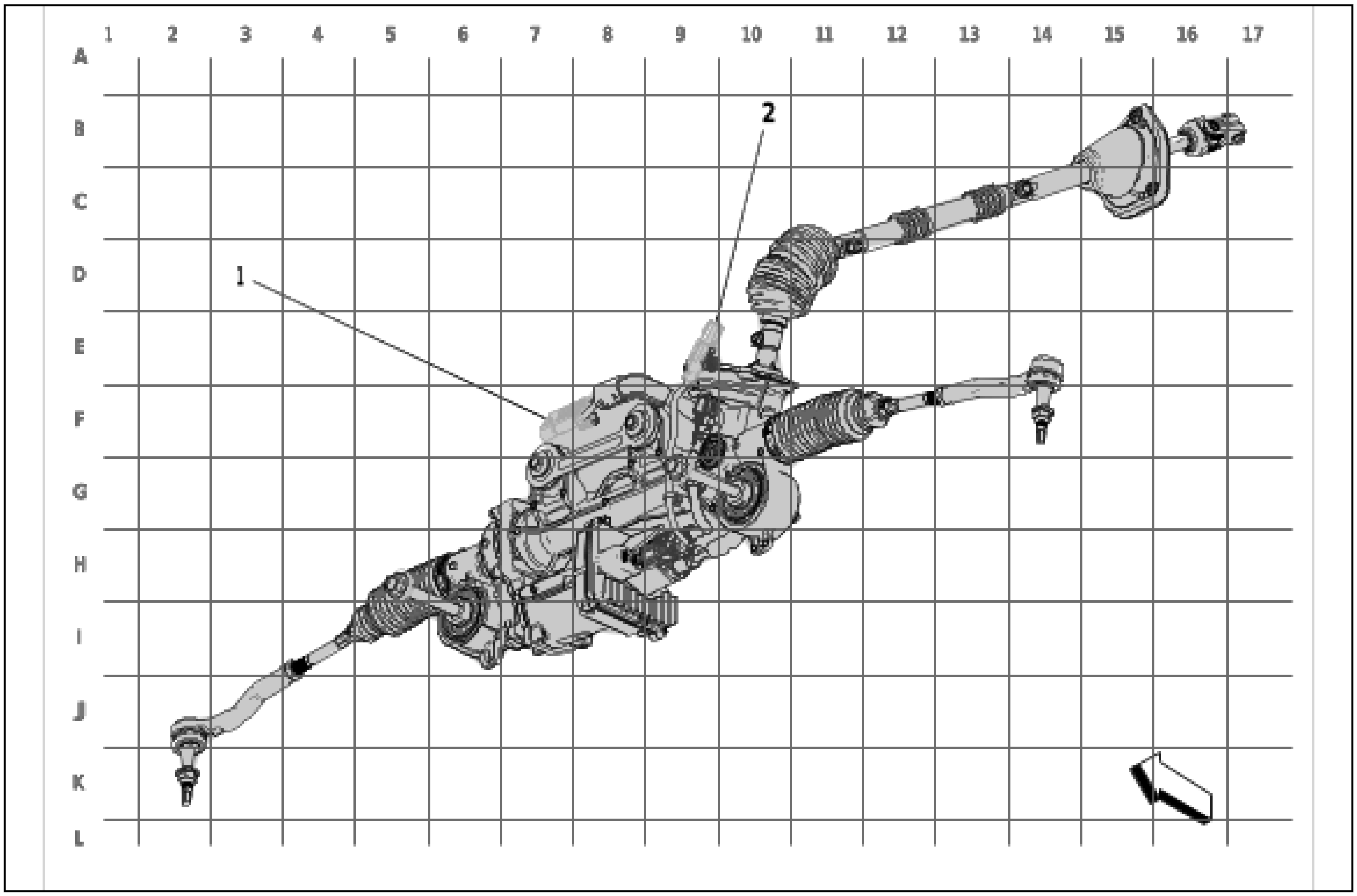
Engine Compartment - Engine Wiring Harness - Right Front (LZ0)



6141574

Items
(1) J189 Engine Wiring Harness (LZ0)
(2) J184 Engine Wiring Harness (LZ0)
(3) J190 Engine Wiring Harness (LZ0)
(4) J182 Engine Wiring Harness (LZ0)
(5) J154 Engine Wiring Harness
(6) J150 Engine Wiring Harness
(7) J186 Engine Wiring Harness (LZ0)
(8) X401 Engine Wiring Harness to Chassis Wiring Harness (LZ0)
(9) J152 Engine Wiring Harness (L3B / L84 / L87 / LZ0)
(10) J164 Engine Wiring Harness (L3B / L84 / L87 / LZ0)
(11) X160 Engine Wiring Harness to Fuel Injector Wiring Harness
(12) X129 Engine Wiring Harness to Oil Pump Flow Control Solenoid Valve Harness (L3B / L87 / LZ0)
(13) X175 Engine Wiring Harness to Automatic Transmission Wiring Harness (MQC / MFC)

Engine Compartment - Power Steering Wiring Harness Extension Harness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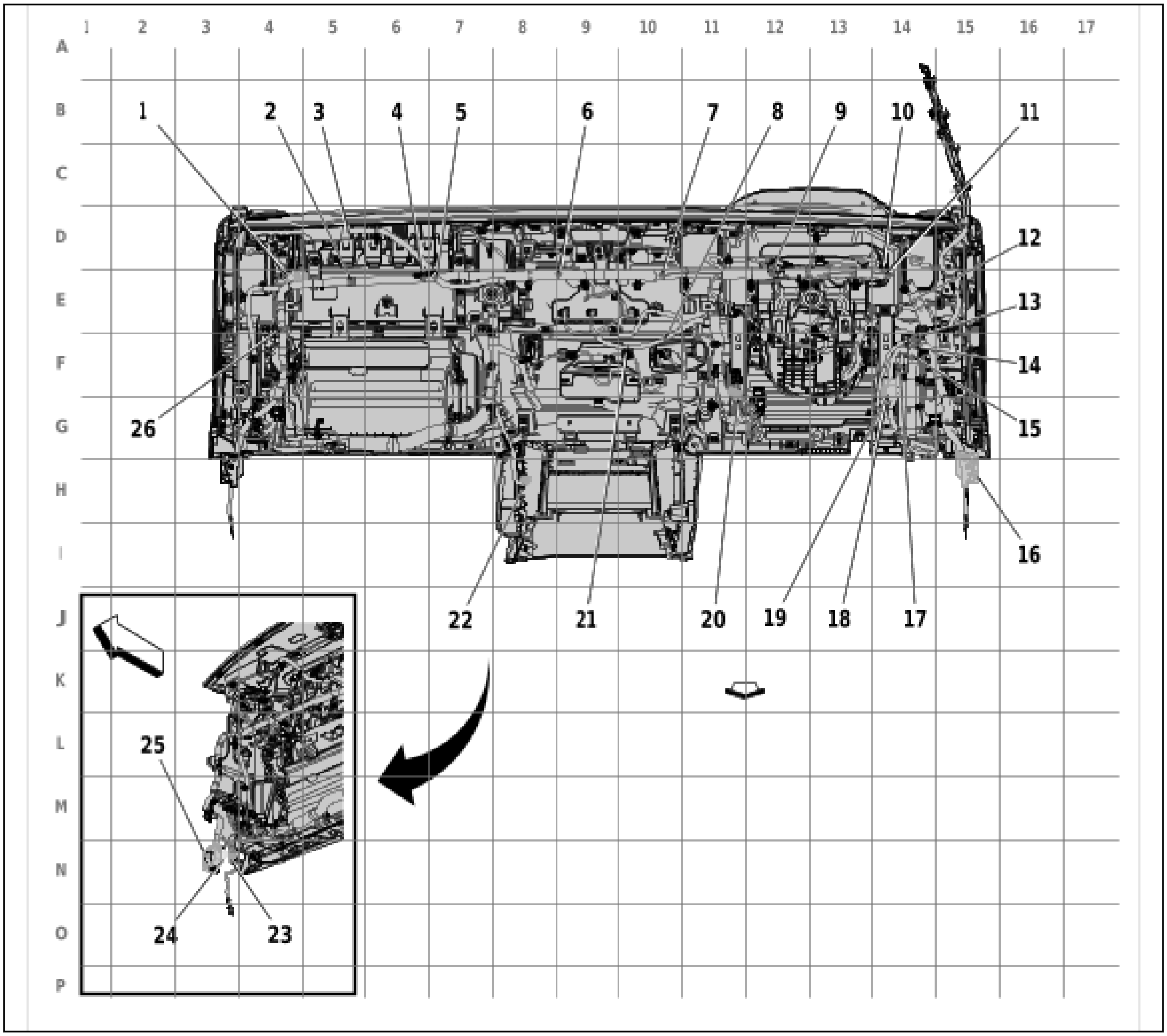
5978843

Items
(1) X405 Power Steering Wiring Harness to Power Steering Control Module Wiring Harness
(2) X403 Chassis Wiring Harness to Power Steering Wiring Harness Extension Harness (Regular Cab / Double Cab / Crew Cab)

Instrument Panel Wiring Harness (IOK & GA4 & GFF & GFG & GFI & GFJ & GFS & GFU)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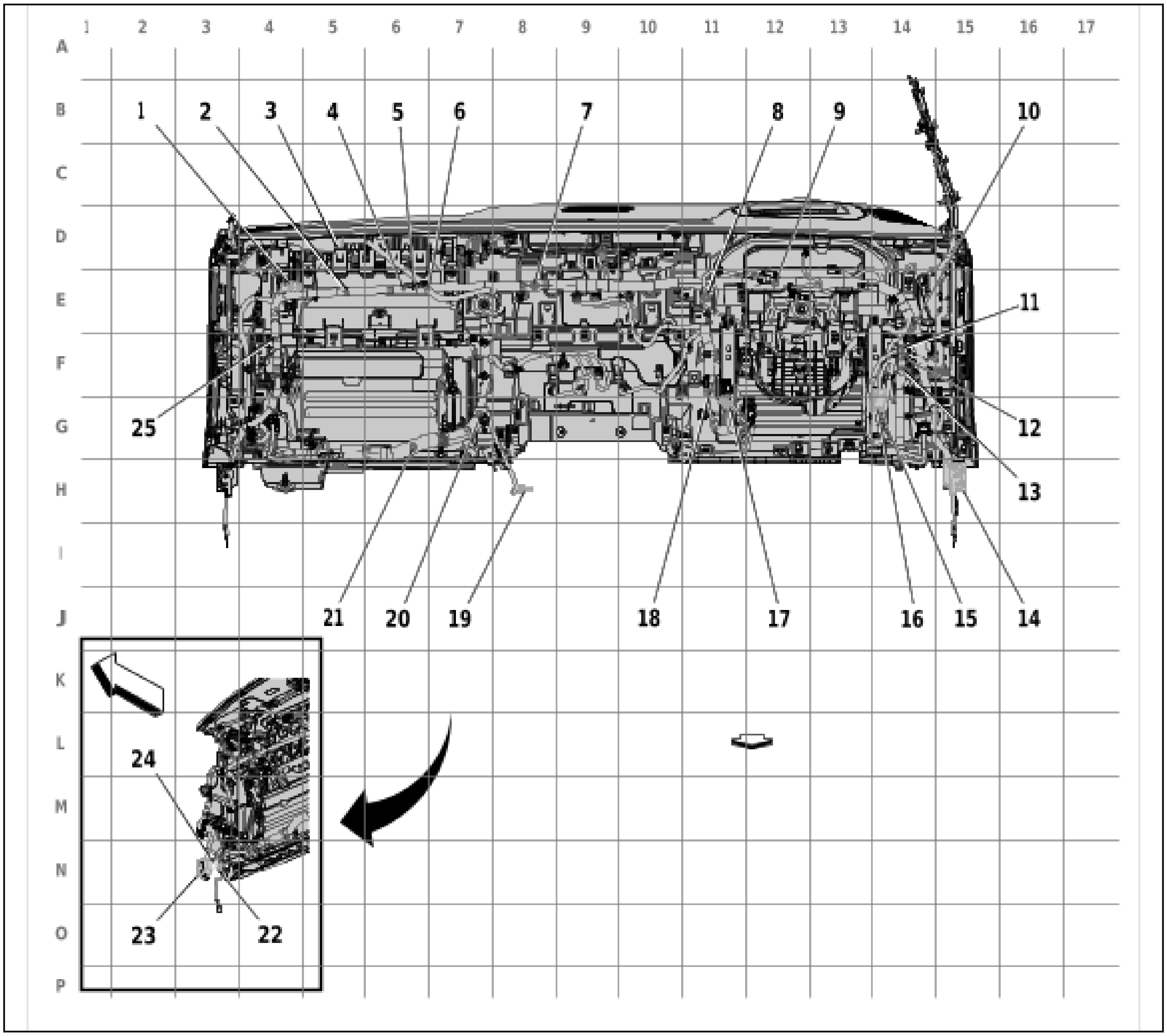
5965518

Items
(1) X237 Instrument Panel Wiring Harness to Passenger Instrument Panel Air Bag Jumper Wiring Harness
(2) J241 Instrument Panel Wiring Harness
(3) X370 Dome Lamp Wiring Harness to Instrument Panel Wiring Harness (IOK / IOR)
(4) J240 Instrument Panel Wiring Harness
(5) J239 Instrument Panel Wiring Harness
(6) J238 Instrument Panel Wiring Harness
(7) J235 Instrument Panel Wiring Harness
(8) J236 Instrument Panel Wiring Harness
(9) J233 Instrument Panel Wiring Harness (UV6)
(10) J231 Instrument Panel Wiring Harness (9L7+(G93/ G94))

Items
(11) J230 Instrument Panel Wiring Harness
(12) J229 Instrument Panel Wiring Harness
(13) J225 Instrument Panel Wiring Harness
(14) J226 Instrument Panel Wiring Harness
(15) J227 Instrument Panel Wiring Harness
(16) X210 Instrument Panel Wiring Harness to Body Wiring Harness
(17) J228 Instrument Panel Wiring Harness (JHD)
(18) X213A
(19) X213B
(20) X250 Instrument Panel Wiring Harness to Heater Wiring Harness
(21) J237 Instrument Panel Wiring Harness
(22) X226 Front Floor Console Wiring Harness to Instrument Panel Wiring Harness (D07)
(23) X218 Instrument Panel Wiring Harness to Body Wiring Harness
(24) X217 Body Wiring Harness to Instrument Panel Wiring Harness (UV2 / UVB)
(25) X211 Instrument Panel Wiring Harness to Body Wiring Harness
(26) J242 Instrument Panel Wiring Harness

Instrument Panel Wiring Harness (IOK & (GFW / GFY))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6341444

Items

(1) X237 Instrument Panel Wiring Harness to Passenger Instrument Panel Air Bag Jumper Wiring Harness

(2) J241 Instrument Panel Wiring Harness

(3) X370 Dome Lamp Wiring Harness to Instrument Panel Wiring Harness (IOK / IOR)

(4) J236 Instrument Panel Wiring Harness

(5) J240 Instrument Panel Wiring Harness

(6) J239 Instrument Panel Wiring Harness

(7) J237 Instrument Panel Wiring Harness

(8) J234 Instrument Panel Wiring Harness

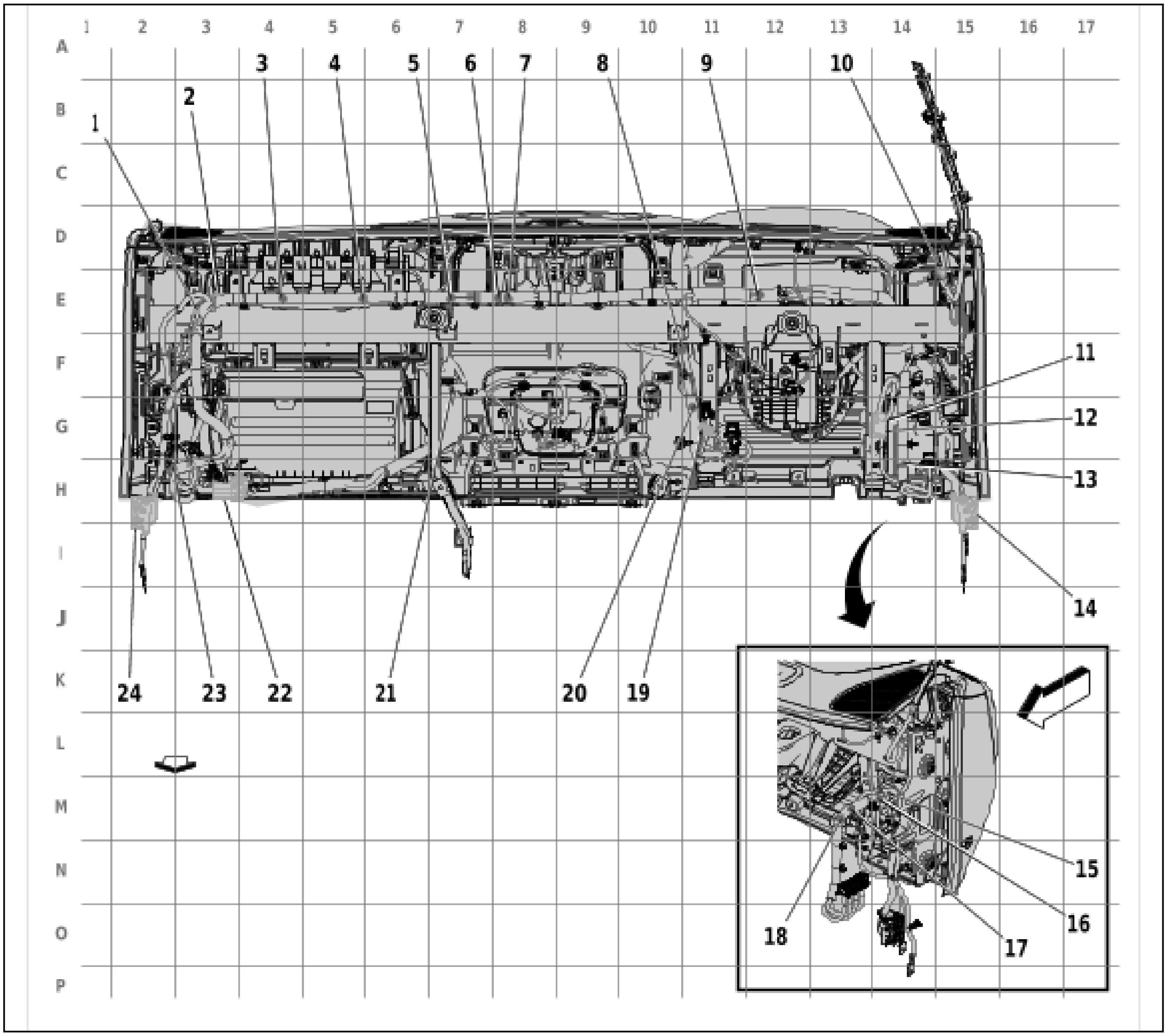
(9) J230 Instrument Panel Wiring Harness

(10) J229 Instrument Panel Wiring Harness

(11) J225 Instrument Panel Wiring Harness

Items
(12) J226 Instrument Panel Wiring Harness
(13) J227 Instrument Panel Wiring Harness
(14) X210 Instrument Panel Wiring Harness to Body Wiring Harness
(15) X213A
(16) X213B
(17) X250 Instrument Panel Wiring Harness to Heater Wiring Harness
(18) J228 Instrument Panel Wiring Harness (JHD)
(19) X226 Front Floor Console Wiring Harness to Instrument Panel Wiring Harness (D07)
(20) J235 Instrument Panel Wiring Harness
(21) J233 Instrument Panel Wiring Harness (UV6)
(22) X218 Instrument Panel Wiring Harness to Body Wiring Harness
(23) X211 Instrument Panel Wiring Harness to Body Wiring Harness
(24) X217 Body Wiring Harness to Instrument Panel Wiring Harness (UV2 / UVB)
(25) J242 Instrument Panel Wiring Harness

Instrument Panel Wiring Harness (IOR)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5965519

Items

(1) X220 Police Accessory Wiring Harness to Instrument Panel Wiring Harness (5W4 / 9C1)

(2) X237 Instrument Panel Wiring Harness to Passenger Instrument Panel Air Bag Jumper Wiring Harness

(3) J241 Instrument Panel Wiring Harness

(4) J239 Instrument Panel Wiring Harness

(5) J237 Instrument Panel Wiring Harness

(6) J236 Instrument Panel Wiring Harness

(7) J238 Instrument Panel Wiring Harness

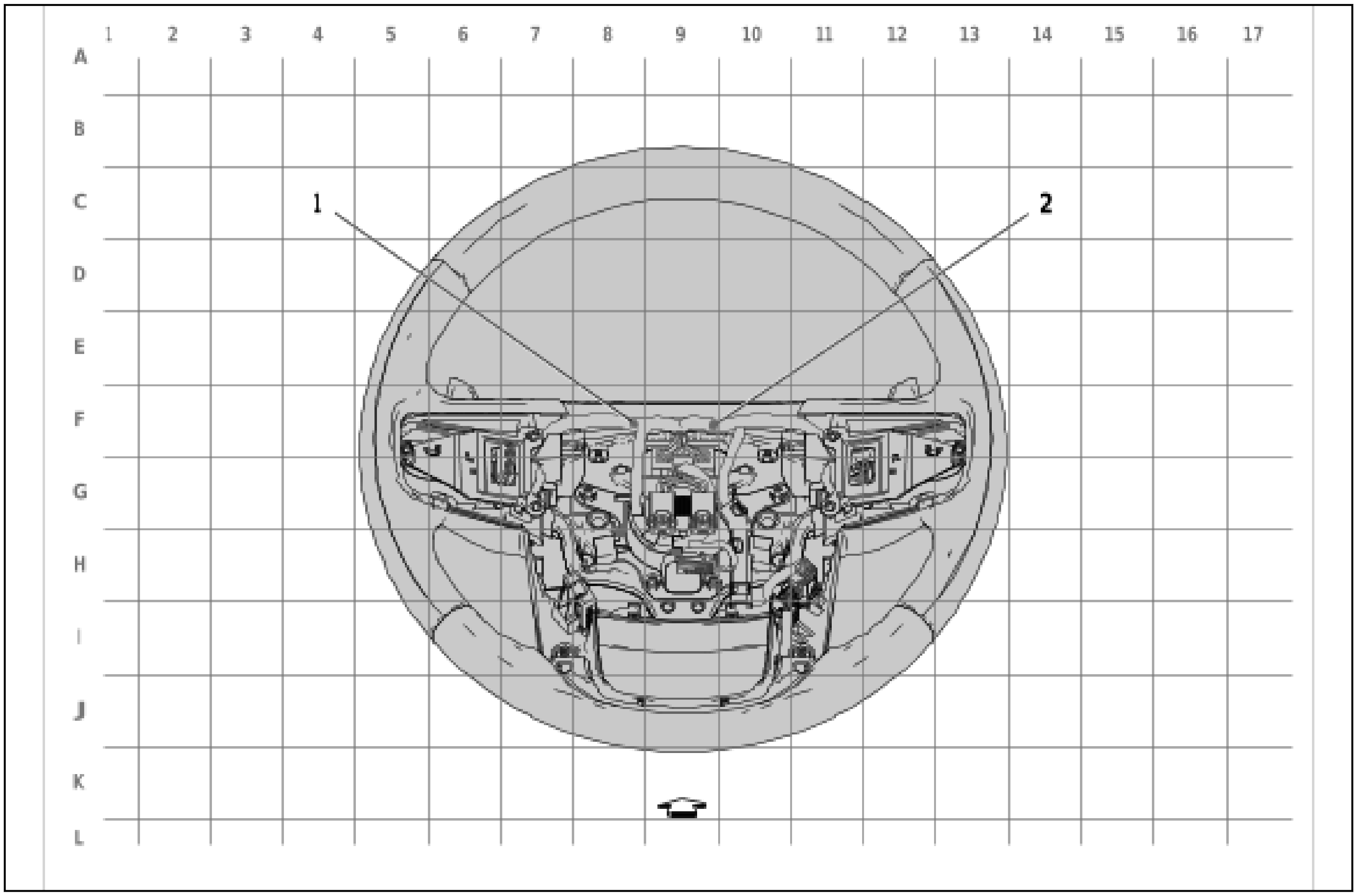
(8) J230 Instrument Panel Wiring Harness

(9) J226 Instrument Panel Wiring Harness

(10) X219 Police Accessory Wiring Harness to Instrument Panel Wiring Harness (5W4 / 9C1)

Items
(11) X213A
(12) X213B
(13) J235 Instrument Panel Wiring Harness
(14) X210 Instrument Panel Wiring Harness to Body Wiring Harness
(15) J227 Instrument Panel Wiring Harness
(16) J229 Instrument Panel Wiring Harness
(17) J225 Instrument Panel Wiring Harness
(18) J240 Instrument Panel Wiring Harness
(19) X250 Instrument Panel Wiring Harness to Heater Wiring Harness
(20) J234 Instrument Panel Wiring Harness
(21) J228 Instrument Panel Wiring Harness (JHD)
(22) X370 Dome Lamp Wiring Harness to Instrument Panel Wiring Harness (IOK / IOR)
(23) J242 Instrument Panel Wiring Harness
(24) X211 Instrument Panel Wiring Harness to Body Wiring Harness

Instrument Panel - Steering Wheel Horn Switch Wiring Harness



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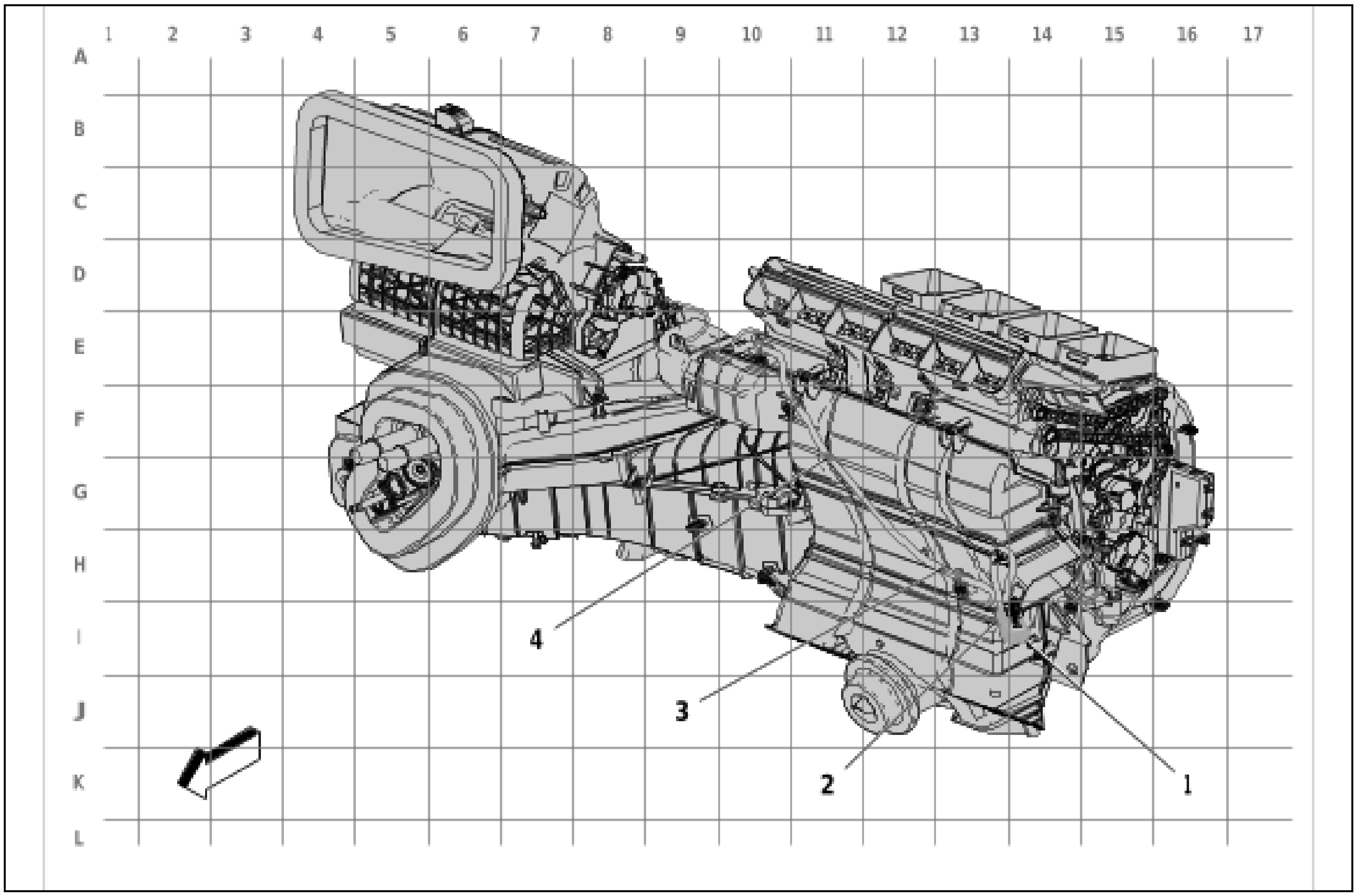
Items
(1) J251 Steering Wheel Horn Switch Wiring Harness
(2) J250 Steering Wheel Horn Switch Wiring Harness (UK3)

Instrument Panel - Heater Wiring Harness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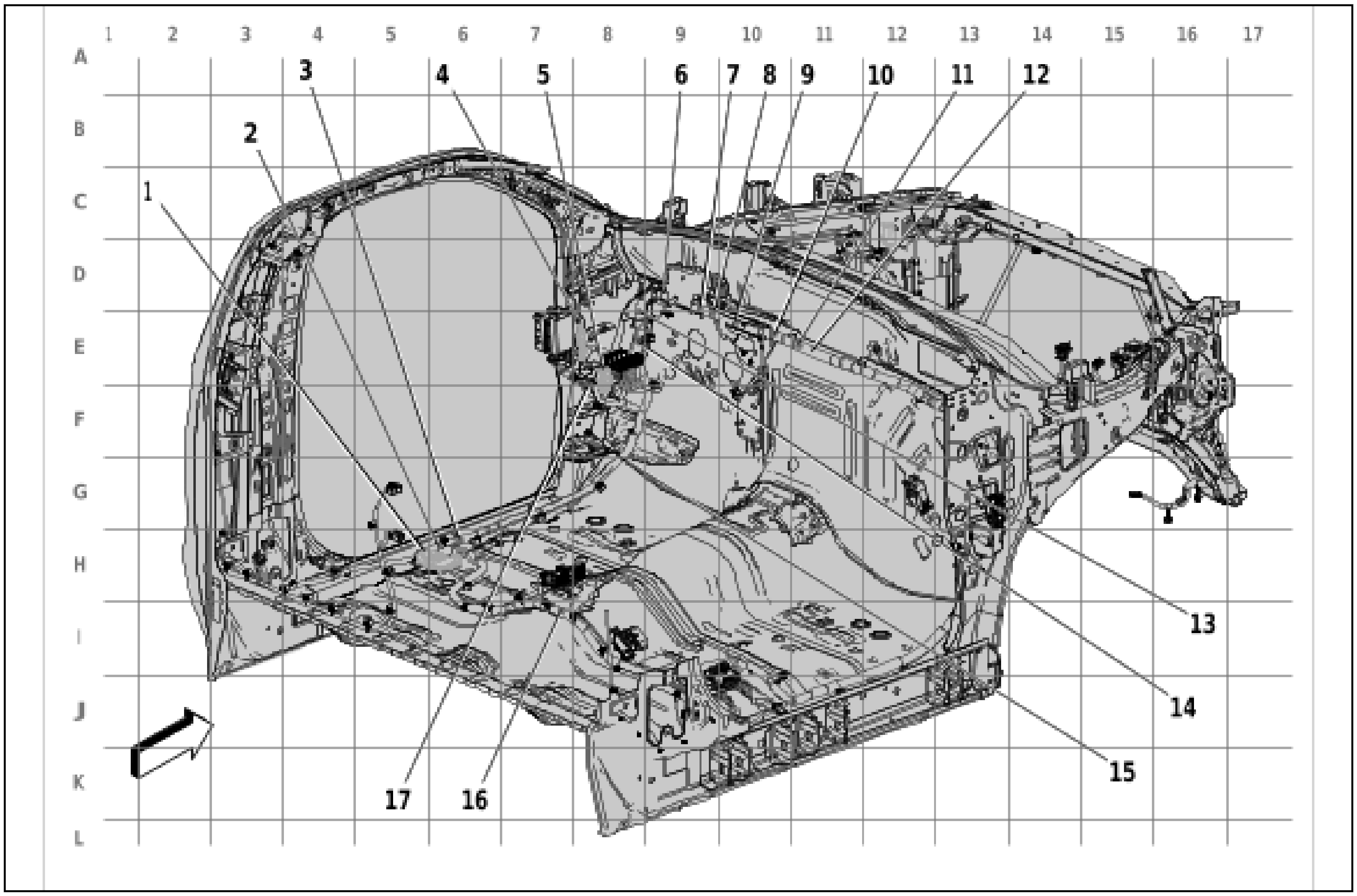
6050076

Items
(1) X250 Instrument Panel Wiring Harness to Heater Wiring Harness
(2) J220 Heater Wiring Harness
(3) J222 Heater Wiring Harness
(4) J221 Heater Wiring Harness

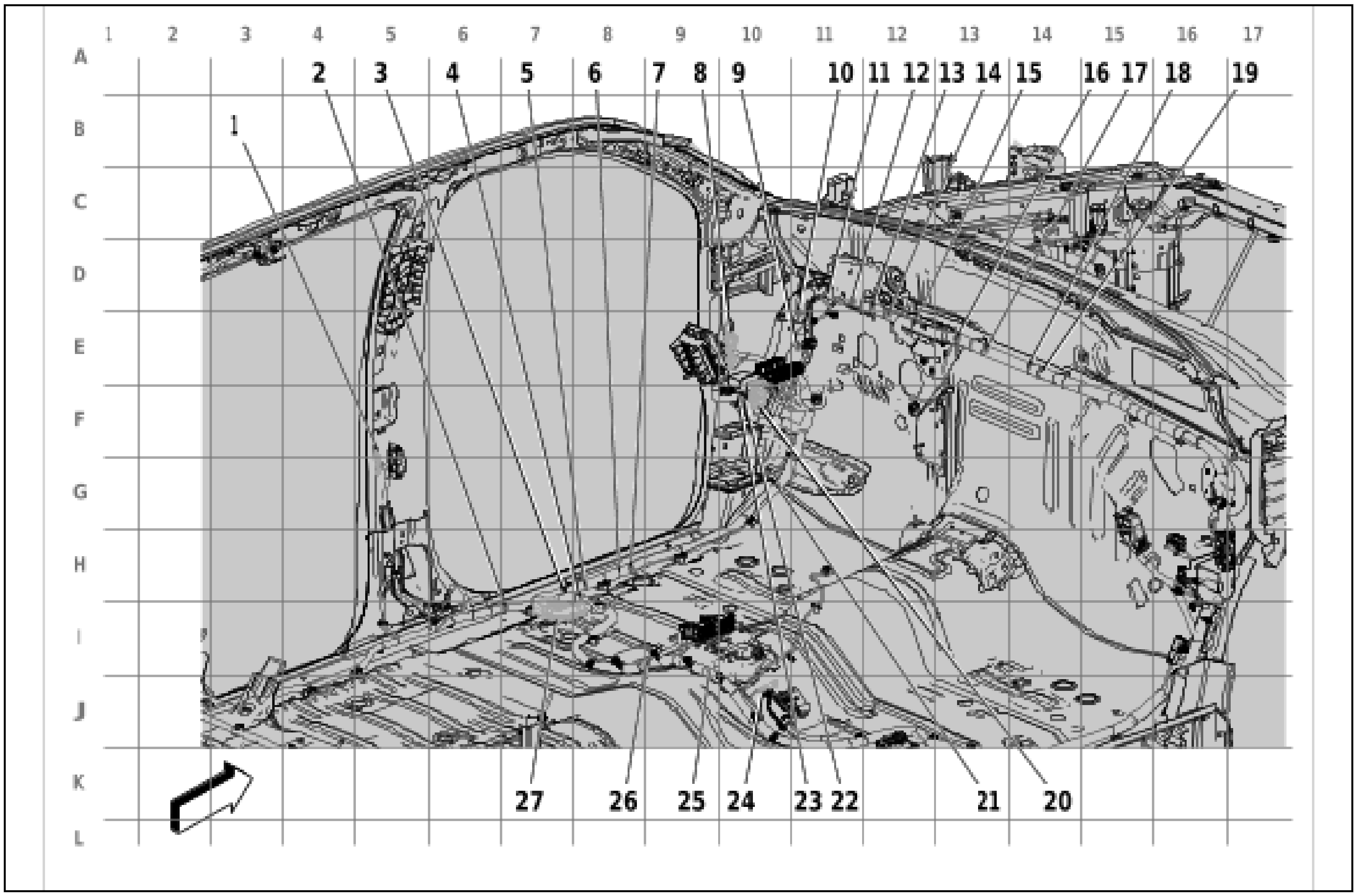
Passenger Compartment - Body Wiring Harness - Left Front - Regular Cab



6282850

Items
(1) X331 Front Seat Wiring Harness - Driver to Body Wiring Harness
(2) J300 Body Wiring Harness
(3) J302 Body Wiring Harness
(4) X500 Front Side Door Door Wiring Harness - Driver to Body Wiring Harness
(5) X210 Instrument Panel Wiring Harness to Body Wiring Harness
(6) J205 Body Wiring Harness
(7) J207 Body Wiring Harness
(8) J208 Body Wiring Harness
(9) J209 Body Wiring Harness
(10) J210 Body Wiring Harness
(11) J211 Body Wiring Harness
(12) J306 Body Wiring Harness
(13) J204 Body Wiring Harness (KC9/KCA)
(14) J203 Body Wiring Harness (LZ0)
(15) J200 Body Wiring Harness (LZ0)
(16) J308 Body Wiring Harness
(17) J201 Body Wiring Harness (FHX)

Passenger Compartment - Body Wiring Harness - Left Front - Double Cab/Crew Cab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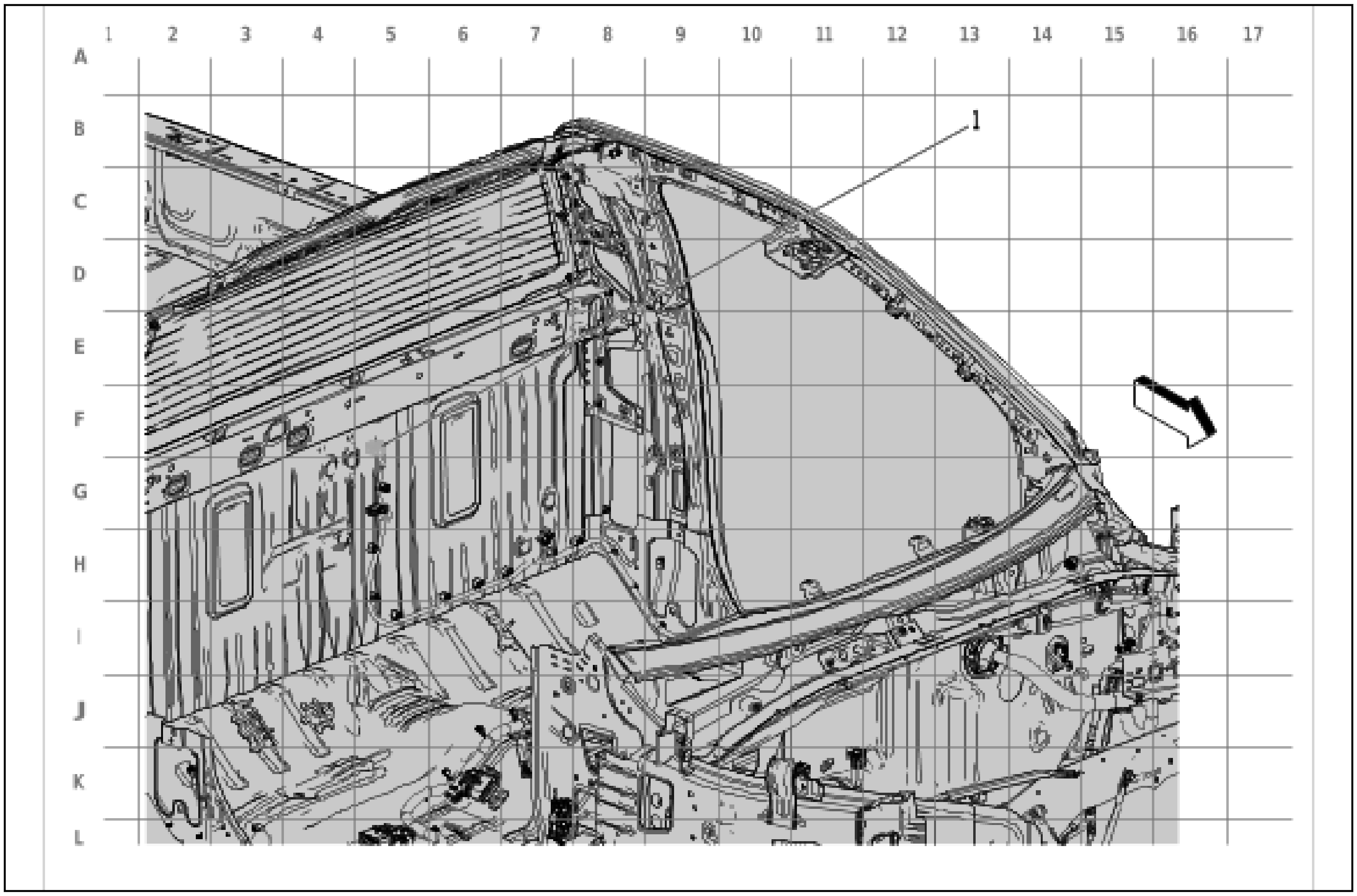
5965521

Items
(1) X700 Rear Side Door Door Wiring Harness - Left Rear to Body Wiring Harness (Double Cab / Crew Cab)
(2) J311 Body Wiring Harness
(3) J303 Body Wiring Harness
(4) J306 Body Wiring Harness
(5) J302 Body Wiring Harness
(6) J301 Body Wiring Harness
(7) J300 Body Wiring Harness
(8) X500 Front Side Door Door Wiring Harness - Driver to Body Wiring Harness
(9) J203 Body Wiring Harness (LZ0)
(10) J204 Body Wiring Harness (KC9/KCA)
(11) J205 Body Wiring Harness
(12) J206 Body Wiring Harness
(13) J207 Body Wiring Harness
(14) J208 Body Wiring Harness
(15) J209 Body Wiring Harness
(16) J210 Body Wiring Harness
(17) J211 Body Wiring Harness
(18) J212 Body Wiring Harness
(19) J213 Body Wiring Harness

Items
(20) X210 Instrument Panel Wiring Harness to Body Wiring Harness
(21) J200 Body Wiring Harness (LZ0)
(22) J201 Body Wiring Harness (FHX)
(23) J202 Body Wiring Harness (BRS)
(24) X225 Front Floor Console Wiring Harness to Body Wiring Harness (D07)
(25) J308 Body Wiring Harness
(26) J307 Body Wiring Harness
(27) X331 Front Seat Wiring Harness - Driver to Body Wiring Harness

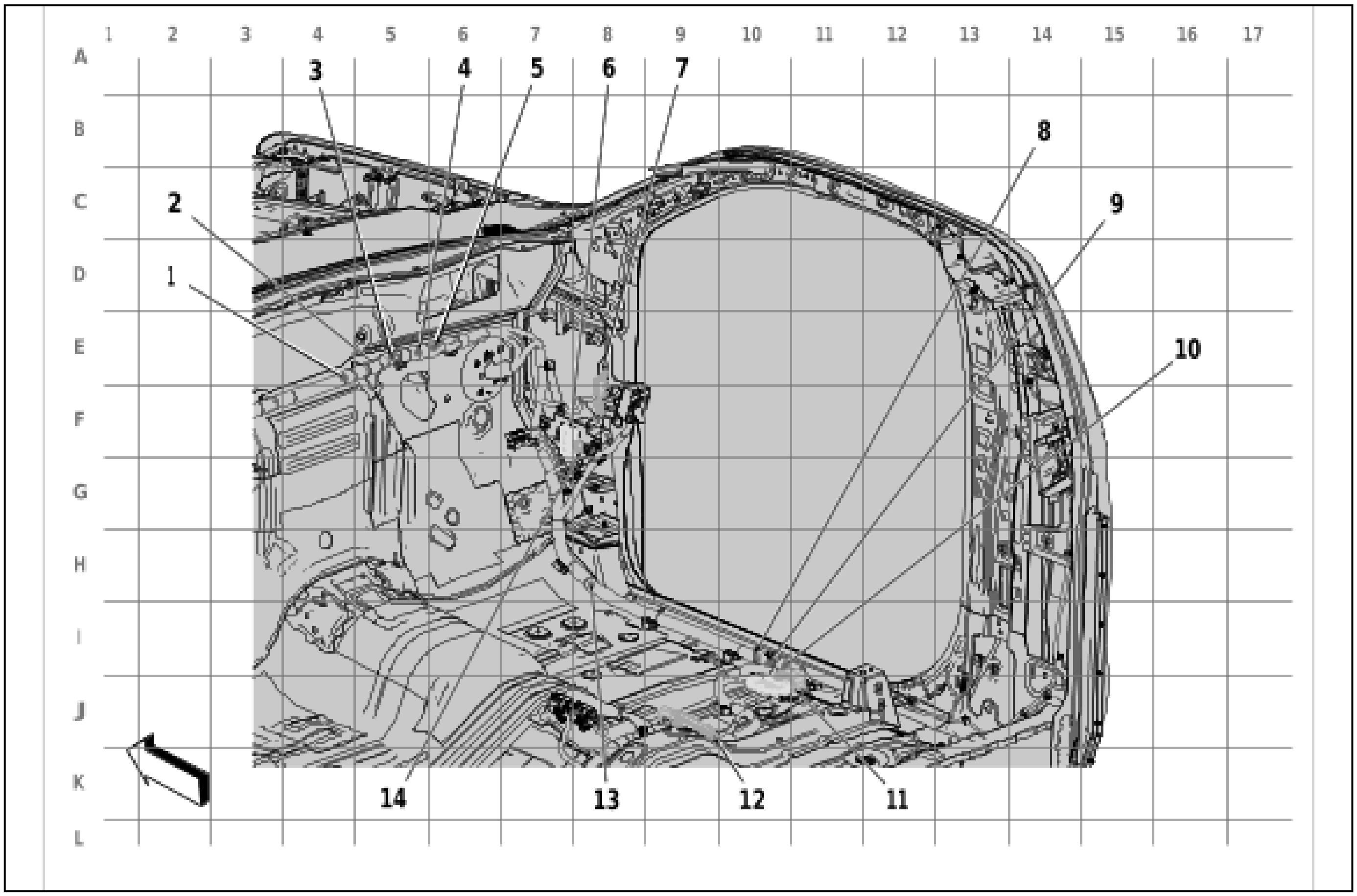
Passenger Compartment - Body Wiring Harness - Left Rear - Regular Cab



5965522

Items
(1) X324 Body Wiring Harness to Body Rear Wiring Harness Extension Harness (KI4 / KI5)

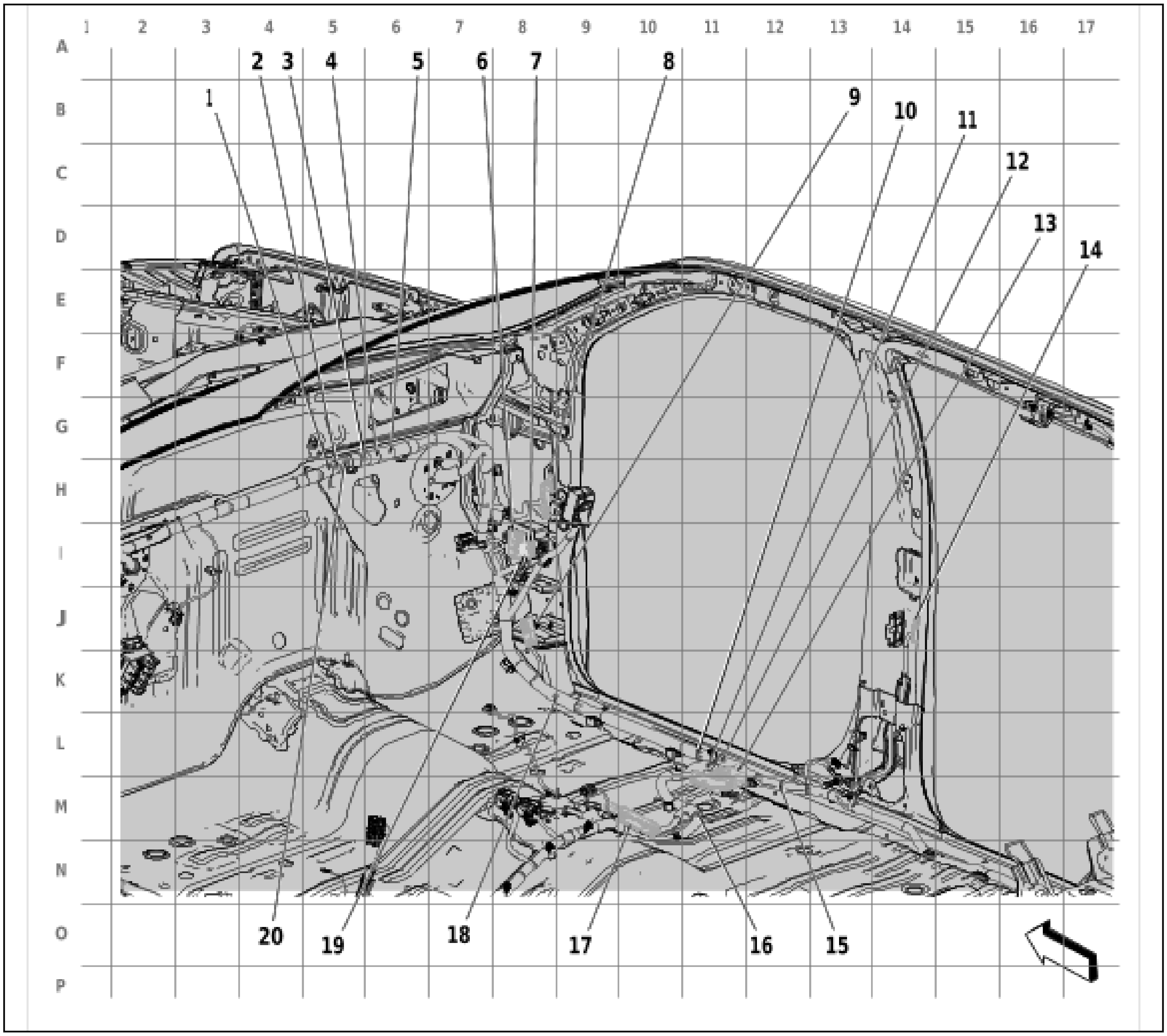
Passenger Compartment - Body Wiring Harness - Right Front - Regular Cab



5965524

Items
(1) J212 Body Wiring Harness
(2) J215 Body Wiring Harness
(3) J213 Body Wiring Harness
(4) J218 Body Wiring Harness
(5) J217 Body Wiring Harness
(6) X211 Instrument Panel Wiring Harness to Body Wiring Harness
(7) X600 Front Side Door Door Wiring Harness - Passenger to Body Wiring Harness
(8) J304 Body Wiring Harness
(9) J310 Body Wiring Harness
(10) J305 Body Wiring Harness
(11) X336 Front Seat Wiring Harness - Passenger to Body Wiring Harness
(12) X227 Front Floor Console Wiring Harness to Body Wiring Harness (AZ3 / D07)
(13) J314 Body Wiring Harness
(14) X217 Body Wiring Harness to Instrument Panel Wiring Harness (UV2 / UVB)

Passenger Compartment - Body Wiring Harness - Right Front - Double Cab/Crew Cab

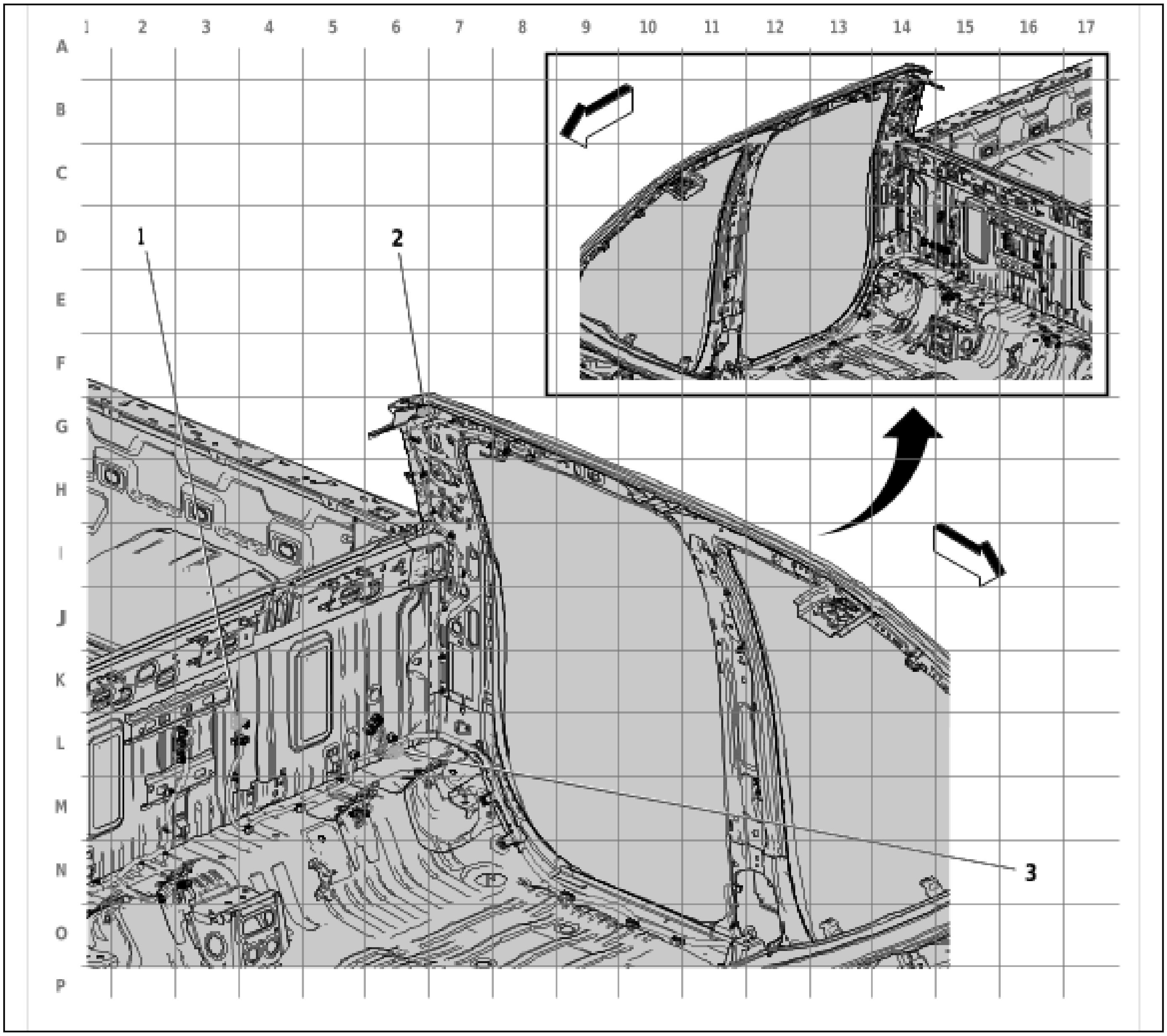


5965525

Items
(1) J215 Body Wiring Harness
(2) J213 Body Wiring Harness
(3) J218 Body Wiring Harness
(4) J217 Body Wiring Harness
(5) J219 Body Wiring Harness
(6) X211 Instrument Panel Wiring Harness to Body Wiring Harness
(7) X218 Instrument Panel Wiring Harness to Body Wiring Harness
(8) X600 Front Side Door Door Wiring Harness - Passenger to Body Wiring Harness
(9) X251 HVAC Wiring Harness to Body Wiring Harness (C32)
(10) J304 Body Wiring Harness

Items
(11) J310 Body Wiring Harness
(12) J305 Body Wiring Harness
(13) X336 Front Seat Wiring Harness - Passenger to Body Wiring Harness
(14) X800 Rear Side Door Door Wiring Harness - Right Rear to Body Wiring Harness (Double Cab / Crew Cab)
(15) J312 Body Wiring Harness
(16) J309 Body Wiring Harness
(17) X227 Front Floor Console Wiring Harness to Body Wiring Harness (AZ3 / D07)
(18) J314 Body Wiring Harness
(19) X217 Body Wiring Harness to Instrument Panel Wiring Harness (UV2 / UVB)
(20) J216 Body Wiring Harness

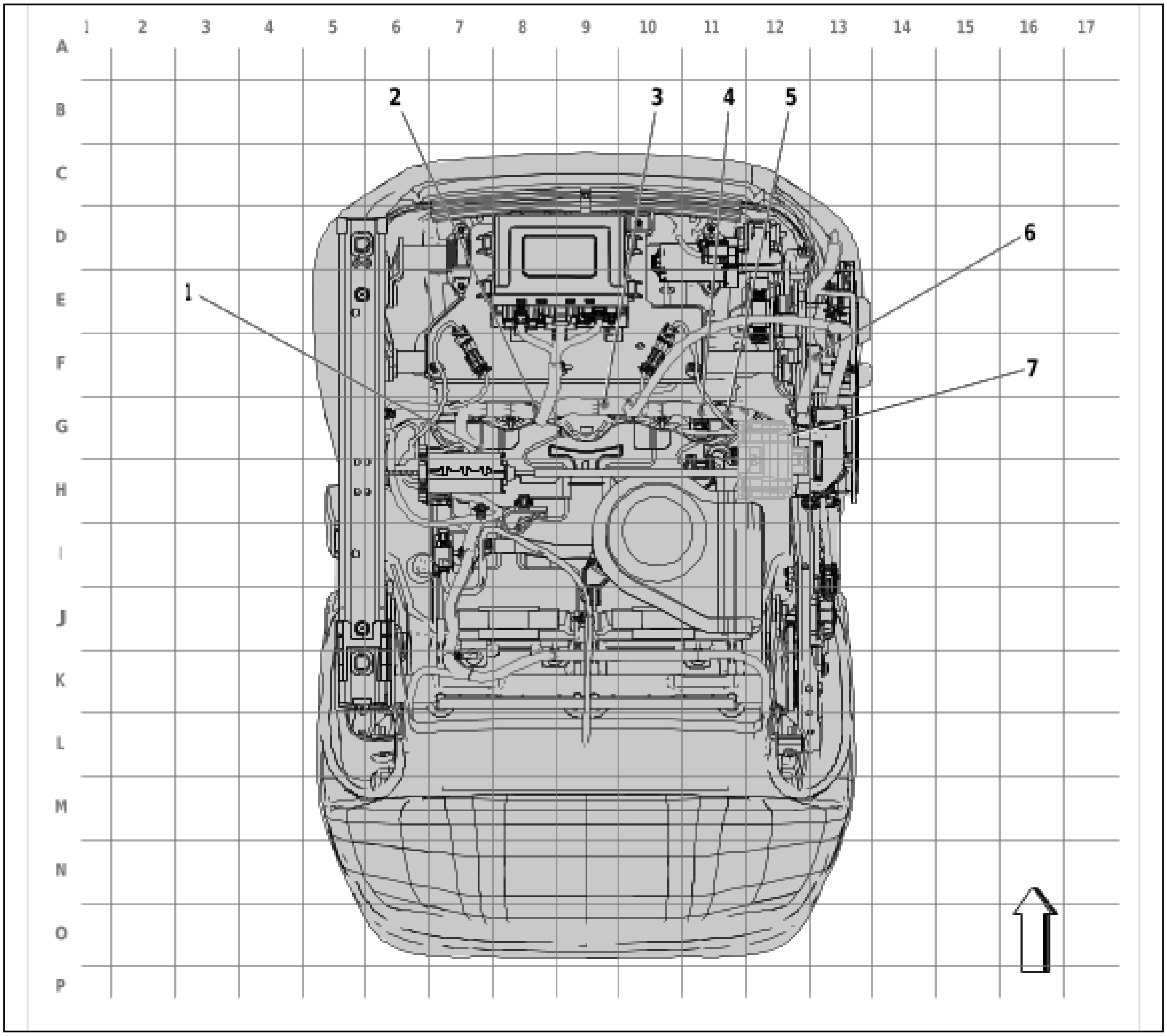
Passenger Compartment - Body Wiring Harness - Rear - Double Cab/Crew Cab



5965523

Items
(1) X324 Body Wiring Harness to Body Rear Wiring Harness Extension Harness (KI4 / KI5)
(2) X309 Body Wiring Harness to Inside Rearview Mirror Wiring Harness - Jumper (UVN)
(3) X340 Body Wiring Harness to Rear Seat Heater Control Wiring Harness (KA6)

Passenger Compartment - Front Seat Wiring Harness - Driver

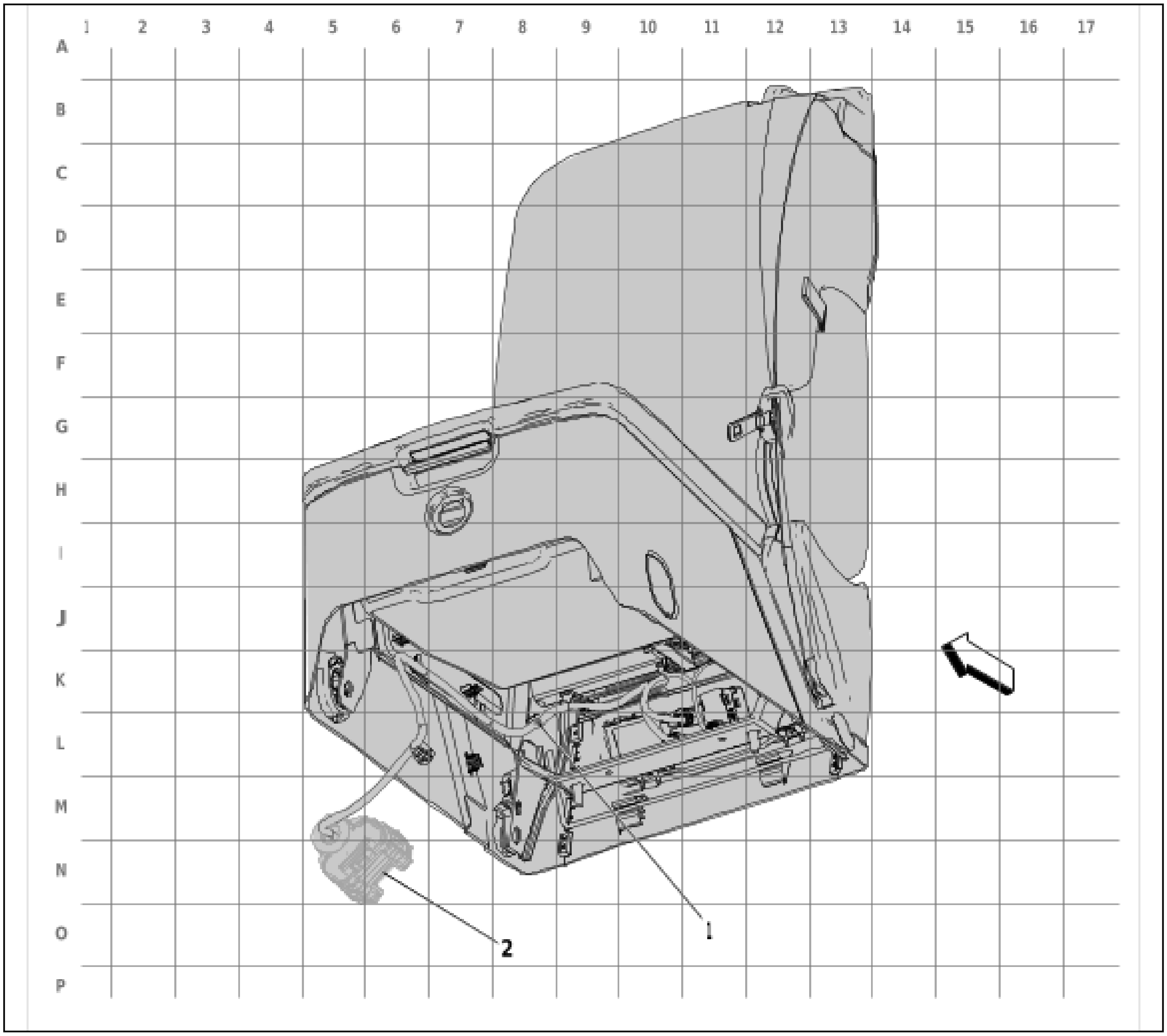


5978852

Items
(1) J339 Front Seat Wiring Harness - Driver (KA1 / KQV)
(2) J329 Front Seat Wiring Harness - Driver (KQV)
(3) J328 Front Seat Wiring Harness - Driver (A45)
(4) J336 Front Seat Wiring Harness - Driver (KQV)
(5) J338 Front Seat Wiring Harness - Driver

Items
(6) J337 Front Seat Wiring Harness - Driver
(7) X331 Front Seat Wiring Harness - Driver to Body Wiring Harness

Passenger Compartment - Front Seat Wiring Harness - Center (AZ3)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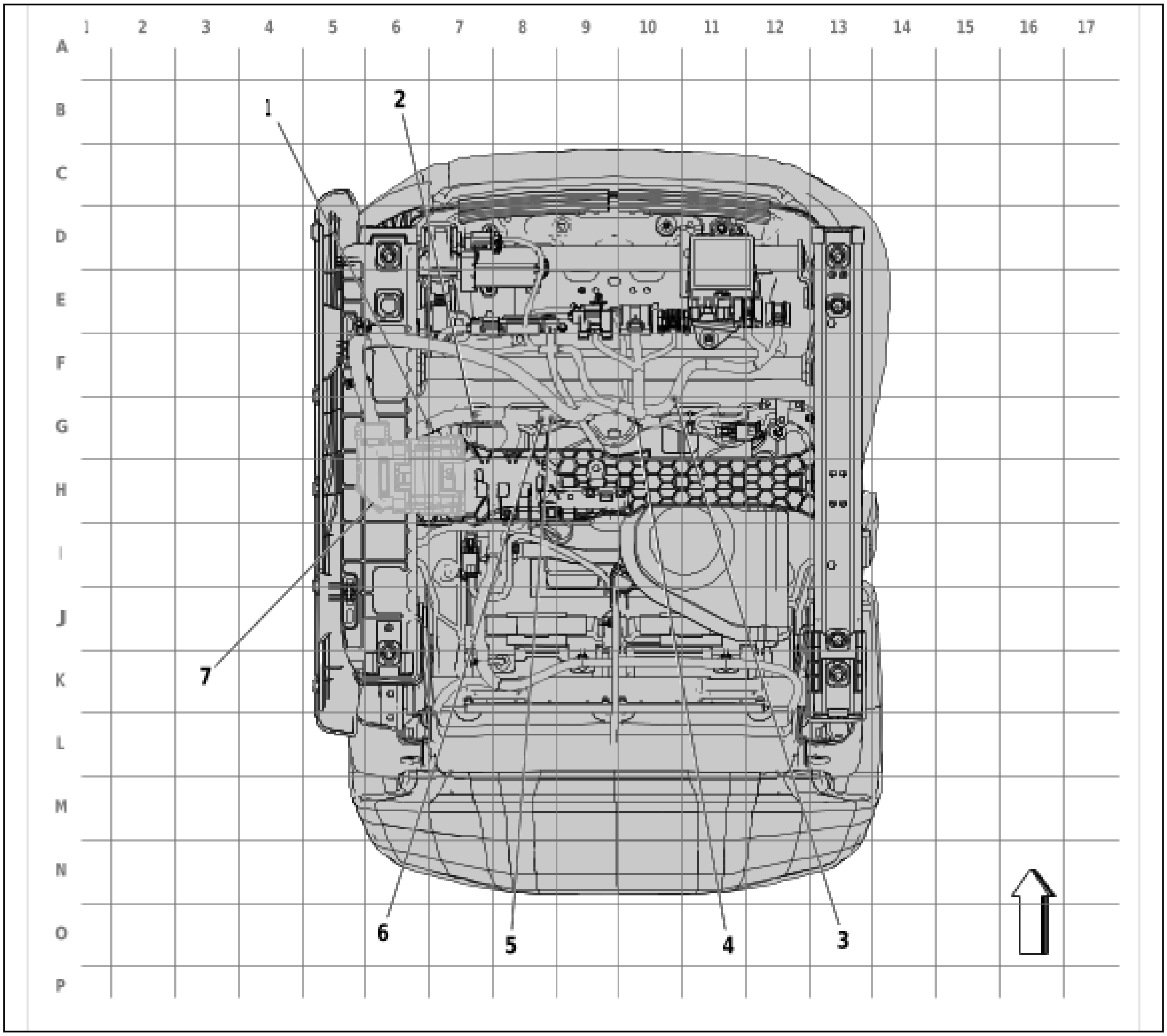
5990991

Items
(1) J345 Front Seat Wiring Harness - Center (AZ3)
(2) X227 Front Floor Console Wiring Harness to Body Wiring Harness (AZ3 / D07)

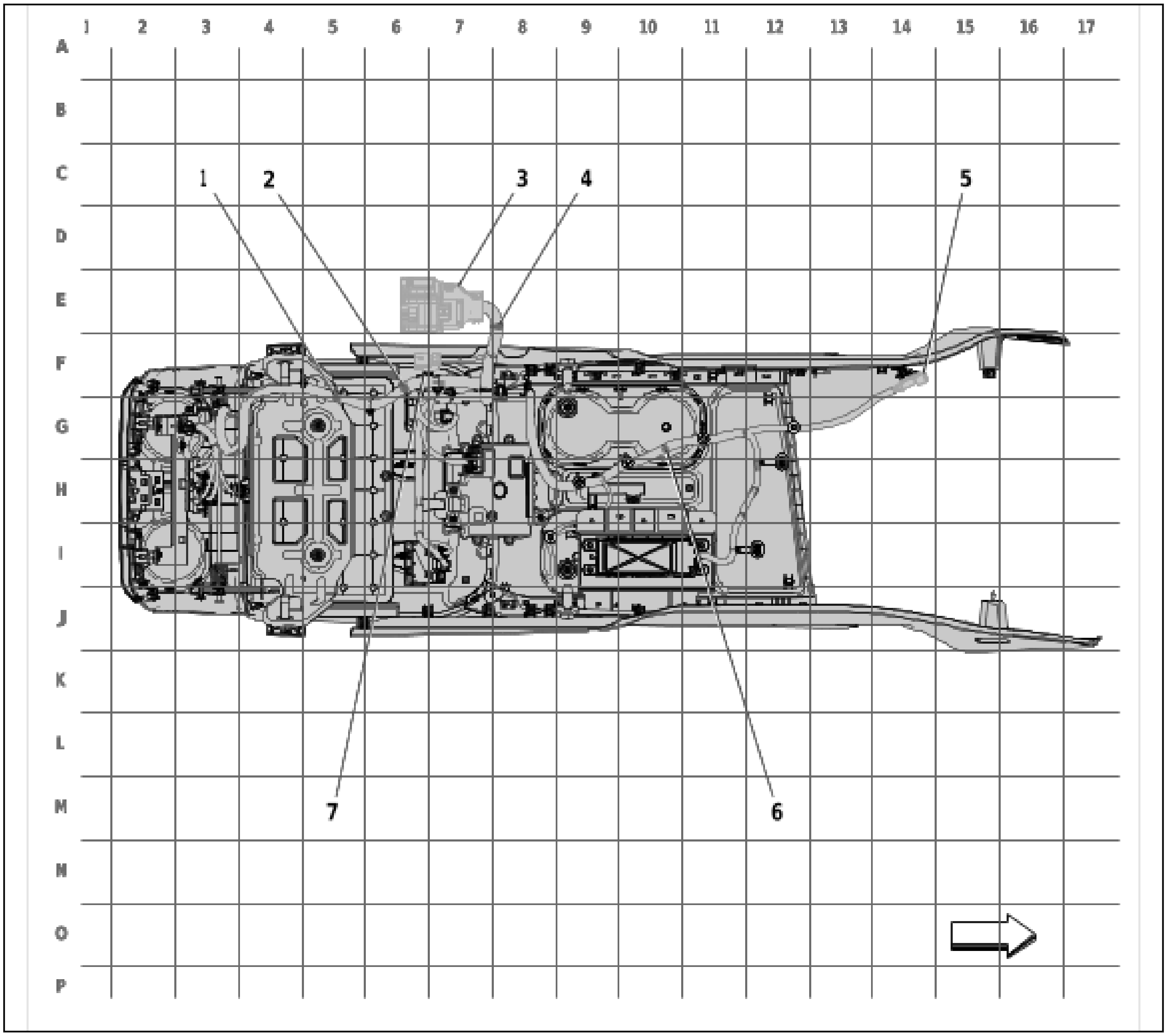
Passenger Compartment - Front Seat Wiring Harness - Passenger



5978853

Items
(1) J353 Front Seat Wiring Harness - Passenger
(2) J347 Front Seat Wiring Harness - Passenger (A45)
(3) J349 Front Seat Wiring Harness - Passenger (KQV)
(4) J348 Front Seat Wiring Harness - Passenger (KQV)
(5) J351 Front Seat Wiring Harness - Passenger
(6) J352 Front Seat Wiring Harness - Passenger (KA1 / KQV)
(7) X336 Front Seat Wiring Harness - Passenger to Body Wiring Harness

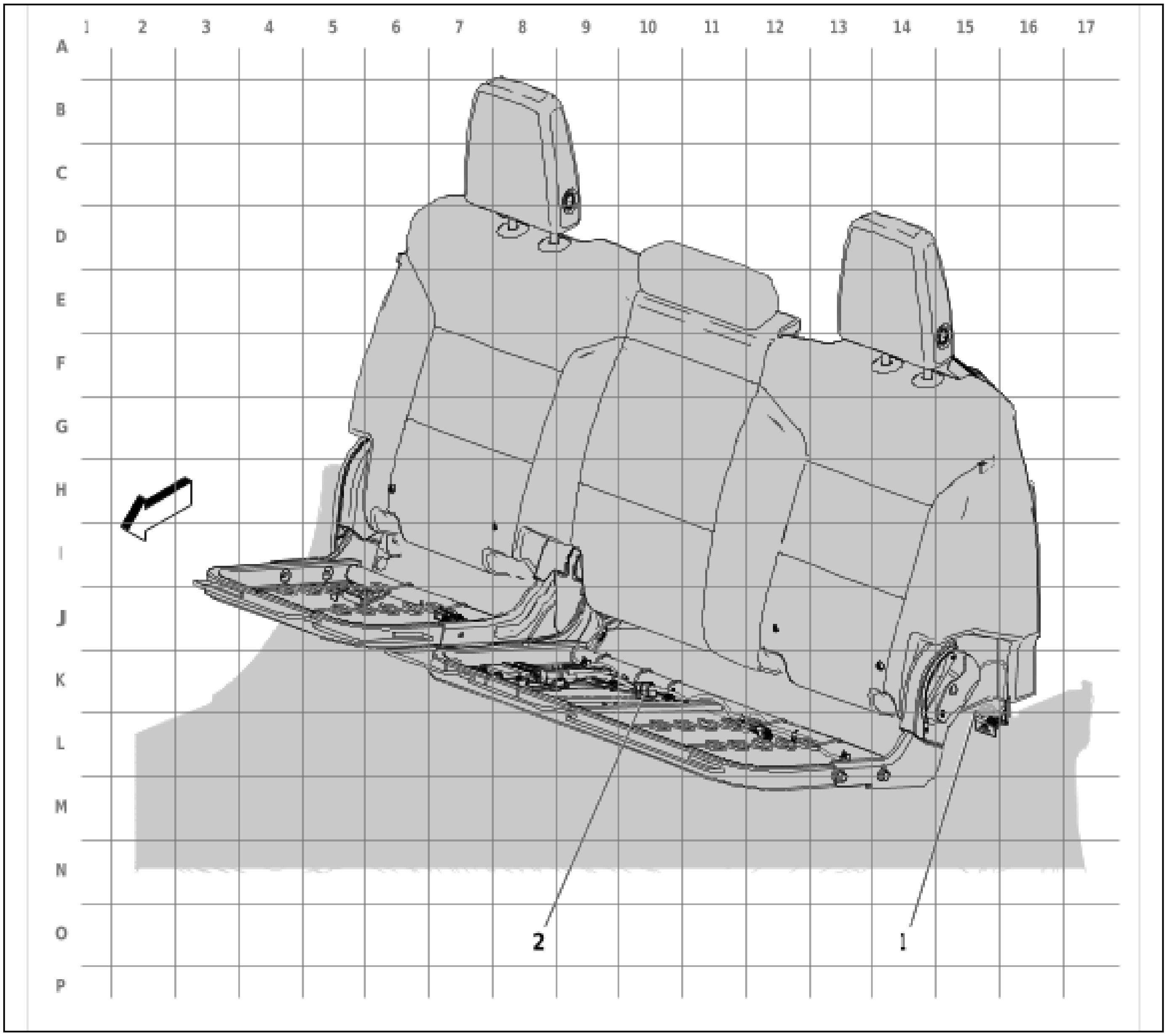
Passenger Compartment - Front Floor Console Wiring Harness (D07)



5970781

Items
(1) J341 Front Floor Console Wiring Harness
(2) J342 Front Floor Console Wiring Harness
(3) X227 Front Floor Console Wiring Harness to Body Wiring Harness (AZ3 / D07)
(4) J340 Front Floor Console Wiring Harness
(5) X226 Front Floor Console Wiring Harness to Instrument Panel Wiring Harness (D07)
(6) J344 Front Floor Console Wiring Harness
(7) X225 Front Floor Console Wiring Harness to Body Wiring Harness (D07)

Passenger Compartment - Rear Seat Heater Control Wiring Harness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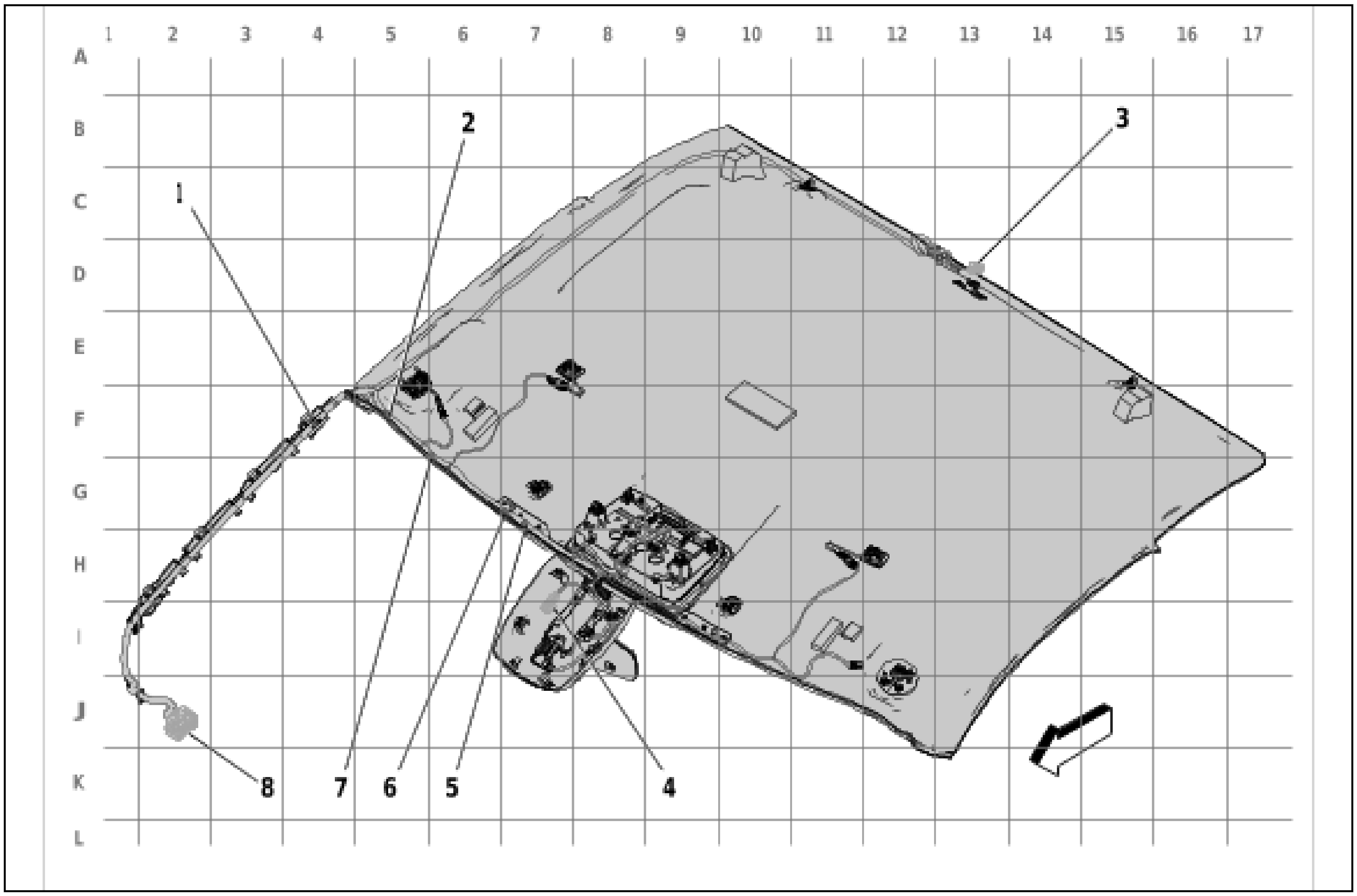
5978855

Items
(1) X340 Body Wiring Harness to Rear Seat Heater Control Wiring Harness (KA6)
(2) J350 Rear Seat Heater Control Wiring Harness - 2nd Row (KA6)

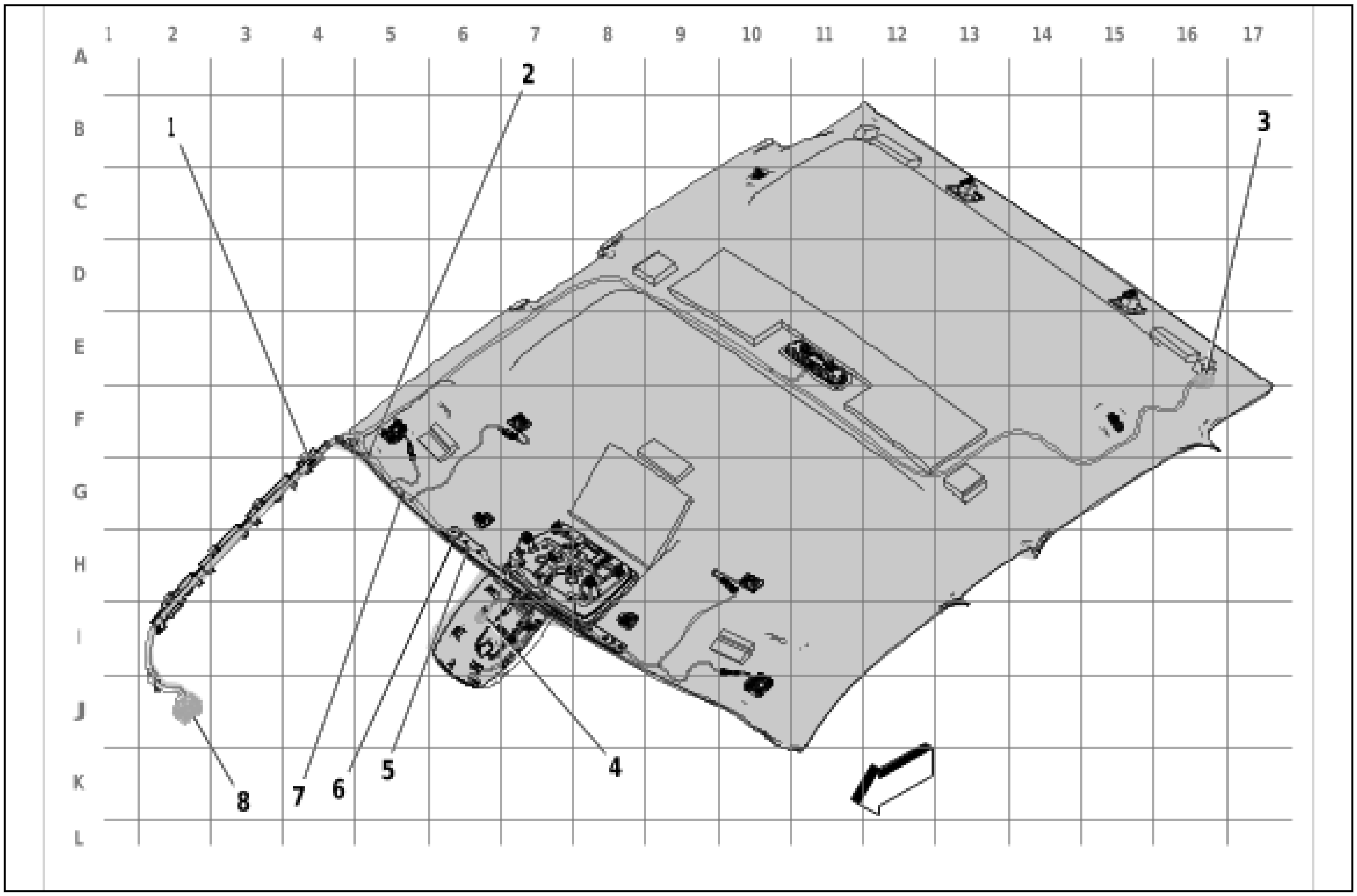
Roof - Dome Lamp Wiring Harness - Regular Cab



5978856

Items
(1) J330 Dome Lamp Wiring Harness
(2) J331 Dome Lamp Wiring Harness
(3) X371 Inside Rearview Mirror Wiring Harness - Jumper to Dome Lamp Wiring Harness (Double Cab / Crew Cab)
(4) X382 Headlamp Automatic Control Ambient Light Sensor Wiring Harness to Dome Lamp Wiring Harness (ASV)
(5) J334 Dome Lamp Wiring Harness
(6) J333 Dome Lamp Wiring Harness
(7) J332 Dome Lamp Wiring Harness
(8) X370 Dome Lamp Wiring Harness to Instrument Panel Wiring Harness (IOK / IOR)

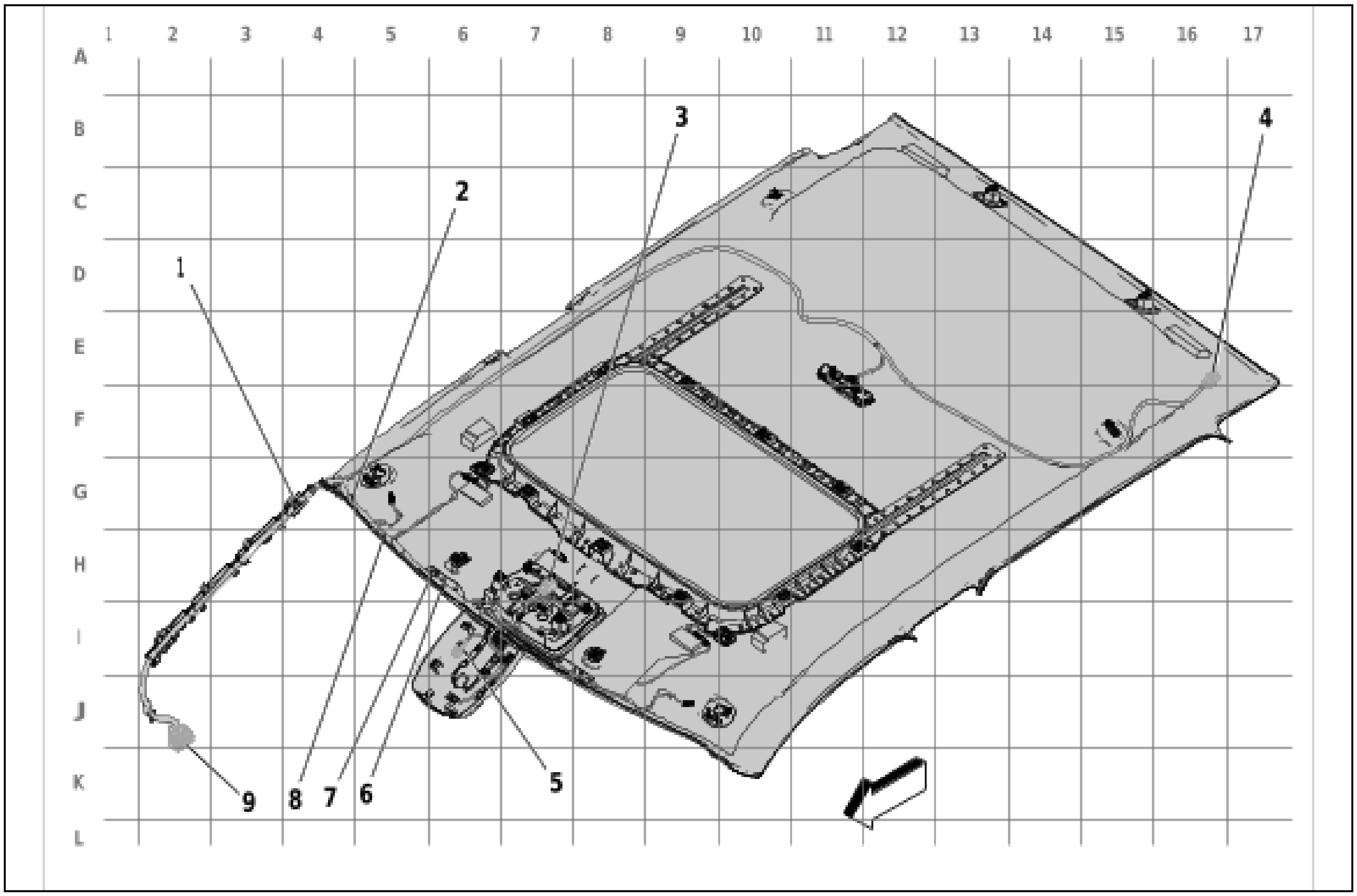
Roof - Dome Lamp Wiring Harness - Double Cab



5978857

Items
(1) J330 Dome Lamp Wiring Harness
(2) J331 Dome Lamp Wiring Harness
(3) X371 Inside Rearview Mirror Wiring Harness - Jumper to Dome Lamp Wiring Harness (Double Cab / Crew Cab)
(4) X382 Headlamp Automatic Control Ambient Light Sensor Wiring Harness to Dome Lamp Wiring Harness (ASV)
(5) J334 Dome Lamp Wiring Harness
(6) J333 Dome Lamp Wiring Harness
(7) J332 Dome Lamp Wiring Harness
(8) X370 Dome Lamp Wiring Harness to Instrument Panel Wiring Harness (IOK / IOR)

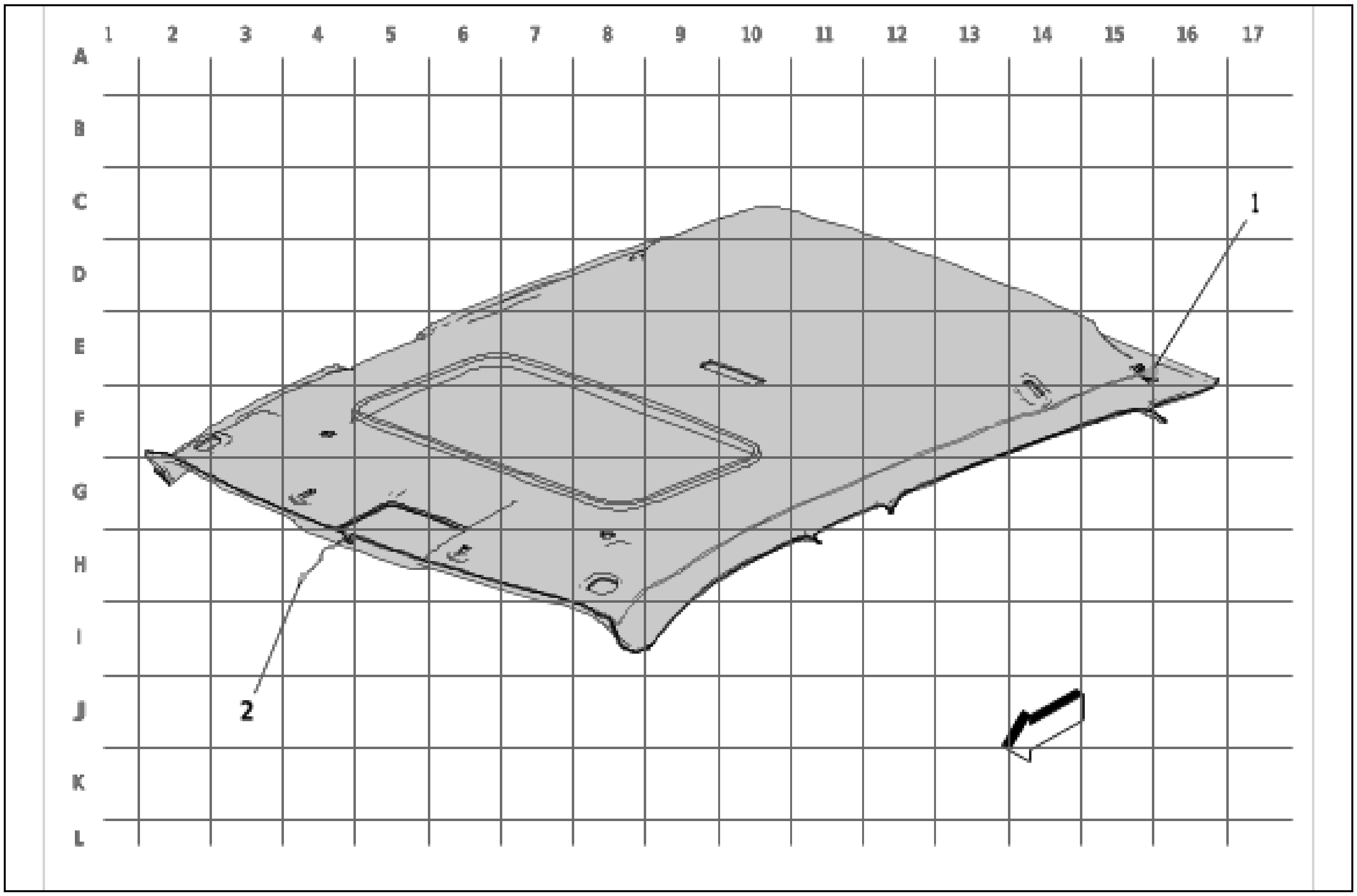
Roof - Dome Lamp Wiring Harness - Crew Cab



5978858

Items
(1) J330 Dome Lamp Wiring Harness
(2) J331 Dome Lamp Wiring Harness
(3) X375 Sunroof Wiring Harness to Dome Lamp Wiring Harness (CF5)
(4) X371 Inside Rearview Mirror Wiring Harness - Jumper to Dome Lamp Wiring Harness (Double Cab / Crew Cab)
(5) X382 Headlamp Automatic Control Ambient Light Sensor Wiring Harness to Dome Lamp Wiring Harness (ASV)
(6) J334 Dome Lamp Wiring Harness
(7) J333 Dome Lamp Wiring Harness
(8) J332 Dome Lamp Wiring Harness
(9) X370 Dome Lamp Wiring Harness to Instrument Panel Wiring Harness (IOK / IOR)

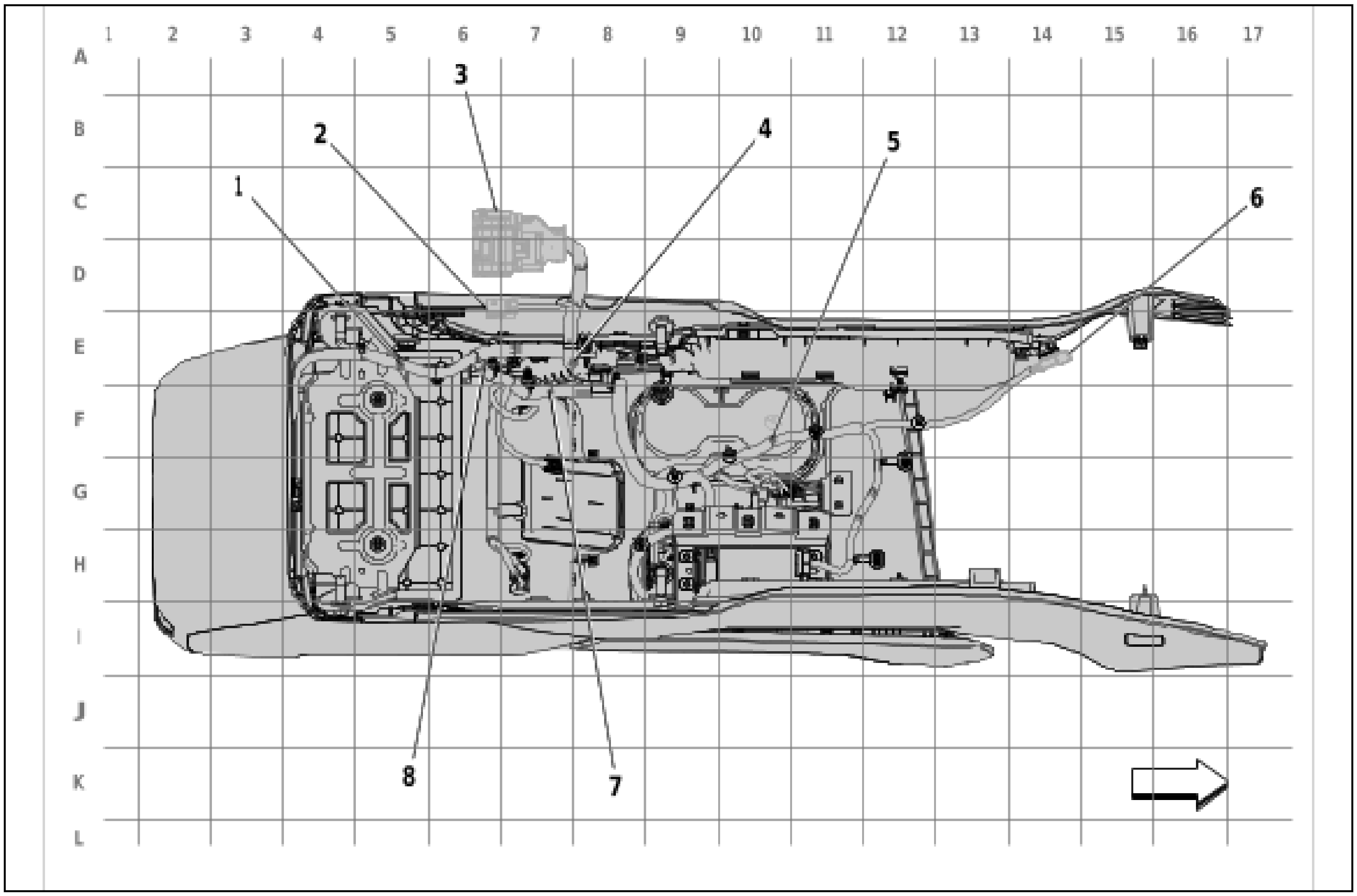
Roof - Rearview Driver Information Camera Rear Closure Coaxial Cable (DRZ)



6050078

Items
(1) X985 Rearview Driver Information Camera Rear Closure Coaxial Cable to Inside Rearview Mirror Wiring Harness - Jumper (DRZ)
(2) X381 Rearview Driver Information Camera Rear Closure Coaxial Cable to Rearview Driver Information Camera Rear Closure Coaxial Cable (DRZ)

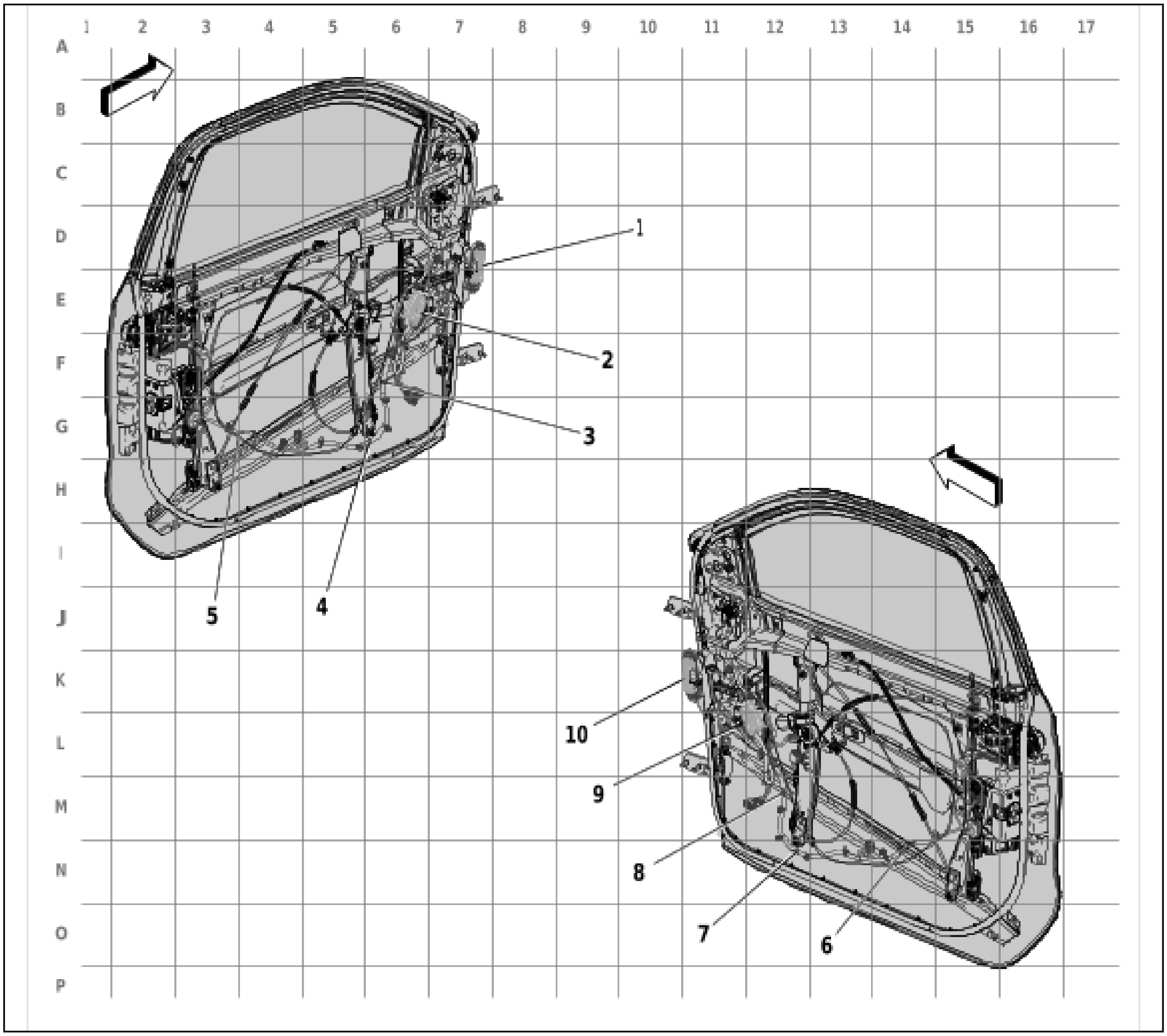
Center Console - Front Floor Console Wiring Harness



5971970

Items
(1) J141 Accessory Wiring Harness (VYU)
(2) X225 Front Floor Console Wiring Harness to Body Wiring Harness (D07)
(3) X227 Front Floor Console Wiring Harness to Body Wiring Harness (AZ3 / D07)
(4) J340 Front Floor Console Wiring Harness
(5) J344 Front Floor Console Wiring Harness
(6) X226 Front Floor Console Wiring Harness to Instrument Panel Wiring Harness (D07)
(7) J343 Front Floor Console Wiring Harness (UBC+UBD)
(8) J342 Front Floor Console Wiring Harness

Doors - Front Side Door Door Wiring Harnesses - Regular Cab

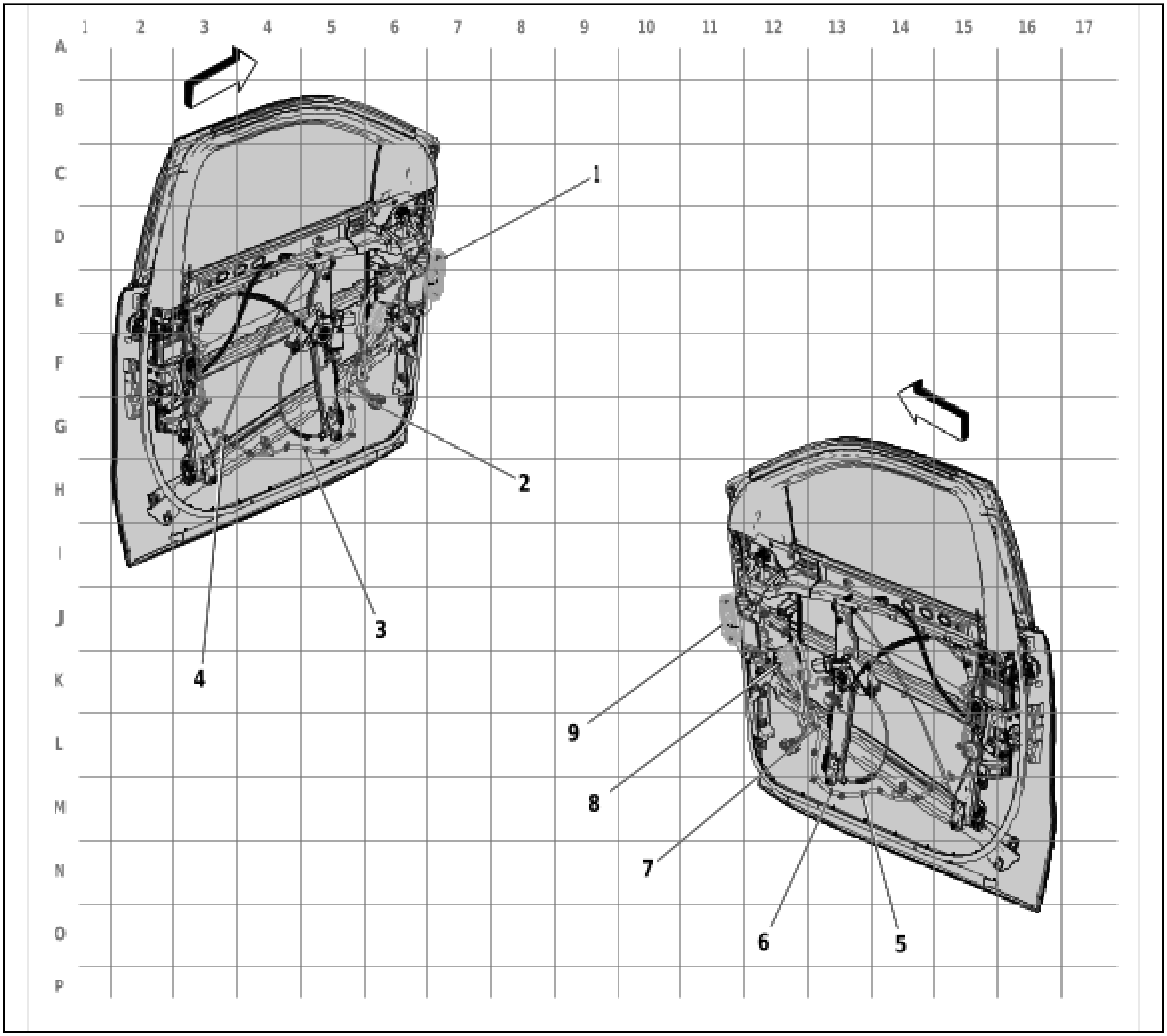


5978859

Items
(1) X500 Front Side Door Door Wiring Harness - Driver to Body Wiring Harness
(2) X505 Front Side Door Door Wiring Harness - Driver to Front Side Door Door Lock Door Wiring Harness - Driver
(3) J500 Front Side Door Door Wiring Harness - Driver
(4) J501 Front Side Door Door Wiring Harness - Driver
(5) J502 Front Side Door Door Wiring Harness - Driver
(6) J602 Front Side Door Door Wiring Harness - Passenger
(7) J600 Front Side Door Door Wiring Harness - Passenger
(8) J601 Front Side Door Door Wiring Harness - Passenger

Items
(9) X605 Front Side Door Door Wiring Harness - Passenger to Front Side Door Door Lock Door Wiring Harness - Passenger
(10) X600 Front Side Door Door Wiring Harness - Passenger to Body Wiring Harness

Doors - Front Side Door Door Wiring Harnesses - Double Cab/Crew Cab

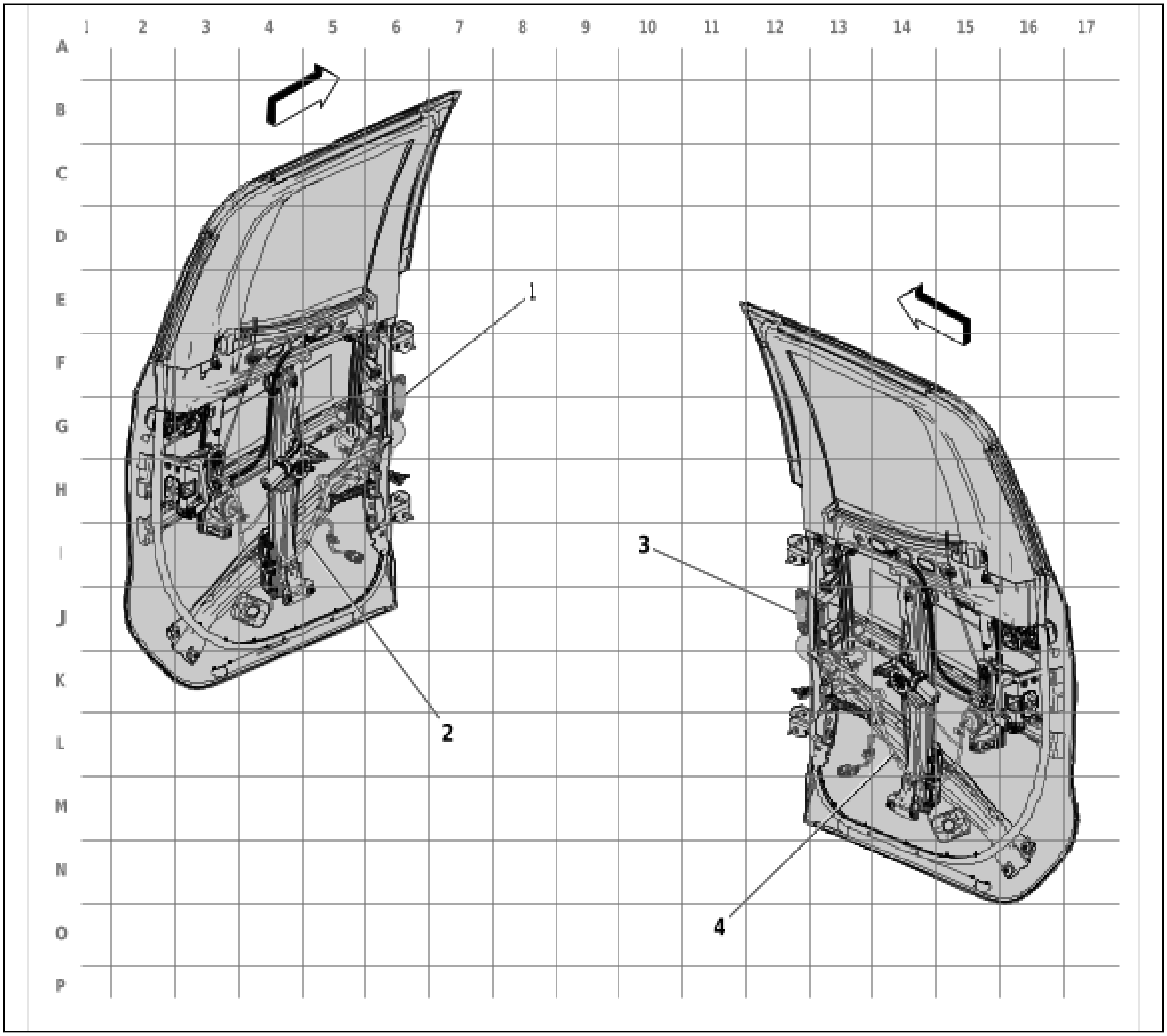


5978860

Items
(1) X500 Front Side Door Door Wiring Harness - Driver to Body Wiring Harness
(2) J500 Front Side Door Door Wiring Harness - Driver
(3) J501 Front Side Door Door Wiring Harness - Driver
(4) J502 Front Side Door Door Wiring Harness - Driver
(5) J602 Front Side Door Door Wiring Harness - Passenger
(6) J601 Front Side Door Door Wiring Harness - Passenger

Items
(7) J600 Front Side Door Door Wiring Harness - Passenger
(8) X605 Front Side Door Door Wiring Harness - Passenger to Front Side Door Door Lock Door Wiring Harness - Passenger
(9) X600 Front Side Door Door Wiring Harness - Passenger to Body Wiring Harness

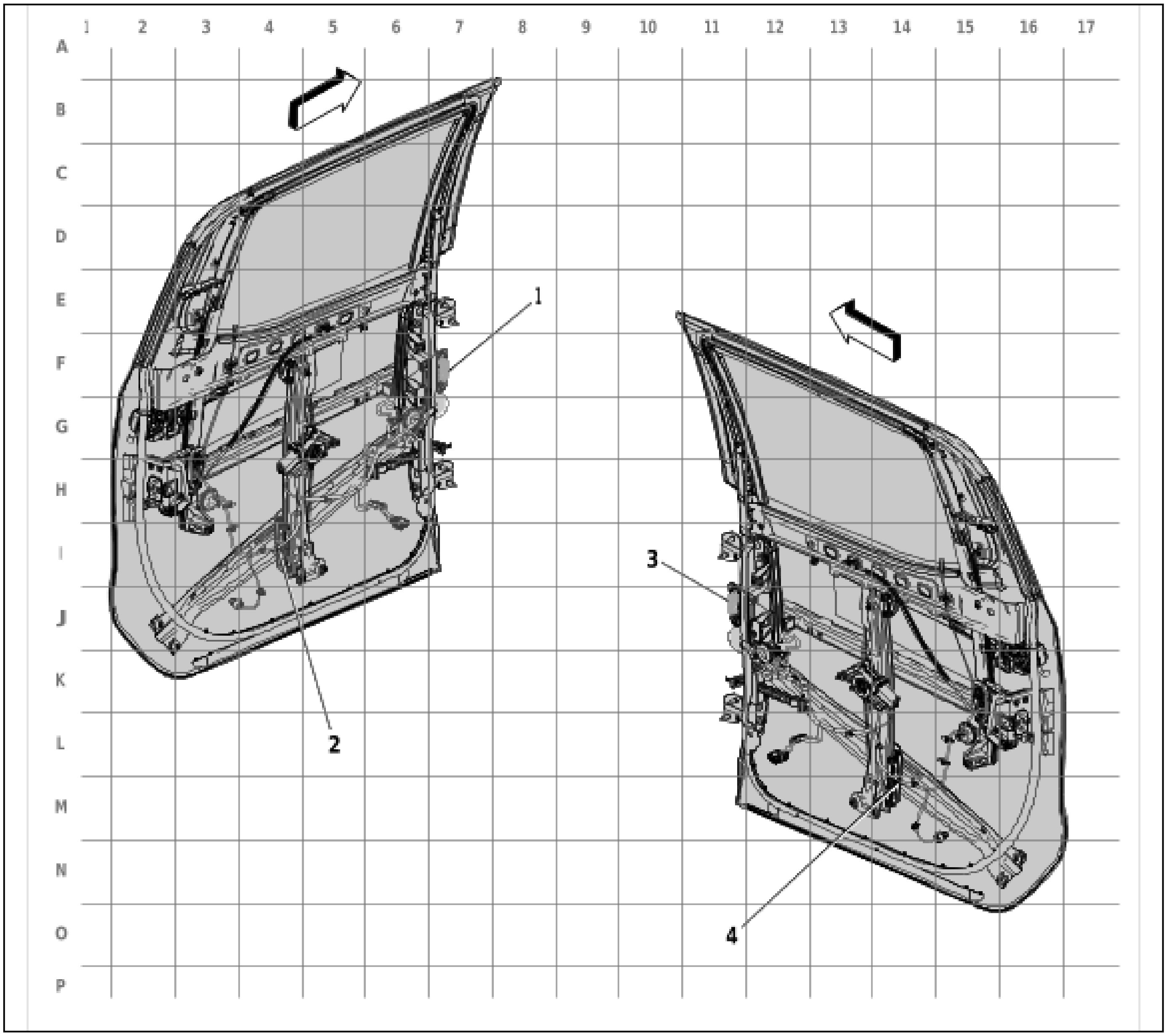
Doors - Rear Side Door Door Wiring Harnesses - Double Cab



5978861

Items
(1) X700 Rear Side Door Door Wiring Harness - Left Rear to Body Wiring Harness (Double Cab / Crew Cab)
(2) J702 Rear Side Door Door Wiring Harness - Left
(3) X800 Rear Side Door Door Wiring Harness - Right Rear to Body Wiring Harness (Double Cab / Crew Cab)
(4) J802 Rear Side Door Door Wiring Harness - Right

Doors - Rear Side Door Door Wiring Harnesses - Crew Cab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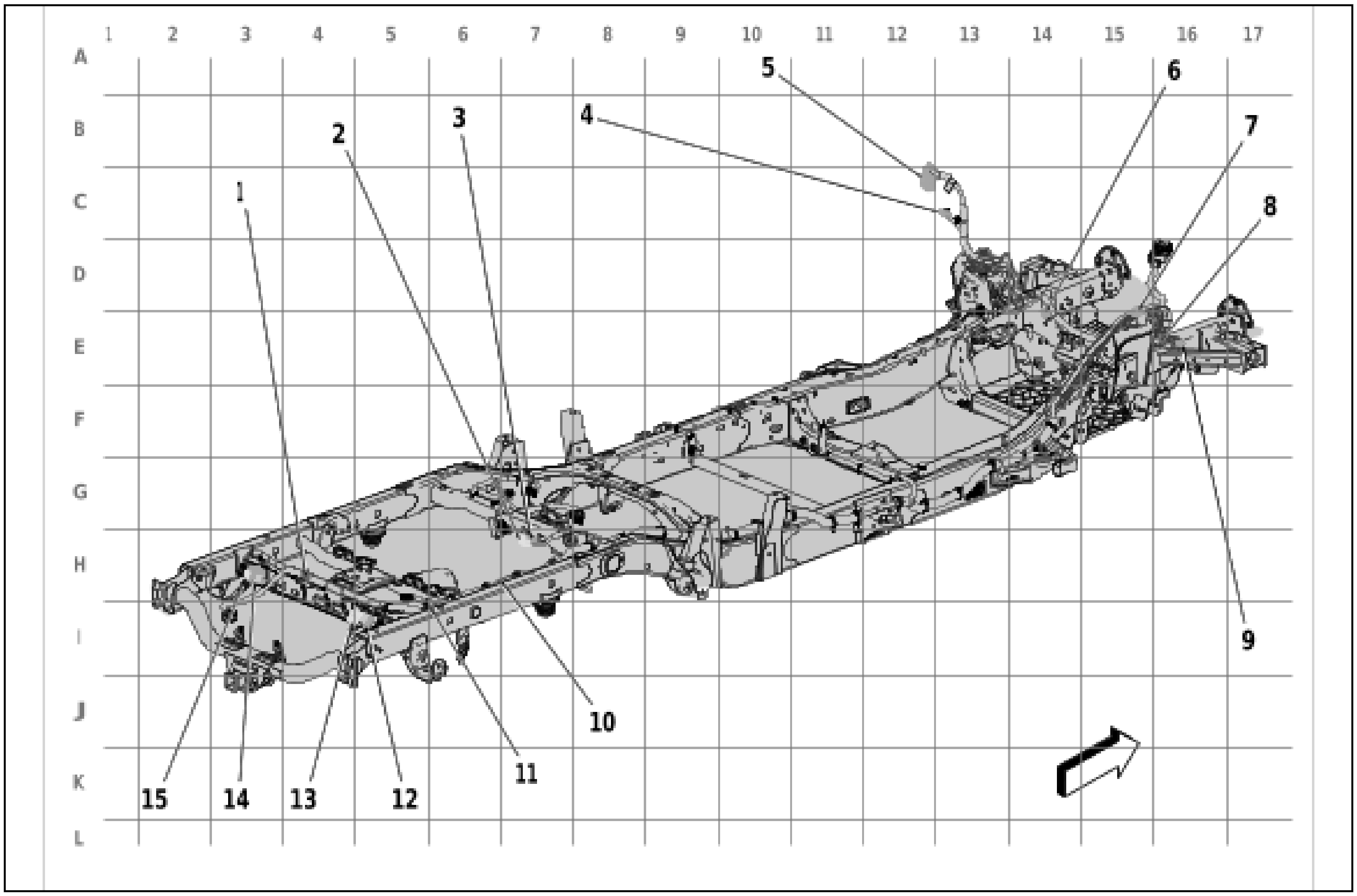
5978862

Items
(1) X700 Rear Side Door Door Wiring Harness - Left Rear to Body Wiring Harness (Double Cab / Crew Cab)
(2) J702 Rear Side Door Door Wiring Harness - Left
(3) X800 Rear Side Door Door Wiring Harness - Right Rear to Body Wiring Harness (Double Cab / Crew Cab)
(4) J802 Rear Side Door Door Wiring Harness - Right

Vehicle Underbody - Chassis Wiring Harness - Regular Cab

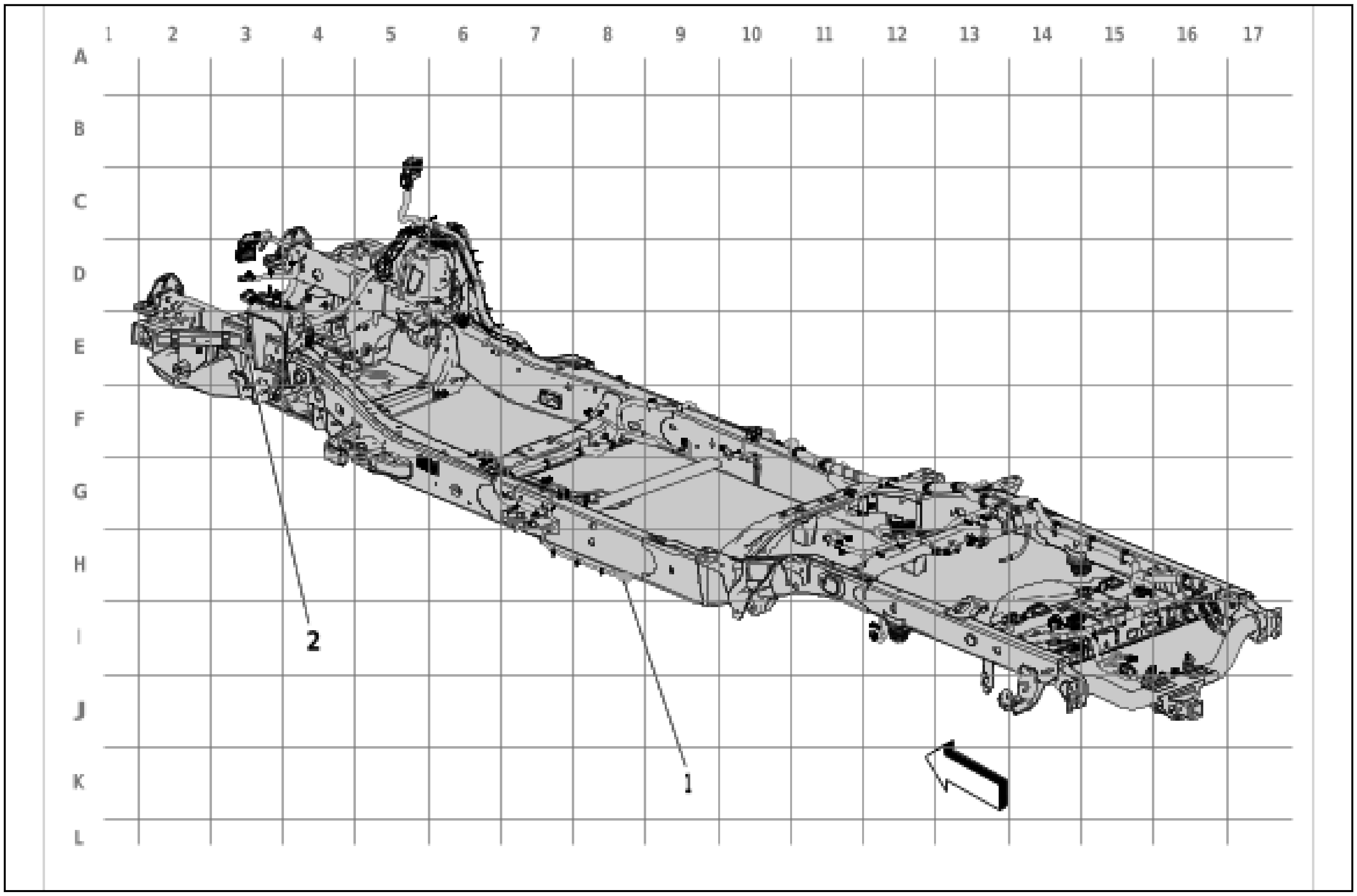


5965534

Items
(1) J402 Chassis Wiring Harness
(2) X420A Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness
(3) X420B Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness
(4) X400 Body Wiring Harness to Chassis Wiring Harness (Regular Cab / Double Cab / Crew Cab)
(5) X410 Chassis Wiring Harness to Body Wiring Harness
(6) X403 Chassis Wiring Harness to Power Steering Wiring Harness Extension Harness (Regular Cab / Double Cab / Crew Cab)
(7) X424 Body Wiring Harness to Chassis Wiring Harness (FHS)
(8) J135 Chassis Wiring Harness (JL1/Z82-JL1)
(9) X402C Body Wiring Harness to Chassis Wiring Harness (UV2)
(10) J400 Chassis Wiring Harness
(11) J401 Chassis Wiring Harness
(12) X414 Chassis Rear Wiring Harness to Chassis Wiring Harness (KC9 / KCA)
(13) X950 Rear Object Alarm Sensor Wiring Harness to Chassis Wiring Harness

Items
(14) X918 Endgate Wiring Harness to Chassis Wiring Harness
(15) X919 Endgate Wiring Harness to Chassis Wiring Harness (UV2 / UVB)

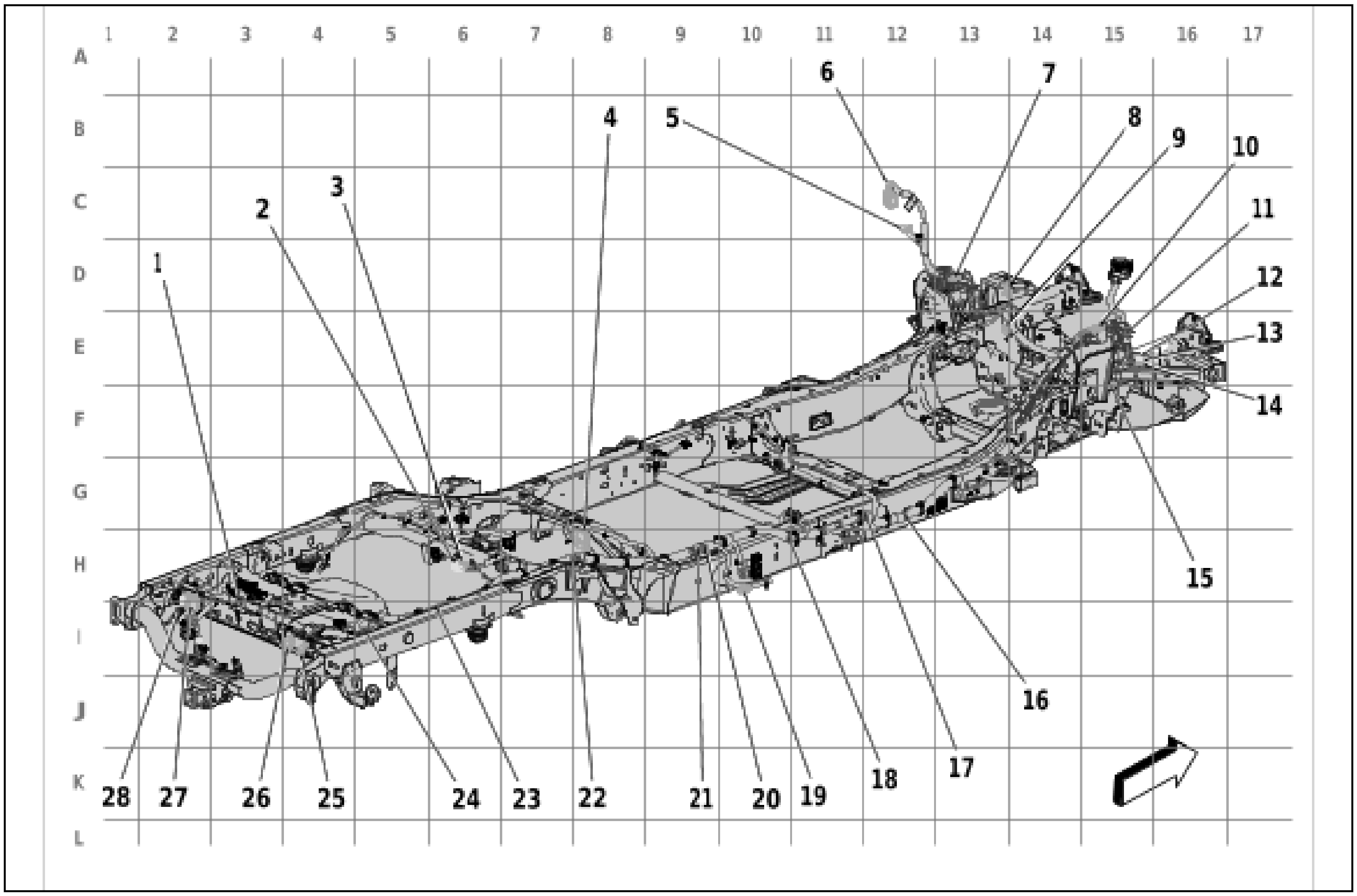
Vehicle Underbody - Chassis Wiring Harness - Left - Double Cab/Crew Cab



5965536

Items
(1) X412 Assist Step Wire Jumper - Left to Chassis Wiring Harness (BRS)
(2) X416A Chassis Wiring Harness to Electronic Suspension Strut Wiring Harness Extension Harness (Z45)

Vehicle Underbody - Chassis Wiring Harness - Right - Double Cab/Crew Cab

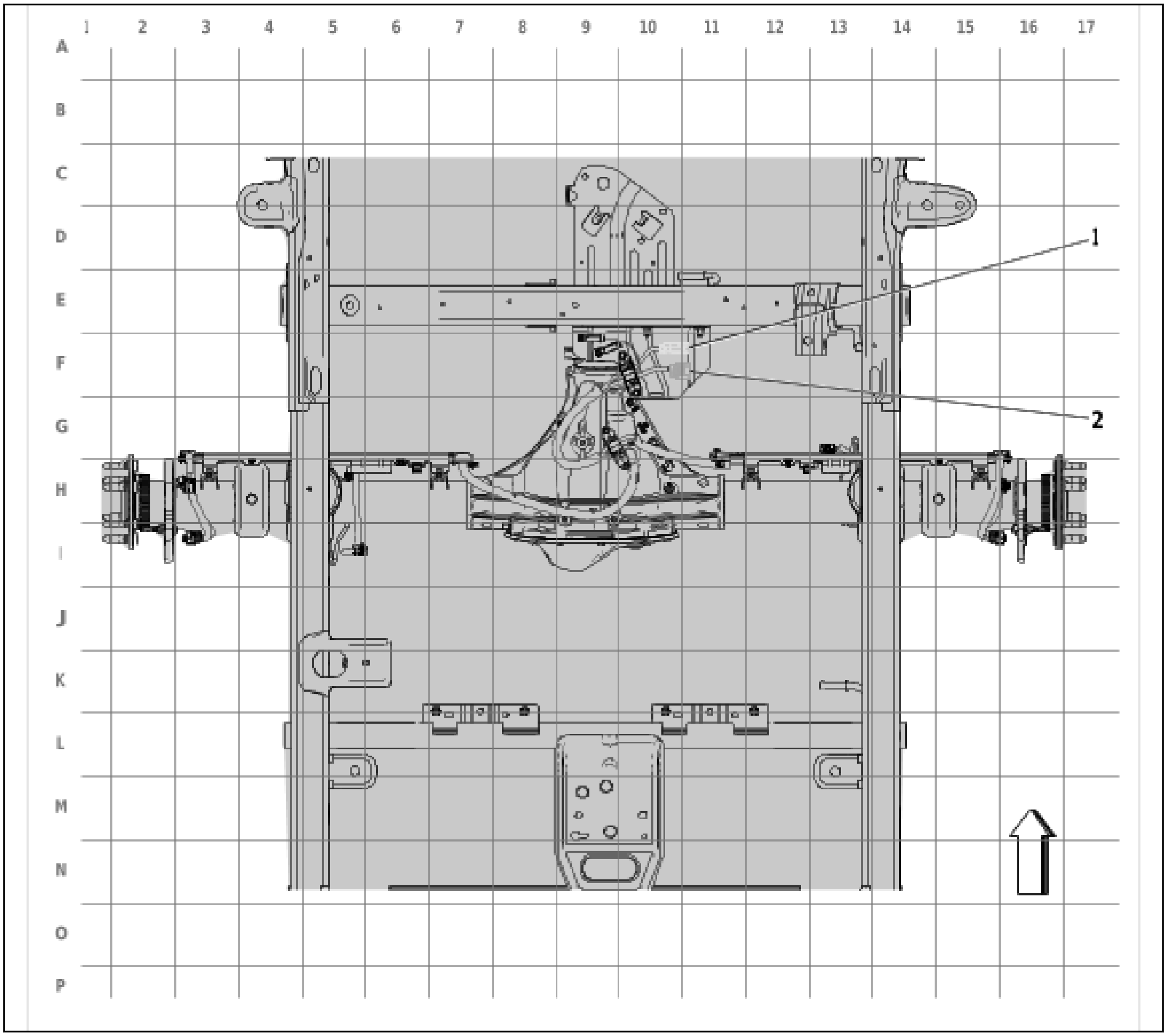


5965537

Items
(1) J402 Chassis Wiring Harness
(2) X420A Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness
(3) X420B Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness
(4) X404 Chassis Wiring Harness to Emission Reduction Fluid Tank Reservoir Wire Harness (FHX)
(5) X400 Body Wiring Harness to Chassis Wiring Harness (Regular Cab / Double Cab / Crew Cab)
(6) X410 Chassis Wiring Harness to Body Wiring Harness
(7) X416C Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness to Chassis Wiring Harness (G93)
(8) X401 Engine Wiring Harness to Chassis Wiring Harness (LZ0)
(9) X403 Chassis Wiring Harness to Power Steering Wiring Harness Extension Harness (Regular Cab / Double Cab / Crew Cab)
(10) X424 Body Wiring Harness to Chassis Wiring Harness (FHS)
(11) J135 Chassis Wiring Harness (JL1/Z82-JL1)
(12) X402B Body Wiring Harness to Chassis Wiring Harness (UV2)
(13) X402C Body Wiring Harness to Chassis Wiring Harness (UV2)

Items
(14) X402A Body Wiring Harness to Chassis Wiring Harness (UV2)
(15) X416B Chassis Wiring Harness to Electronic Suspension Strut Wiring Harness Extension Harness (Z45)
(16) J320 Chassis Wiring Harness
(17) J321 Chassis Wiring Harness
(18) J322 Chassis Wiring Harness
(19) X413 Assist Step Wire Jumper - Right to Chassis Wiring Harness (BRS)
(20) J323 Chassis Wiring Harness
(21) J324 Chassis Wiring Harness
(22) J326 Chassis Wiring Harness
(23) J400 Chassis Wiring Harness
(24) J401 Chassis Wiring Harness
(25) X414 Chassis Rear Wiring Harness to Chassis Wiring Harness (KC9 / KCA)
(26) X950 Rear Object Alarm Sensor Wiring Harness to Chassis Wiring Harness
(27) X918 Endgate Wiring Harness to Chassis Wiring Harness
(28) X919 Endgate Wiring Harness to Chassis Wiring Harness (UV2 / UVB)

Vehicle Underbody - Chassis Rear Wiring Harness Extension Harness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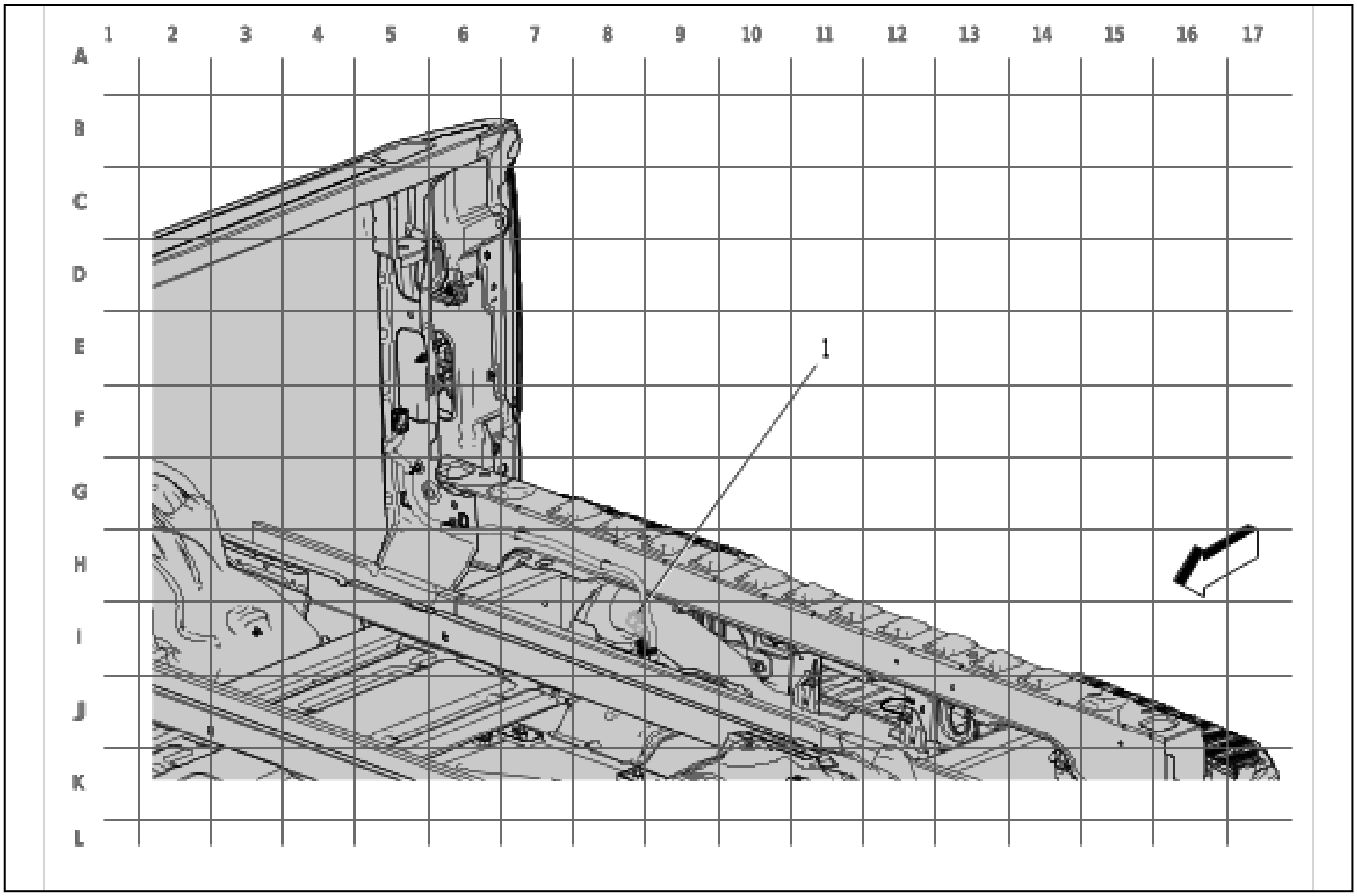
5978866

Items
(1) X420B Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness
(2) X420A Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness

Rear of Pickup Box - Chassis Rear Wiring Harness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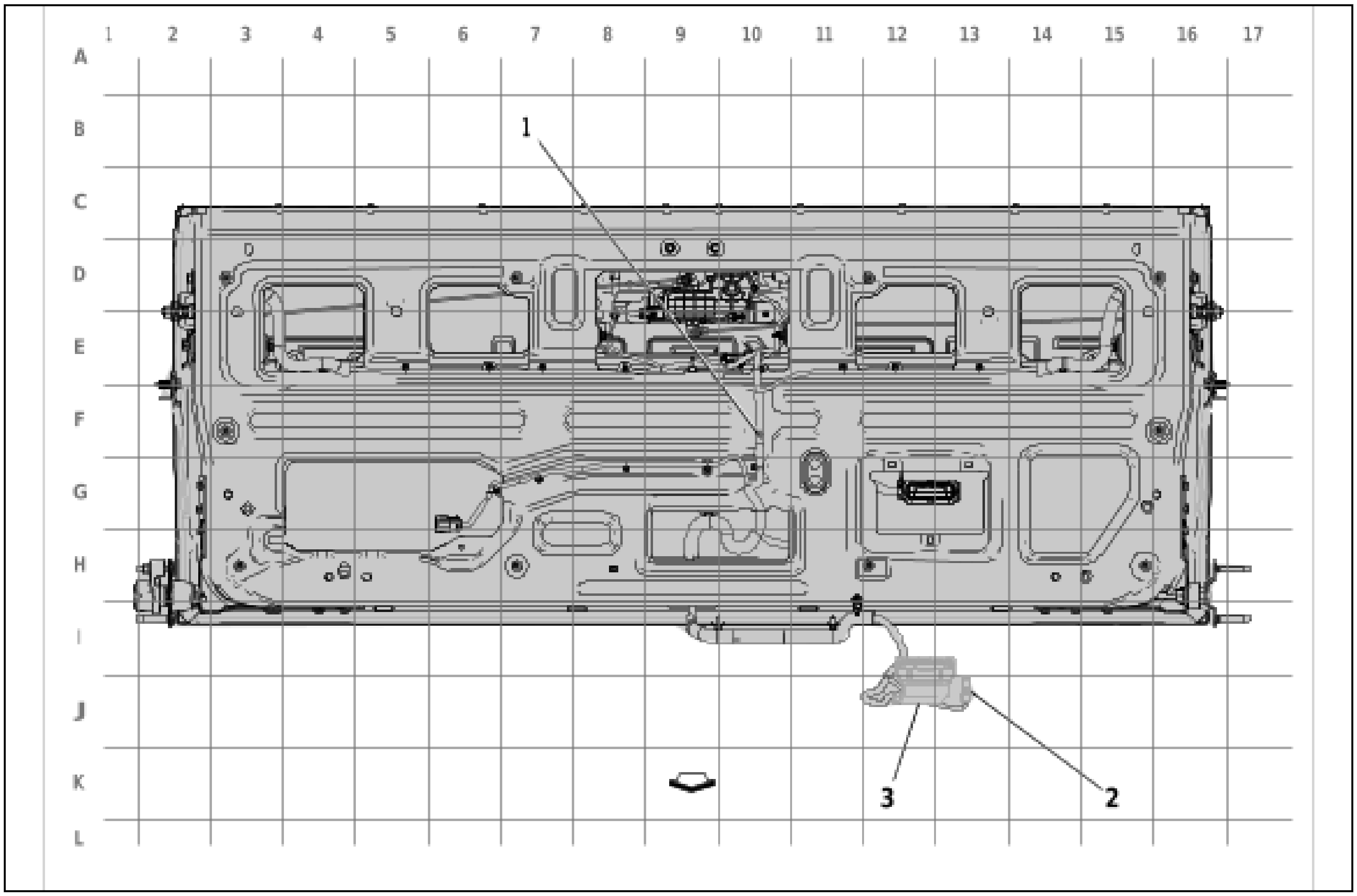
5978867

Items
(1) X414 Chassis Rear Wiring Harness to Chassis Wiring Harness (KC9 / KCA)

Rear of Vehicle - Endgate Wiring Harness (QK1)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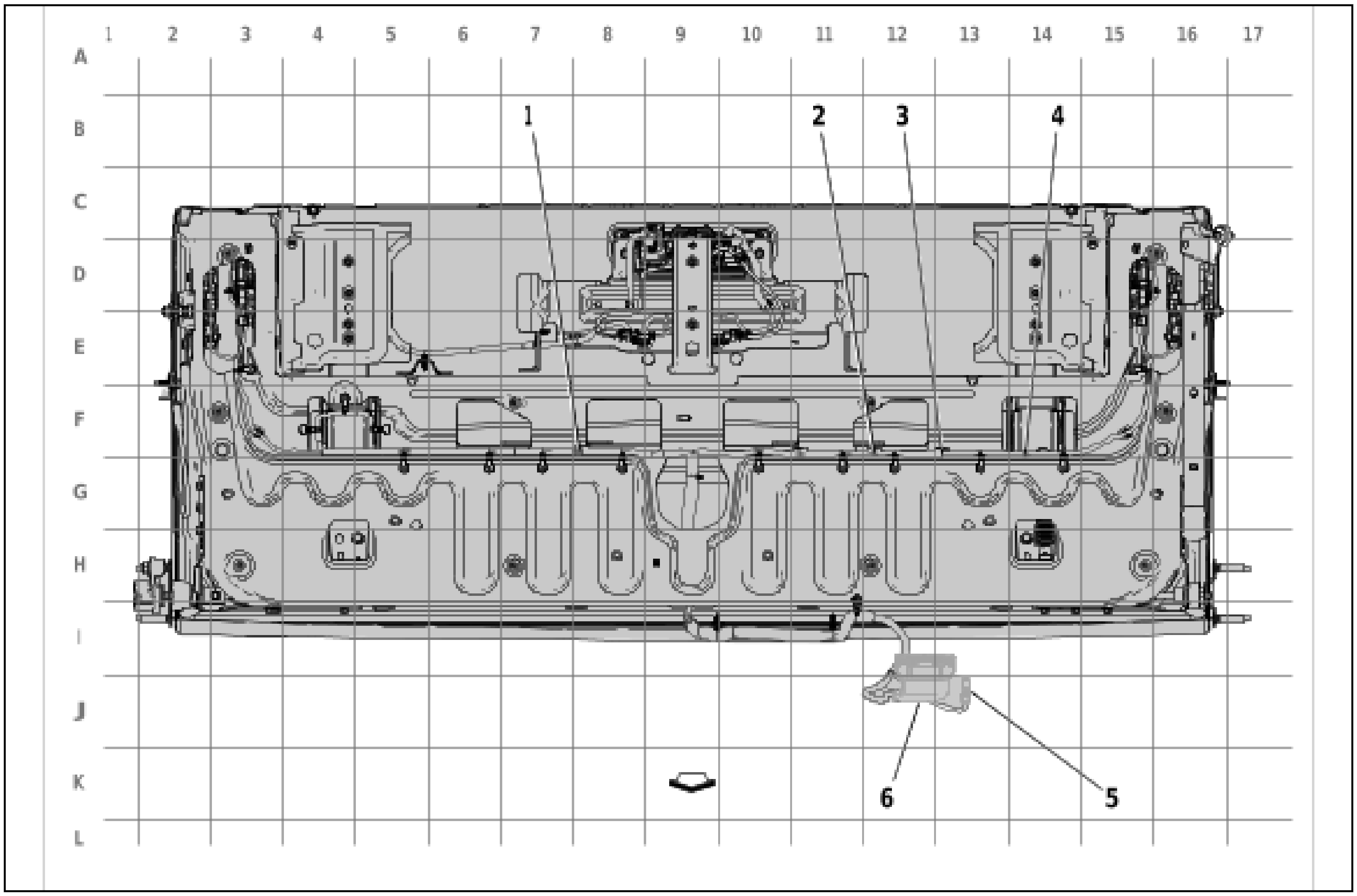
5965541

Items
(1) J913 Endgate Wiring Harness
(2) X919 Endgate Wiring Harness to Chassis Wiring Harness (UV2 / UVB)
(3) X918 Endgate Wiring Harness to Chassis Wiring Harness

Rear of Vehicle - Endgate Wiring Harness (QK2)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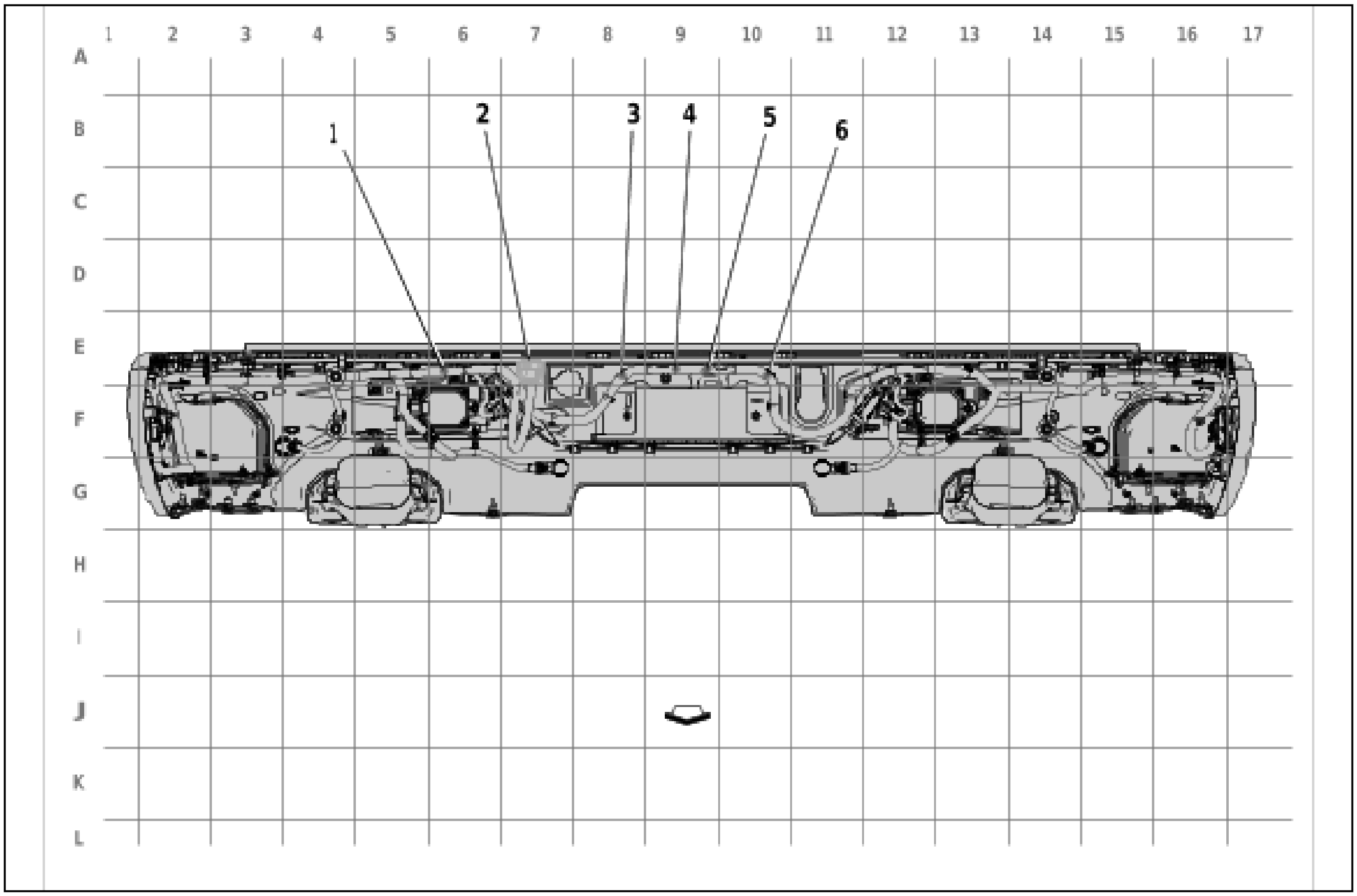
5965542

Items
(1) J913 Endgate Wiring Harness
(2) J910 Endgate Wiring Harness
(3) J911 Endgate Wiring Harness (QK2+QT5)
(4) J912 Endgate Wiring Harness (QK2)
(5) X919 Endgate Wiring Harness to Chassis Wiring Harness (UV2 / UVB)
(6) X918 Endgate Wiring Harness to Chassis Wiring Harness

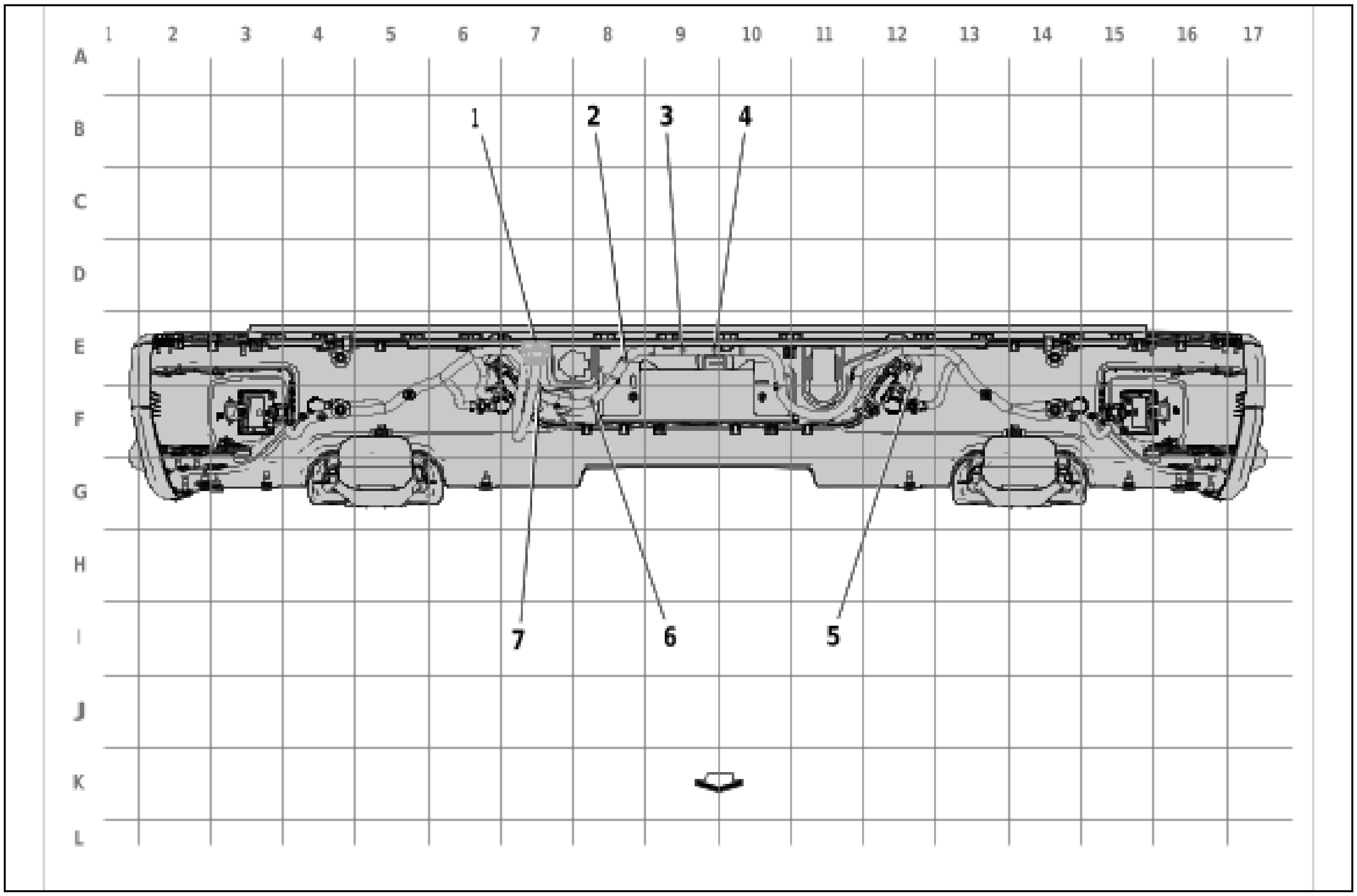
Rear of Vehicle - Rear Object Alarm Sensor Harness (UKL)



6141580

Items
(1) J905 Rear Object Alarm Sensor Wiring Harness
(2) X950 Rear Object Alarm Sensor Wiring Harness to Chassis Wiring Harness
(3) J904 Rear Object Alarm Sensor Wiring Harness
(4) J903 Rear Object Alarm Sensor Wiring Harness
(5) J902 Rear Object Alarm Sensor Wiring Harness (UKL)
(6) J901 Rear Object Alarm Sensor Wiring Harness

Rear of Vehicle - Rear Object Alarm Sensor Harness (- UKL)

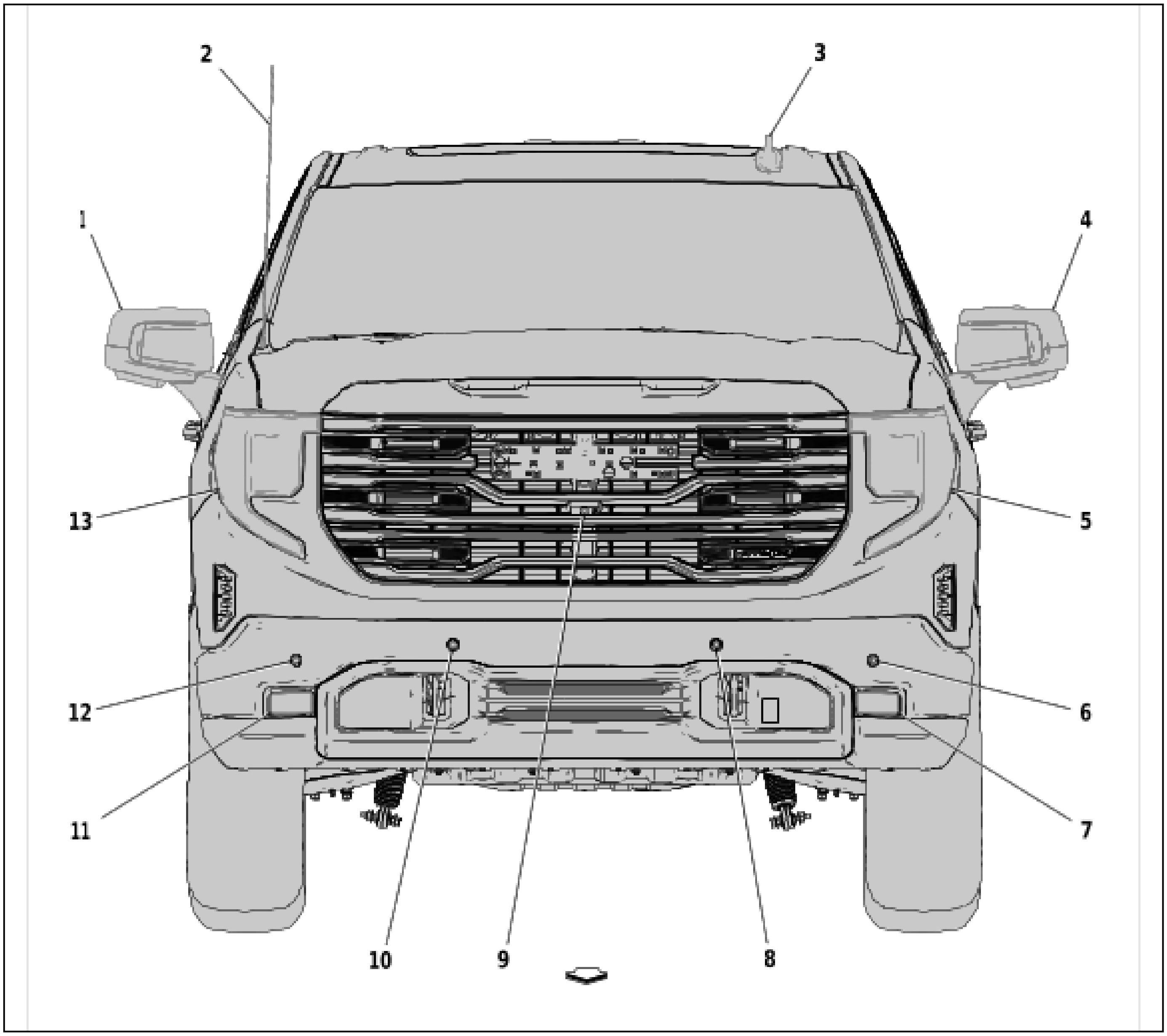


6141583

Items
(1) X950 Rear Object Alarm Sensor Wiring Harness to Chassis Wiring Harness
(2) J905 Rear Object Alarm Sensor Wiring Harness
(3) J903 Rear Object Alarm Sensor Wiring Harness
(4) J904 Rear Object Alarm Sensor Wiring Harness
(5) J900 Rear Object Alarm Sensor Wiring Harness
(6) J901 Rear Object Alarm Sensor Wiring Harness
(7) J906 Rear Object Alarm Sensor Wiring Harness (without UKL)

Component Locator

Front of Vehicle Components

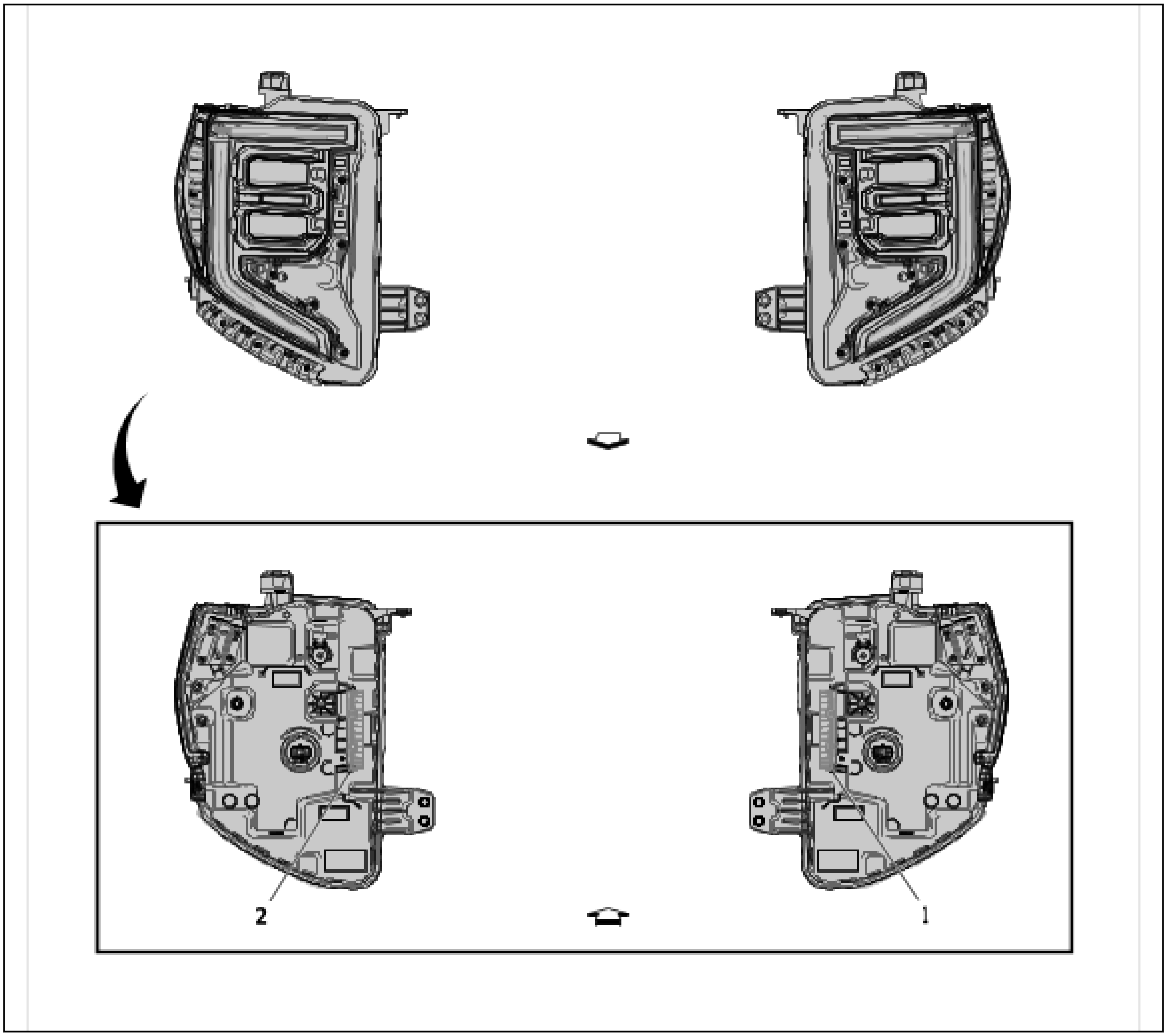


5968757

Items
(1) A9B Outside Rearview Mirror - Passenger
(2) T4M Radio Antenna
(3) T4P High Frequency Antenna
(4) A9A Outside Rearview Mirror - Driver
(5) E13LA Front Headlamp - Left
(6) B306A Parking Assist Alarm Sensor - Front Left Outer (UD5)
(7) E29LF Front Fog Lamp - Left (T3U)
(8) B306B Parking Assist Alarm Sensor - Front Left Middle (UD5)
(9) B174G Front View Driver Information Camera - Grille (UVS)

Items
(10) B306C Parking Assist Alarm Sensor - Front Right Middle (UD5)
(11) E29RF Front Fog Lamp - Right (T3U)
(12) B306D Parking Assist Alarm Sensor - Front Right Outer (UD5)
(13) E13RA Front Headlamp - Right

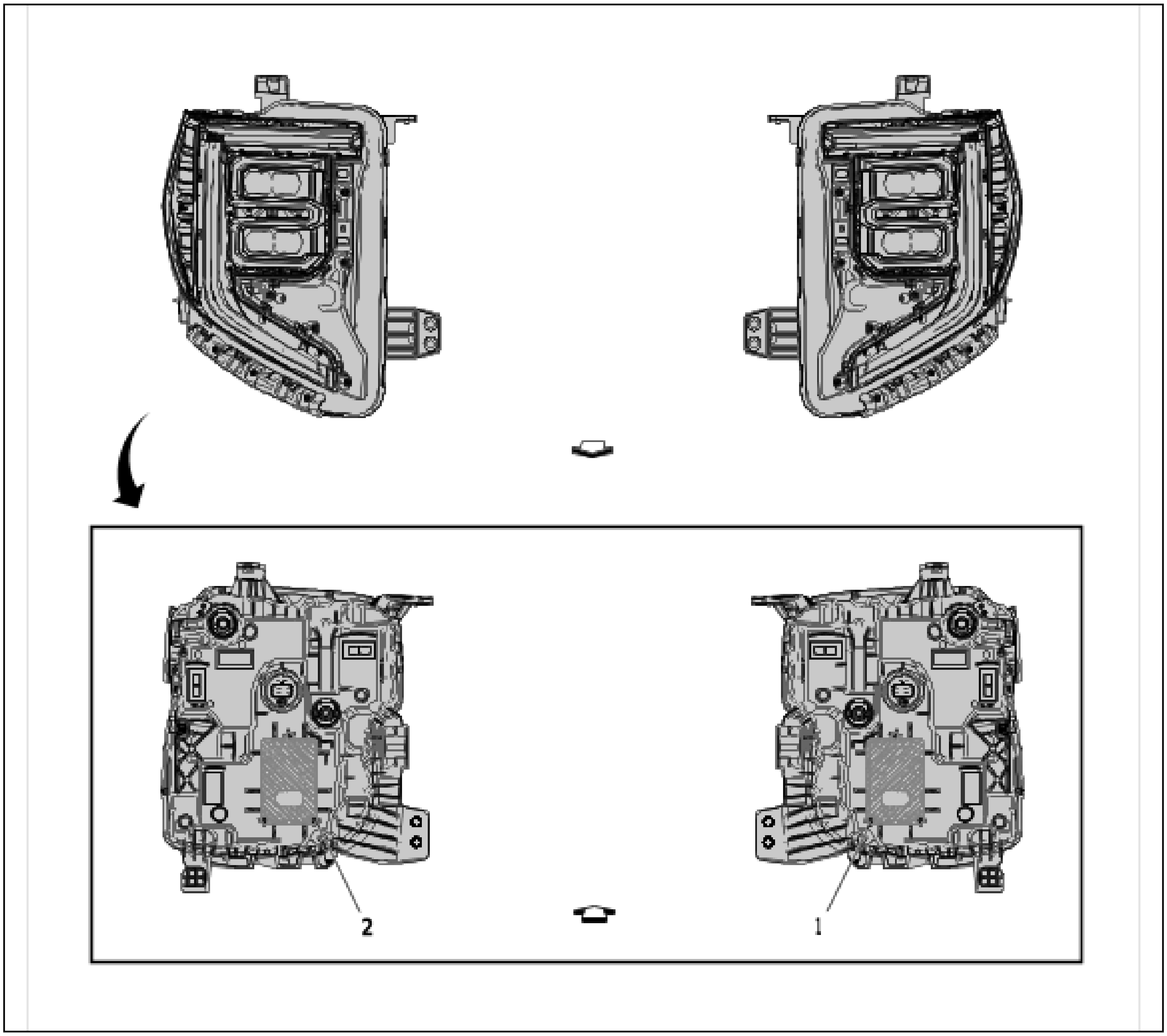
Headlamps (GFF / GFI / GFJ / GFS / GFU / GFW / GFY)



5968764

Items
(1) K221R Headlamp LED Driver Module - Right
(2) K221L Headlamp LED Driver Module - Left

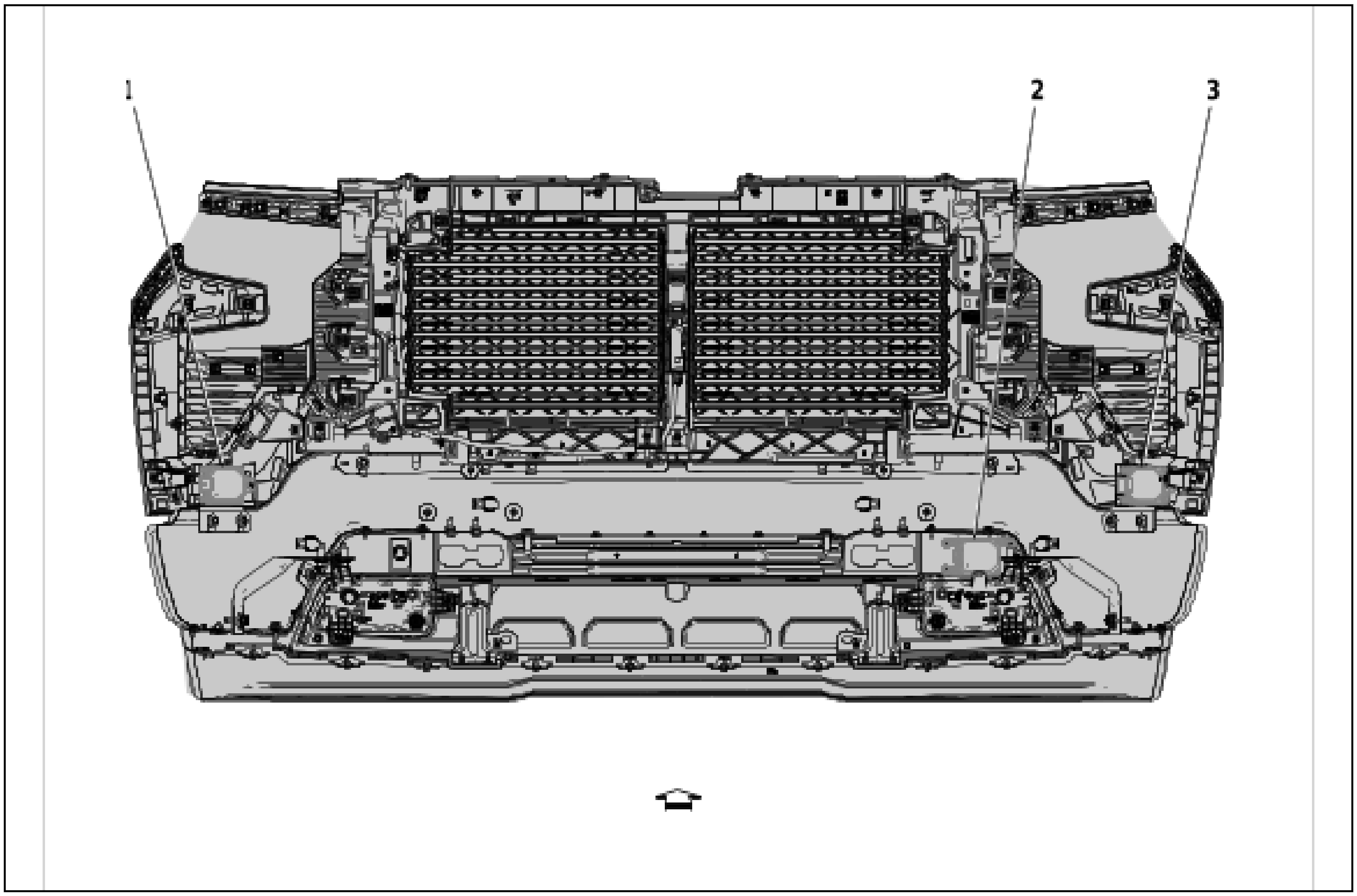
Headlamps (GA4 / GFG)



5968766

Items
(1) K221R Headlamp LED Driver Module - Right
(2) K221L Headlamp LED Driver Module - Left

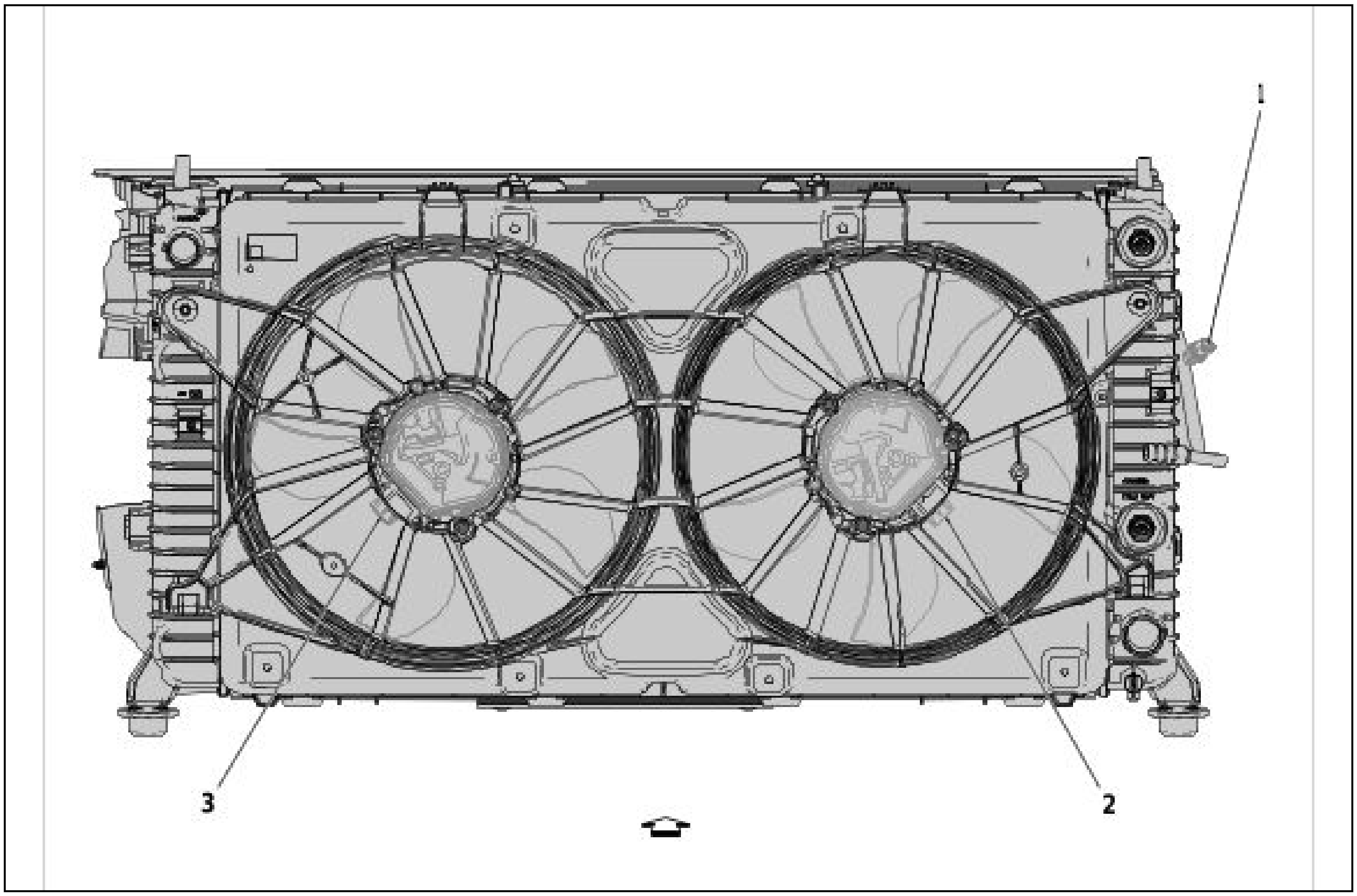
Front Fascia Components - Inside



6141576

Items
(1) B233LF Short Range Radar Sensor - Left Front (UKL)
(2) B233B Forward Range Radar Sensor - Long Range (UGN / UKL)
(3) B233RF Short Range Radar Sensor - Right Front (UKL)

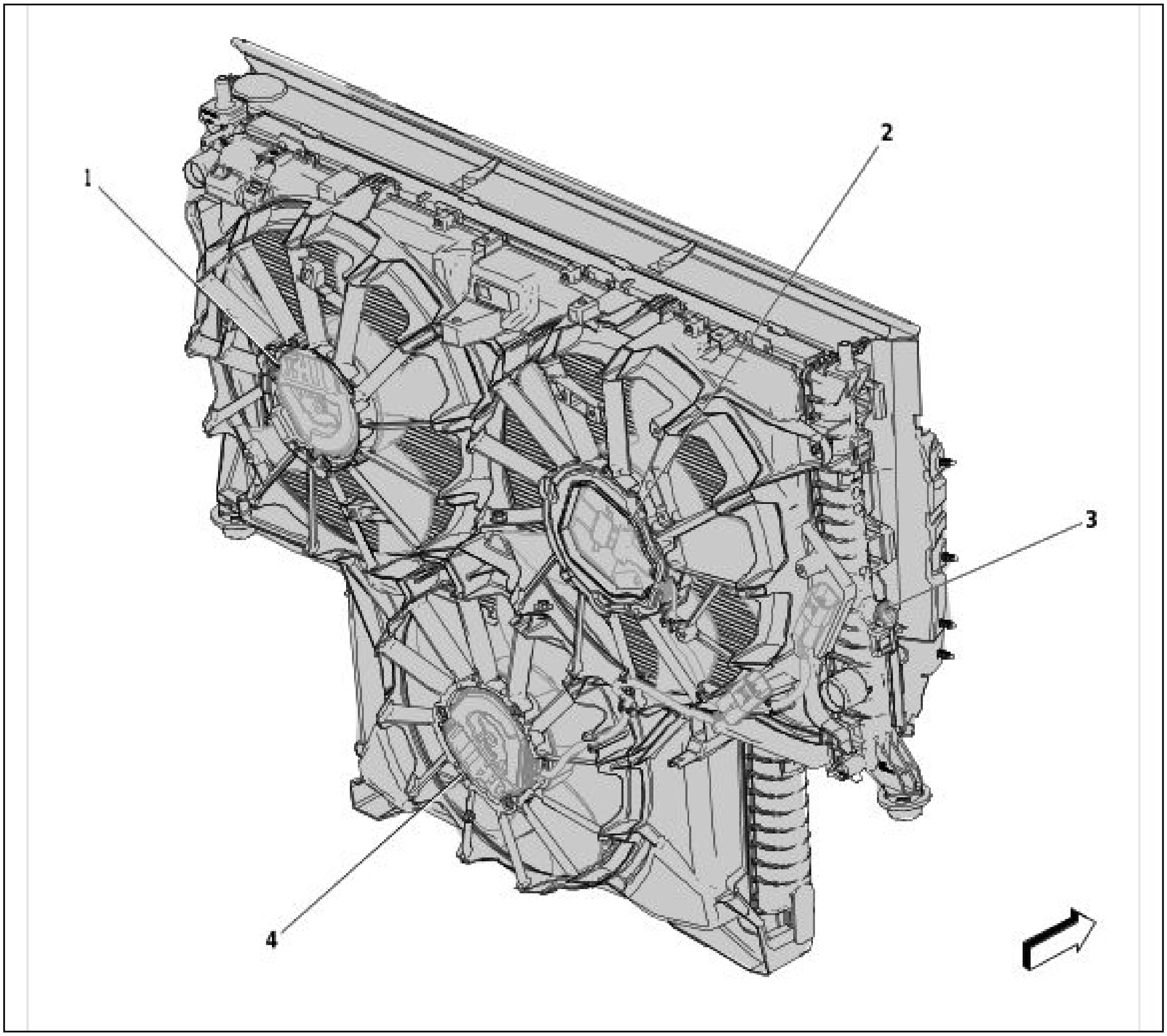
Radiator Support Components (L84 / L87)



5978870

Items
(1) B1 Air Conditioning Refrigerant Pressure Sensor
(2) G10R Cooling Fan Motor - Right
(3) G10L Cooling Fan Motor - Left

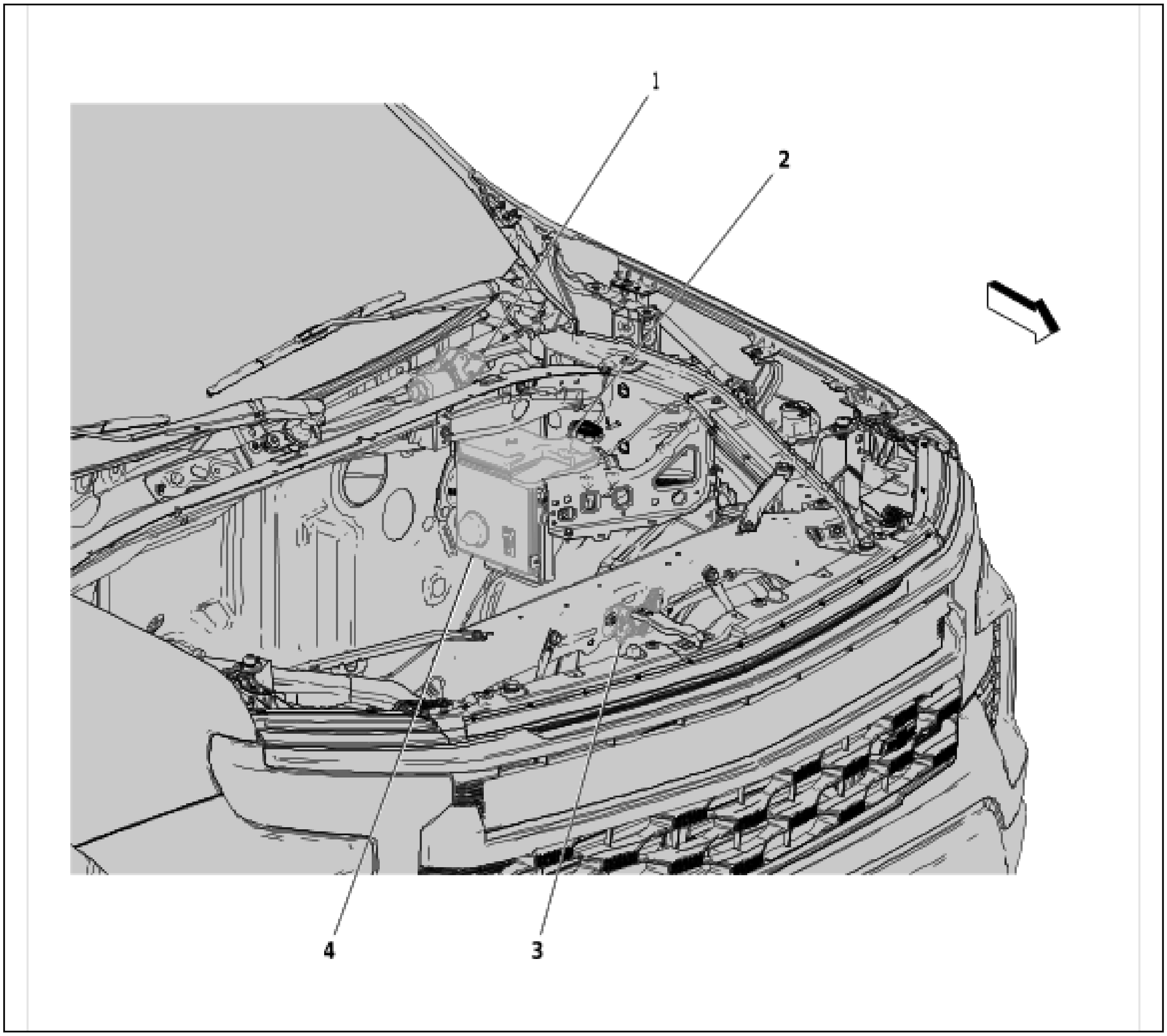
Radiator Support Components (L3B / LZ0)



5978871

Items
(1) G10L Cooling Fan Motor - Left
(2) G10R Cooling Fan Motor - Right
(3) B203 Radiator Coolant Temperature Sensor (L3B / LZ0)
(4) G10LW Cooling Fan Motor - Lower (L3B / LZ0)

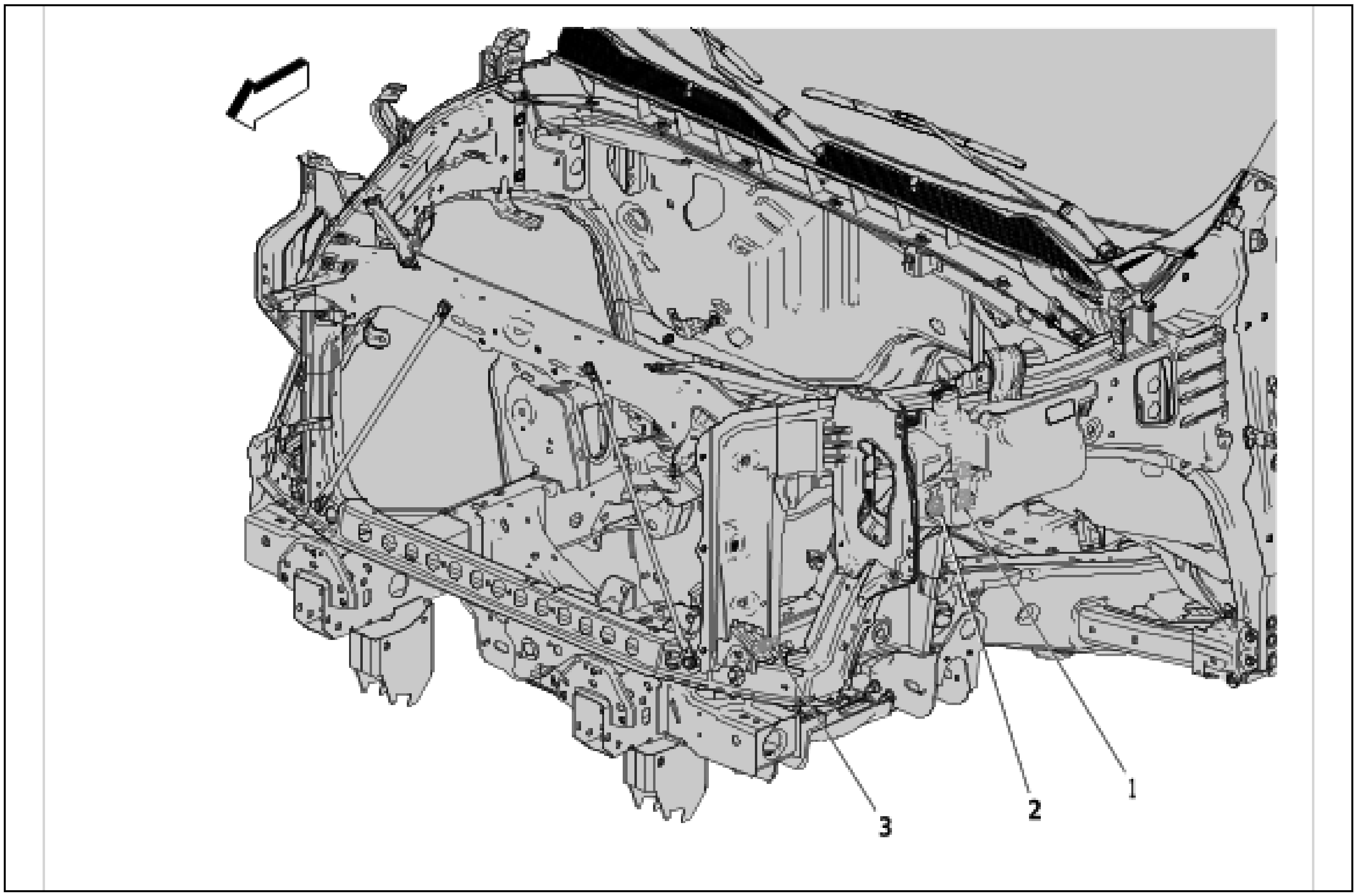
Engine Compartment Components - Left



5978872

Items
(1) M75 Windshield Wiper Motor
(2) B20A Brake Fluid Level Indicator Switch
(3) B55 Engine Compartment Cover Switch
(4) K160 Brake System Control Module

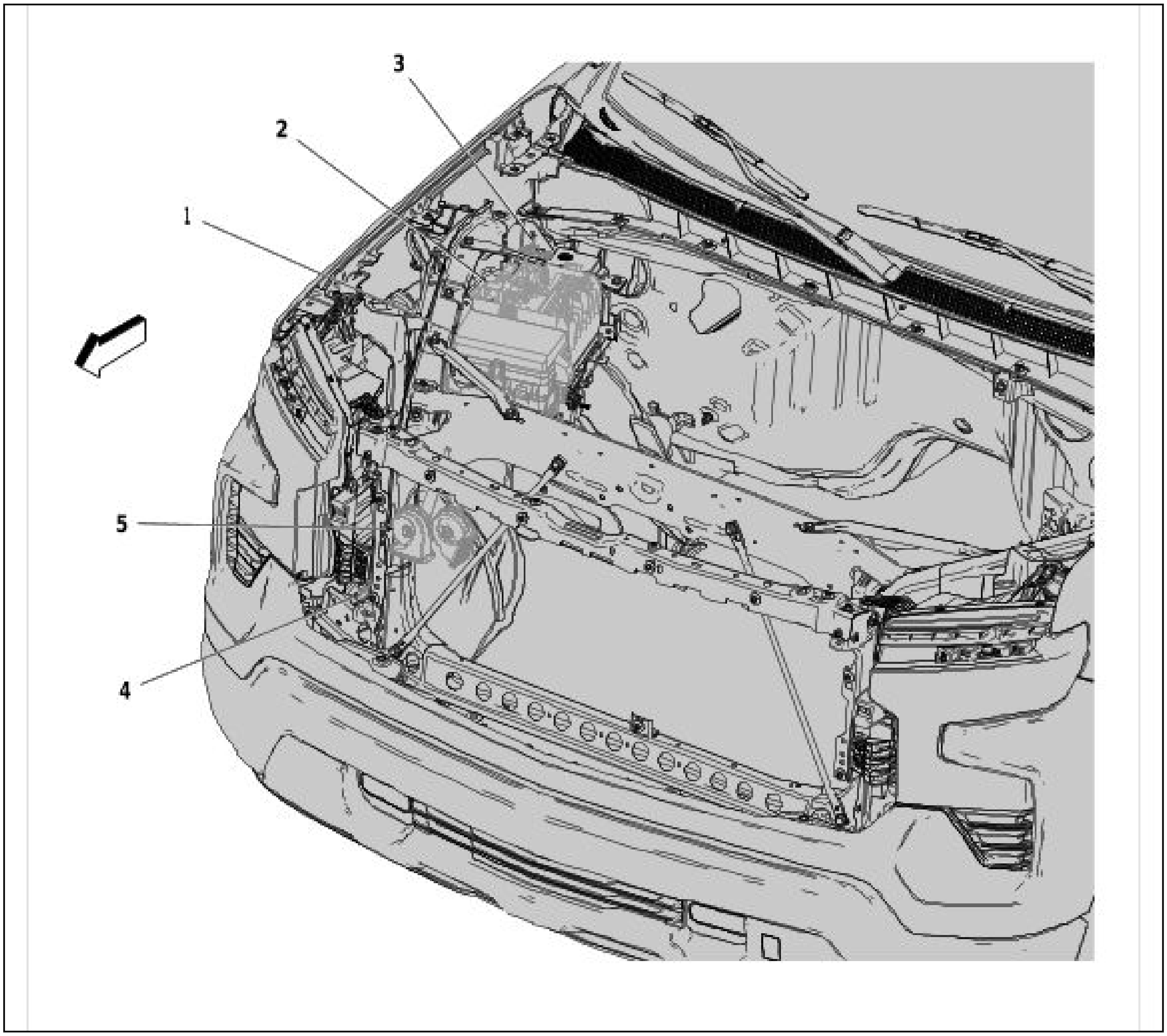
Engine Compartment Components - Left Front



6654342

Items
(1) G24 Windshield Washer Pump
(2) B118 Windshield Washer Solvent Container Level Sensor
(3) B58L Airbag Front End Discriminating Sensor - Left

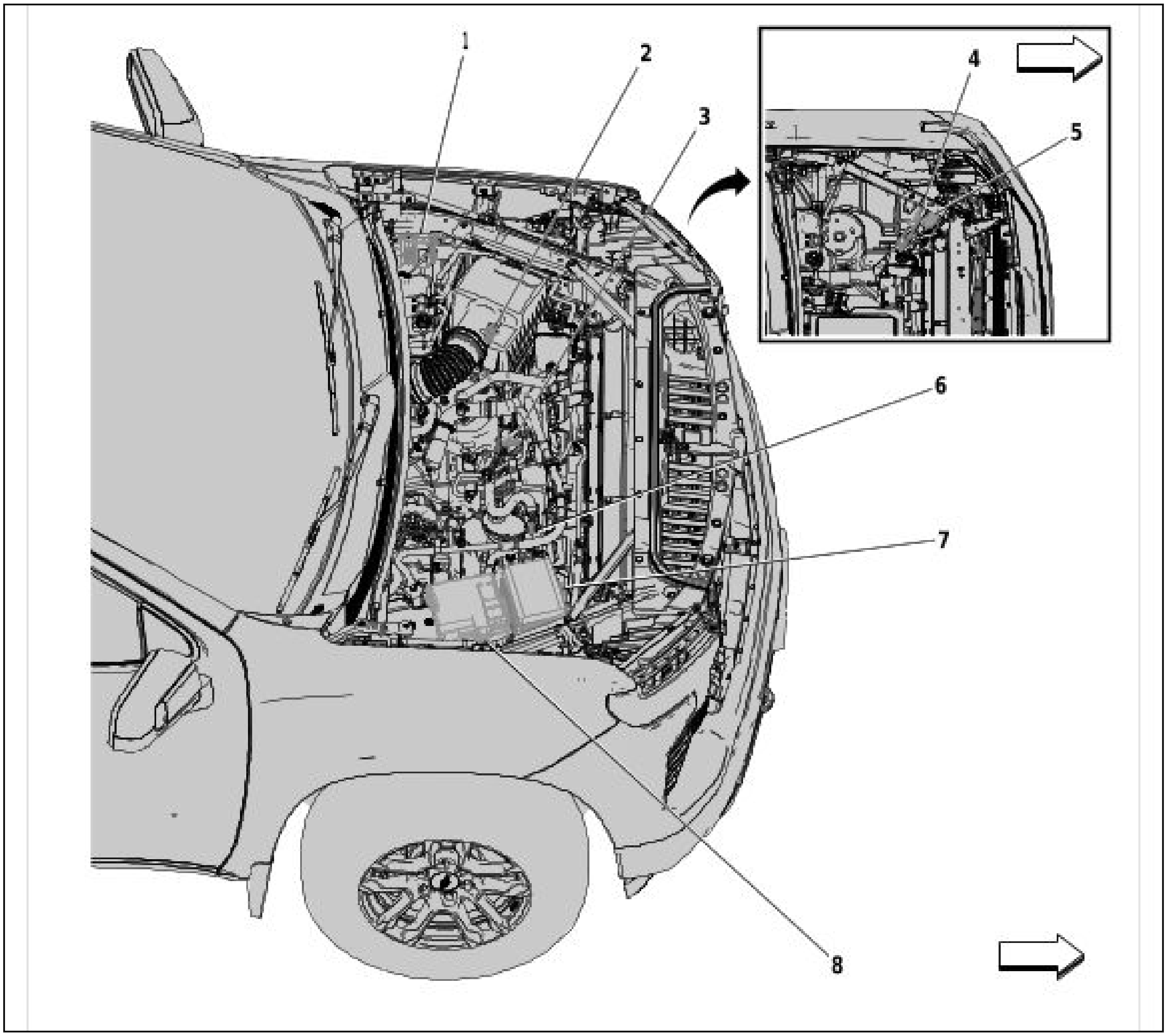
Engine Compartment Components - Right



5978873

Items
(1) X50A Engine Wiring Harness Junction Block
(2) X50B Battery Distribution Engine Compartment Fuse Block (LZ0)
(3) B110 Battery Monitor Module
(4) B58R Airbag Front End Discriminating Sensor - Right
(5) P13 Horn

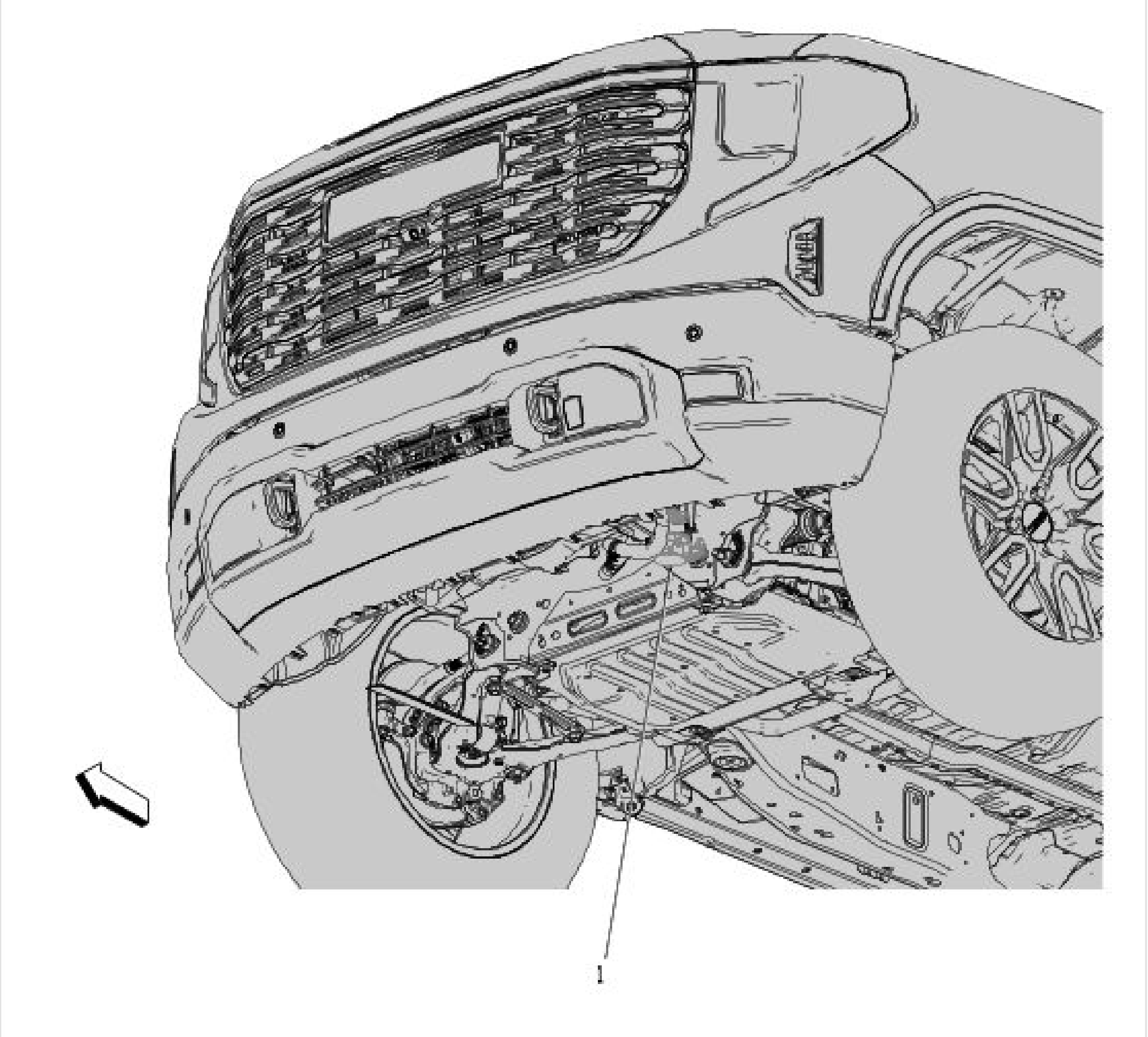
Engine Compartment Components - Top



5978874

Items
(1) K69 Transfer Case Control Module (NP0 / NQH)
(2) B75 Mass Airflow Sensor
(3) B1 Air Conditioning Refrigerant Pressure Sensor
(4) K20 Engine Control Module
(5) K71 Transmission Control Module
(6) B34K Charge Air Cooler Coolant Temperature Sensor - Inlet (LZ0)
(7) X50A Engine Wiring Harness Junction Block
(8) X50B Battery Distribution Engine Compartment Fuse Block (LZ0)

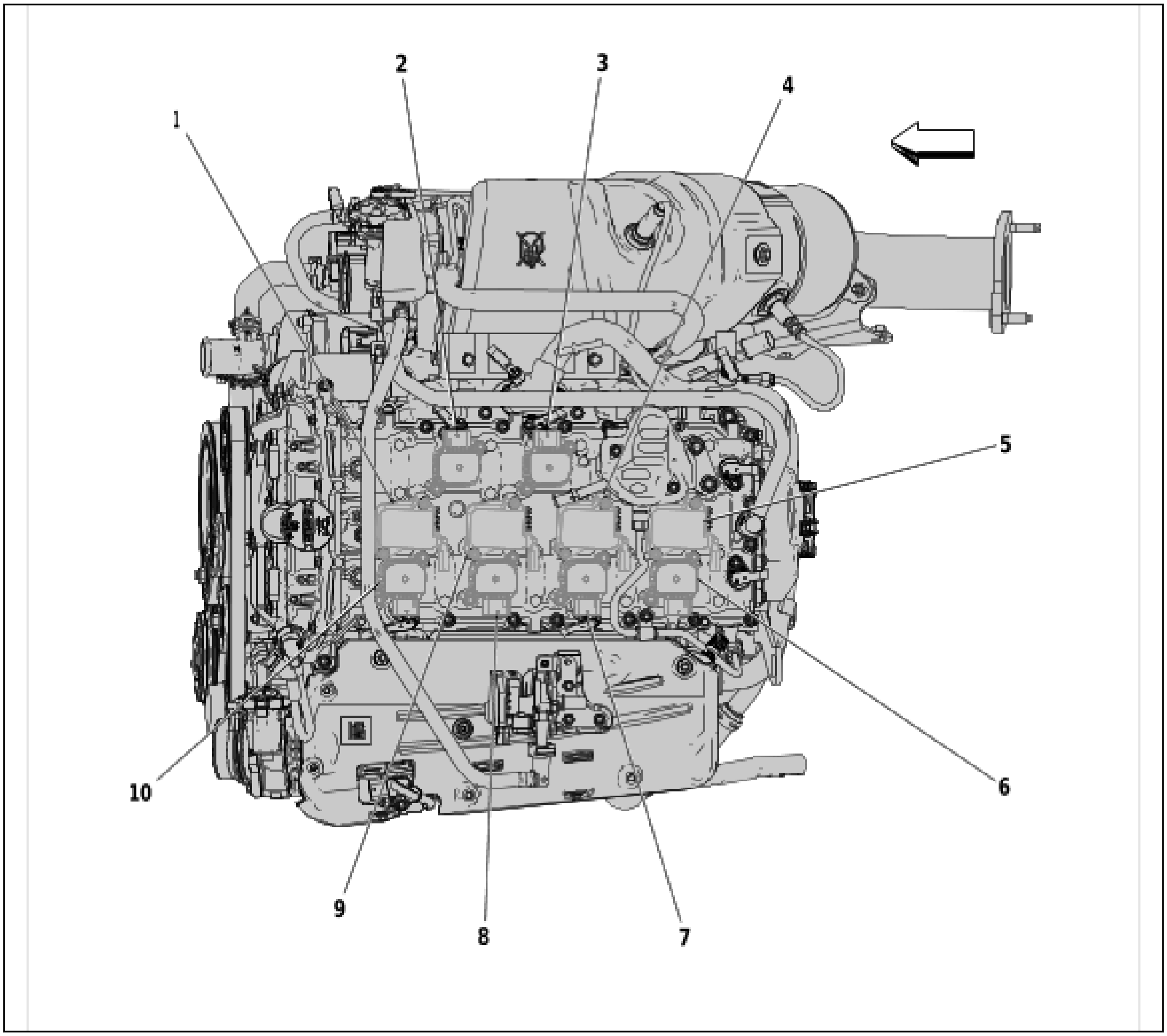
Engine Compartment Components - Bottom (LZ0)



6141568

Items
(1) M10 Charge Air Cooler Coolant Pump (LZ0)

Engine Components - Top (L3B)

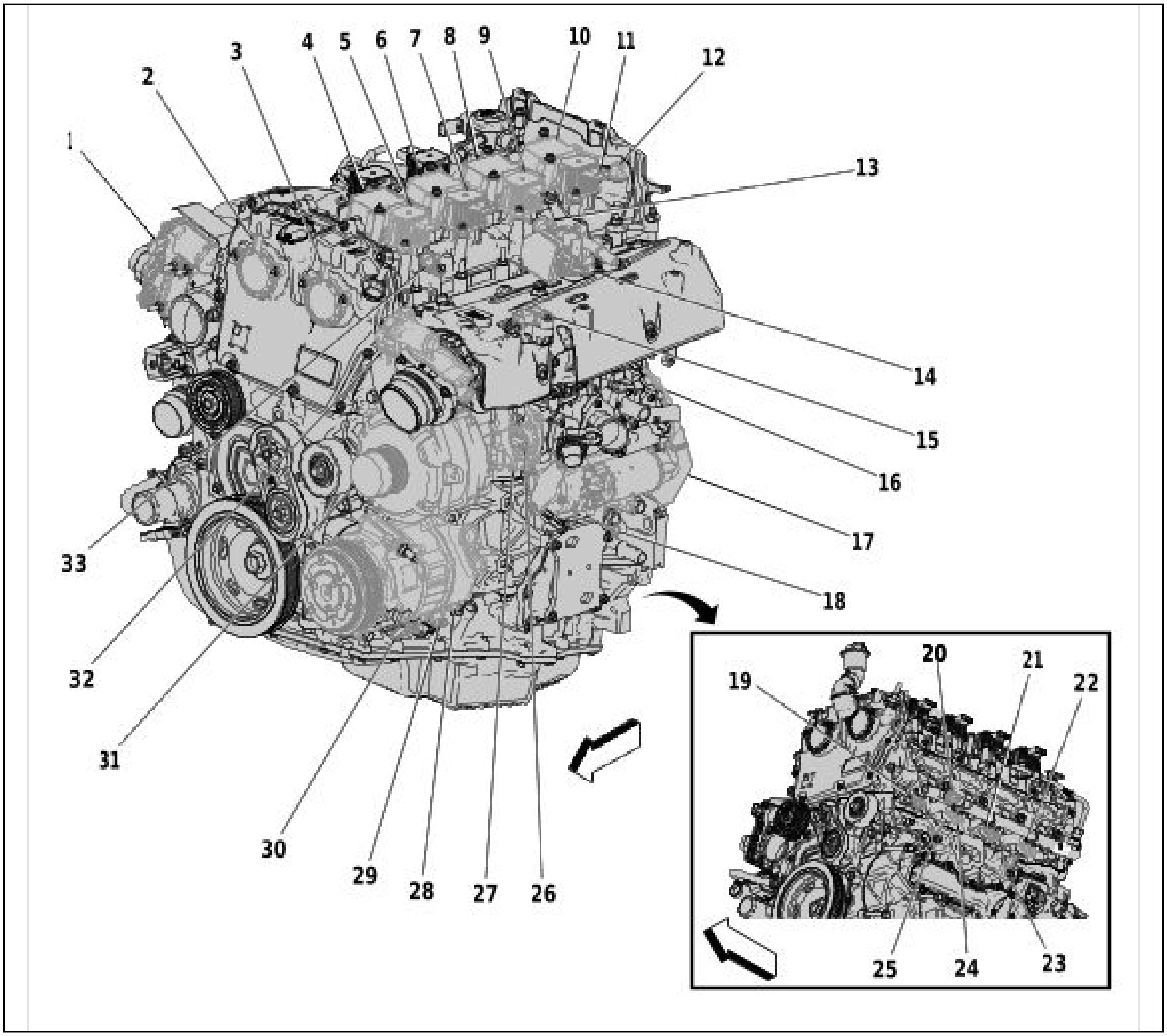


5978876

Items

(1) T8A Ignition Coil 1 (L3B / L84 / L87)
(2) M130B Exhaust Camshaft Profile Actuator 2 (L3B)
(3) M130C Exhaust Camshaft Profile Actuator 3 (L3B)
(4) T8C Ignition Coil 3 (L3B / L84 / L87)
(5) T8D Ignition Coil 4 (L3B / L84 / L87)
(6) M129D Intake Camshaft Profile Actuator 4 (L3B)
(7) M129C Intake Camshaft Profile Actuator 3 (L3B)
(8) M129B Intake Camshaft Profile Actuator 2 (L3B)
(9) T8B Ignition Coil 2 (L3B / L84 / L87)
(10) M129A Intake Camshaft Profile Actuator 1 (L3B)

Engine Components - Left Front (L3B)

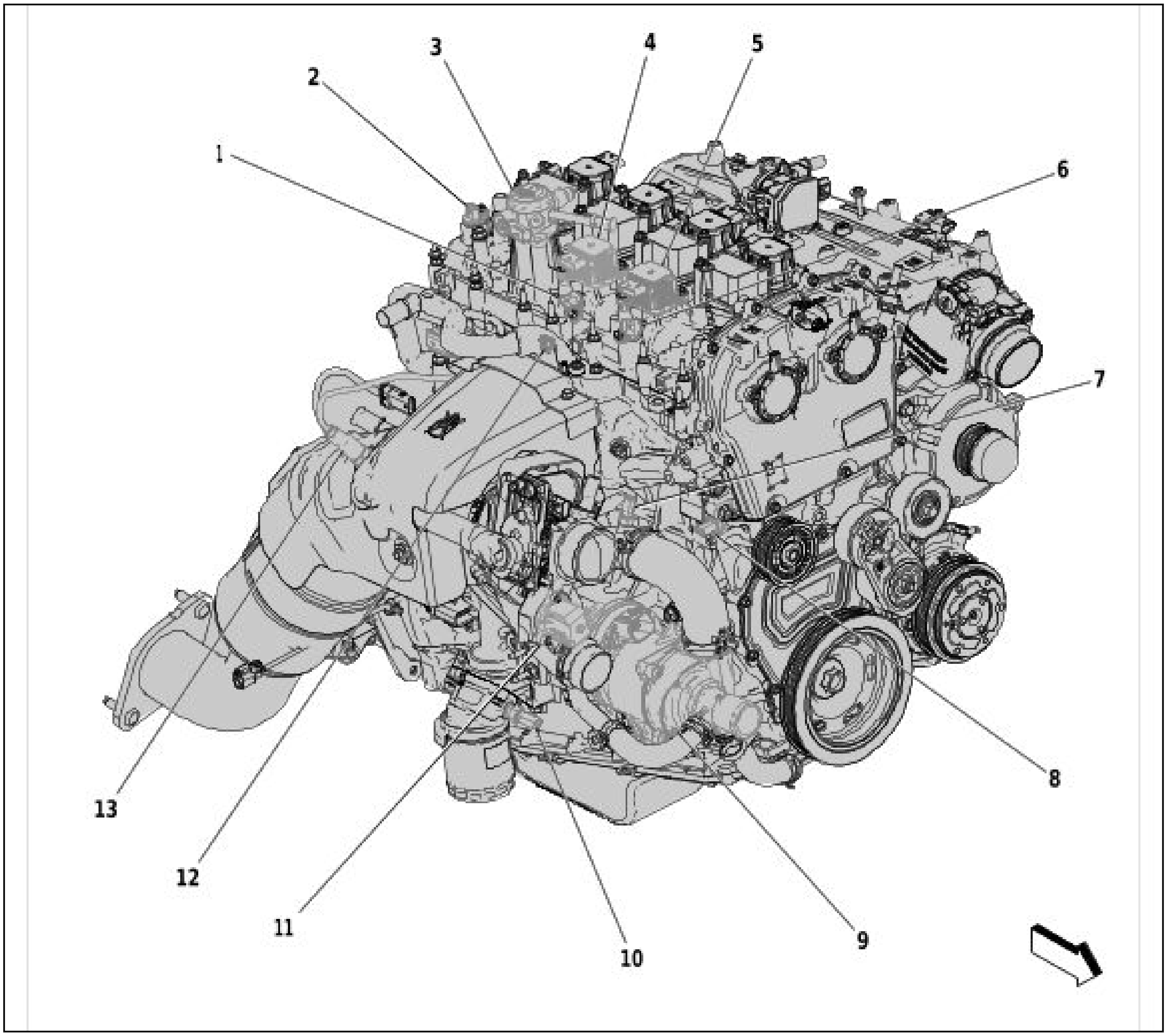


6984131

Items
(1) M128 Turbocharger Wastegate Actuator (L3B)
(2) Q6E Camshaft Position Actuator Solenoid Valve - Exhaust (L3B)
(3) Q6F Camshaft Position Actuator Solenoid Valve - Intake (L3B)
(4) T8A Ignition Coil 1 (L3B / L84 / L87)
(5) M129A Intake Camshaft Profile Actuator 1 (L3B)
(6) T8B Ignition Coil 2 (L3B / L84 / L87)
(7) M129B Intake Camshaft Profile Actuator 2 (L3B)
(8) T8C Ignition Coil 3 (L3B / L84 / L87)
(9) M129C Intake Camshaft Profile Actuator 3 (L3B)
(10) T8D Ignition Coil 4 (L3B / L84 / L87)
(11) M129D Intake Camshaft Profile Actuator 4 (L3B)

Items
(12) B23F Camshaft Position Sensor - Intake (L3B)
(13) B338B Intake Camshaft Profile Sleeve Position Sensor 2 (L3B)
(14) G58 Evaporative Emission Canister Purge Pump (L3B)
(15) B65 Manifold Absolute Pressure and Intake Air Temperature Sensor (LZ0)
(16) Q74 Engine Coolant Bypass Valve (L3B / LZ0)
(17) M64 Starter
(18) B26 Crankshaft Position Sensor
(19) Q17A Fuel Injector 1
(20) B47B Fuel Rail Pressure Sensor
(21) Q17C Fuel Injector 3
(22) Q17D Fuel Injector 4
(23) B68B Knock Sensor 2 (L3B / L84 / L87)
(24) Q17B Fuel Injector 2
(25) B68A Knock Sensor 1 (L3B / L84 / L87)
(26) B34A Engine Coolant Temperature Sensor 1 (L3B)
(27) Q97B Engine Coolant Flow Control Valve - Block (L3B)
(28) G1 Air Conditioning Compressor
(29) Q46 Air Conditioning Compressor Solenoid Valve
(30) Q2 Air Conditioning Clutch
(31) G13 Generator
(32) Q38 Throttle Body (-LC2)
(33) B338A Intake Camshaft Profile Sleeve Position Sensor 1 (L3B)

Engine Components - Right Front (L3B)

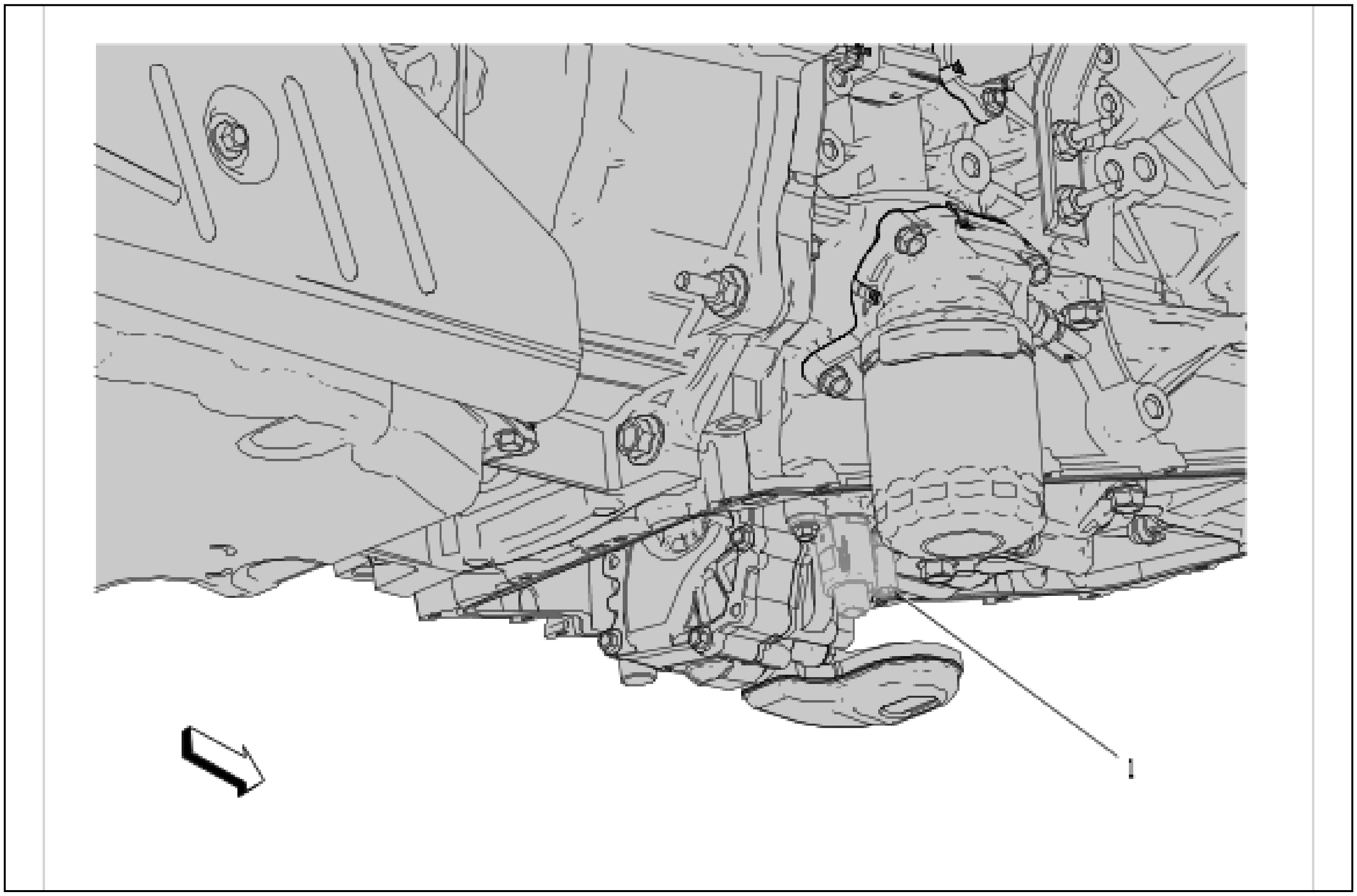


5978878

Items
(1) B338B Intake Camshaft Profile Sleeve Position Sensor 2 (L3B)
(2) B23E Camshaft Position Sensor - Exhaust (L3B)
(3) G18 Fuel Pump - High Pressure
(4) M130C Exhaust Camshaft Profile Actuator 3 (L3B)
(5) M130B Exhaust Camshaft Profile Actuator 2 (L3B)
(6) B338A Intake Camshaft Profile Sleeve Position Sensor 1 (L3B)
(7) B34B Engine Coolant Temperature Sensor 2 (L3B / LZ0)
(8) B37B Engine Oil Pressure Sensor
(9) G59 Engine Coolant Pump (L3B)
(10) B36 Engine Oil Temperature Sensor (L3B / LZ0)
(11) Q40 Turbocharger Bypass Valve Solenoid (L3B)

Items
(12) B34E Engine Coolant Temperature Sensor 5 (L3B / LZ0)
(13) B52A Heated Oxygen Sensor 1 (L3B)

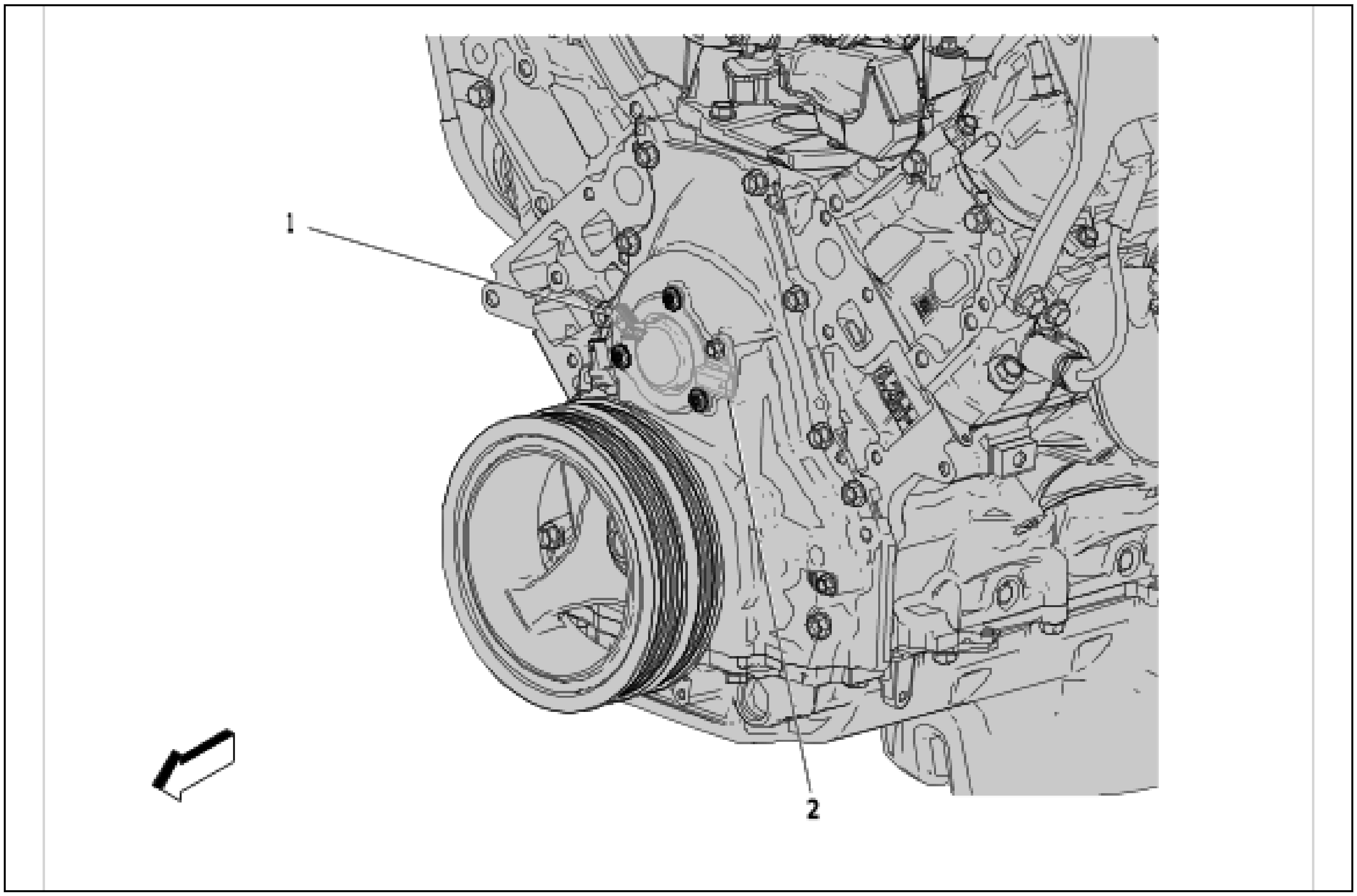
Engine Components - Right Rear (L3B)



6050080

Items
(1) Q44 Engine Oil Pressure Control Solenoid Valve (L3B / L87 / LZ0)

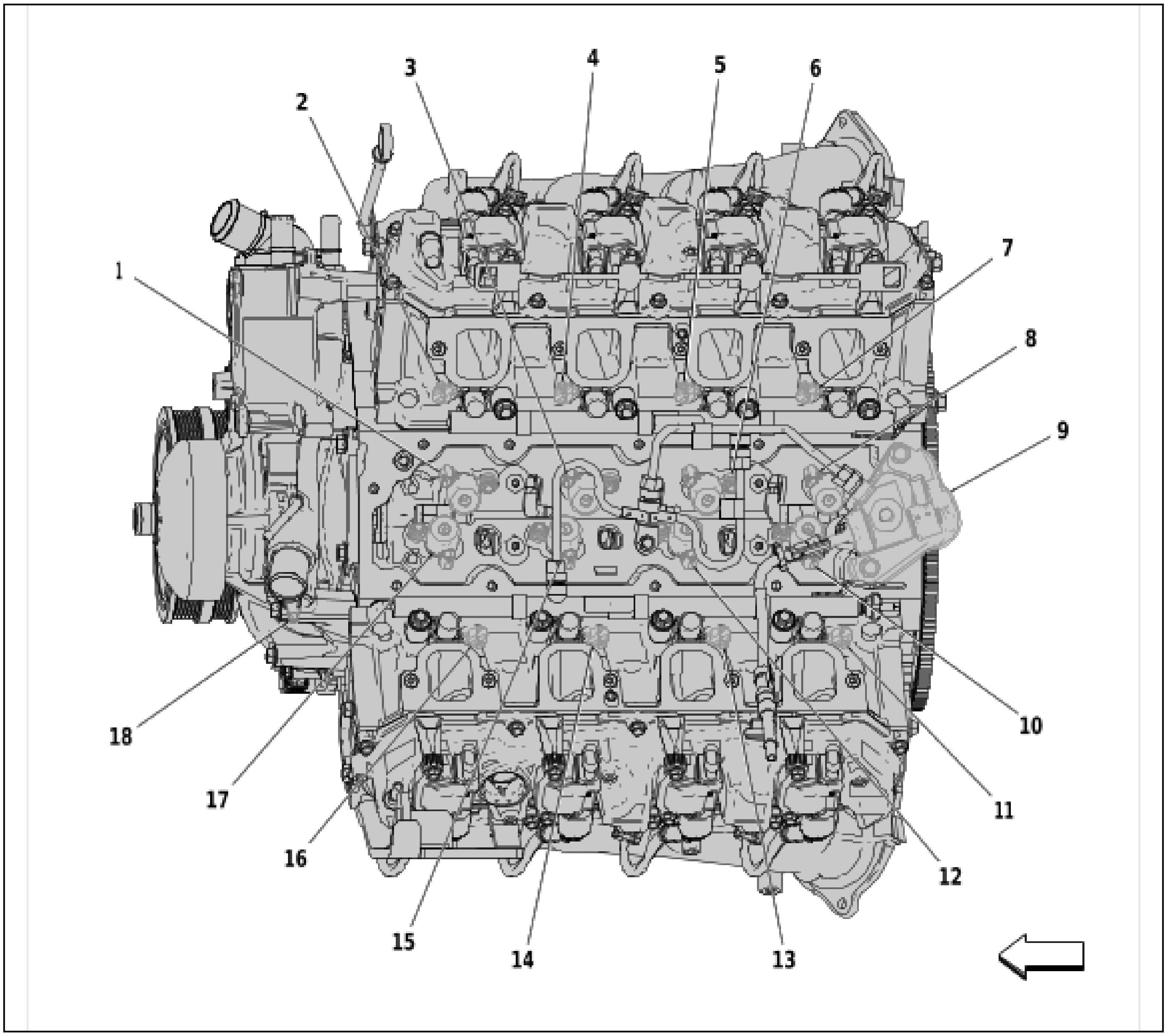
Engine Components - Front (L84 / L87)



6050082

Items
(1) Q6 Camshaft Position Actuator Solenoid Valve (L84 / L87)
(2) B23 Camshaft Position Sensor (L84 / L87 / LZ0)

Engine Components - Top (L84 / L87)

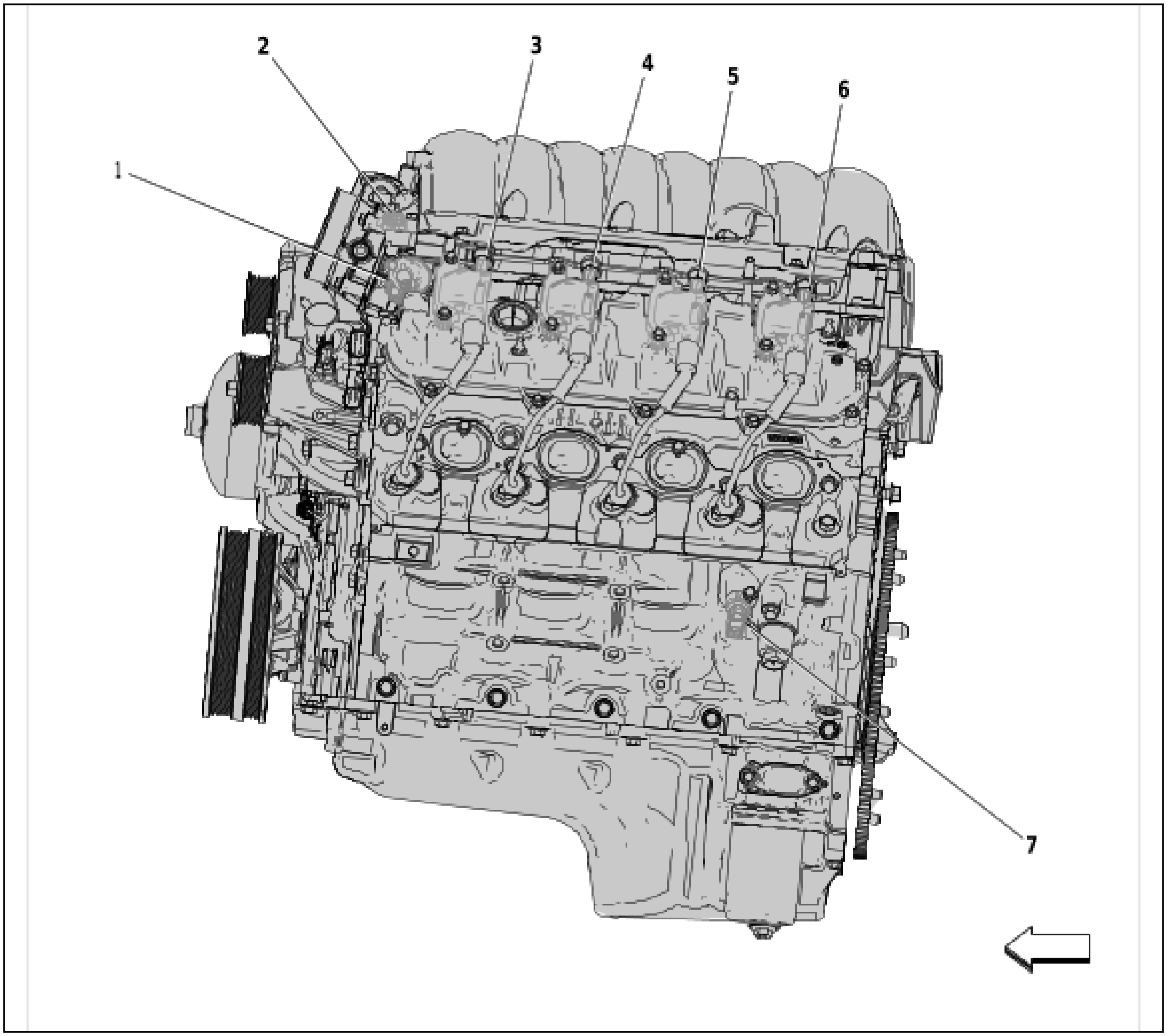


5978879

Items
(1) Q83AB Valve Lifter Oil Solenoid Valve - Cylinder 2 (L84 / L87)
(2) Q17B Fuel Injector 2
(3) Q83AD Valve Lifter Oil Solenoid Valve - Cylinder 4 (L84 / L87)
(4) Q17D Fuel Injector 4
(5) Q17F Fuel Injector 6 (LZ0 / L84 / L87)
(6) Q83AF Valve Lifter Oil Solenoid Valve - Cylinder 6 (L84 / L87)
(7) Q17H Fuel Injector 8 (L84 / L87)
(8) Q83AH Valve Lifter Oil Solenoid Valve - Cylinder 8 (L84 / L87)
(9) G18 Fuel Pump - High Pressure

Items
(10) Q83AG Valve Lifter Oil Solenoid Valve - Cylinder 7 (L84 / L87)
(11) Q17G Fuel Injector 7 (L84 / L87)
(12) Q83AE Valve Lifter Oil Solenoid Valve - Cylinder 5 (L84 / L87)
(13) Q17E Fuel Injector 5 (LZ0 / L84 / L87)
(14) Q17C Fuel Injector 3
(15) Q83AC Valve Lifter Oil Solenoid Valve - Cylinder 3 (L84 / L87)
(16) Q17A Fuel Injector 1
(17) Q83AA Valve Lifter Oil Solenoid Valve - Cylinder 1 (L84 / L87)
(18) B34 Engine Coolant Temperature Sensor (L84 / L87 / LZ0)

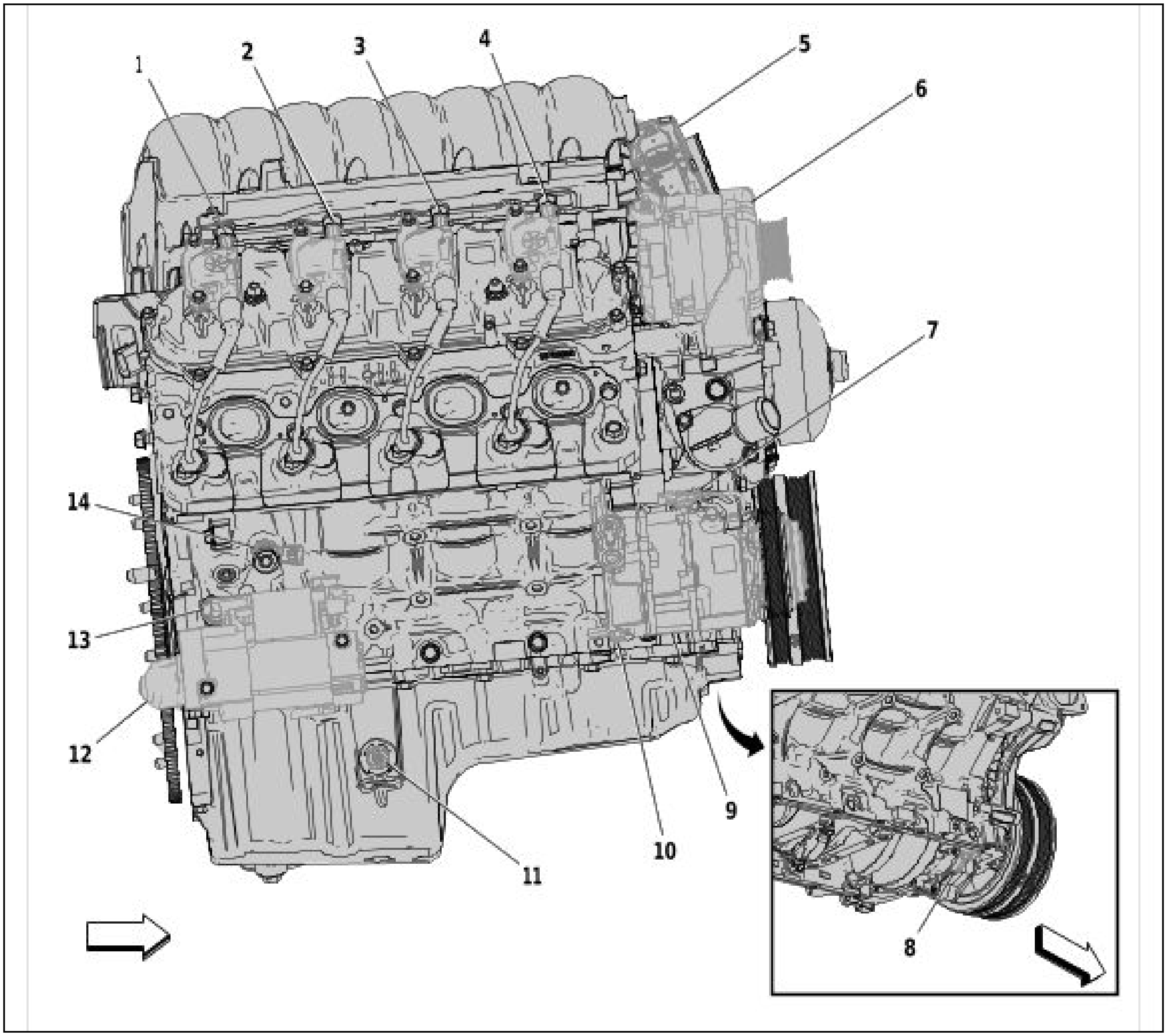
Engine Components - Left (L84 / L87)



5978880

Items
(1) Q12 Evaporative Emission Canister Purge Solenoid Valve (L3B / L84 / L87)
(2) B74 Manifold Absolute Pressure Sensor (L84 / L87)
(3) T8A Ignition Coil 1 (L3B / L84 / L87)
(4) T8C Ignition Coil 3 (L3B / L84 / L87)
(5) T8E Ignition Coil 5 (L84 / L87)
(6) T8G Ignition Coil 7 (L84 / L87)
(7) B68A Knock Sensor 1 (L3B / L84 / L87)

Engine Components - Right (L84 / L87)

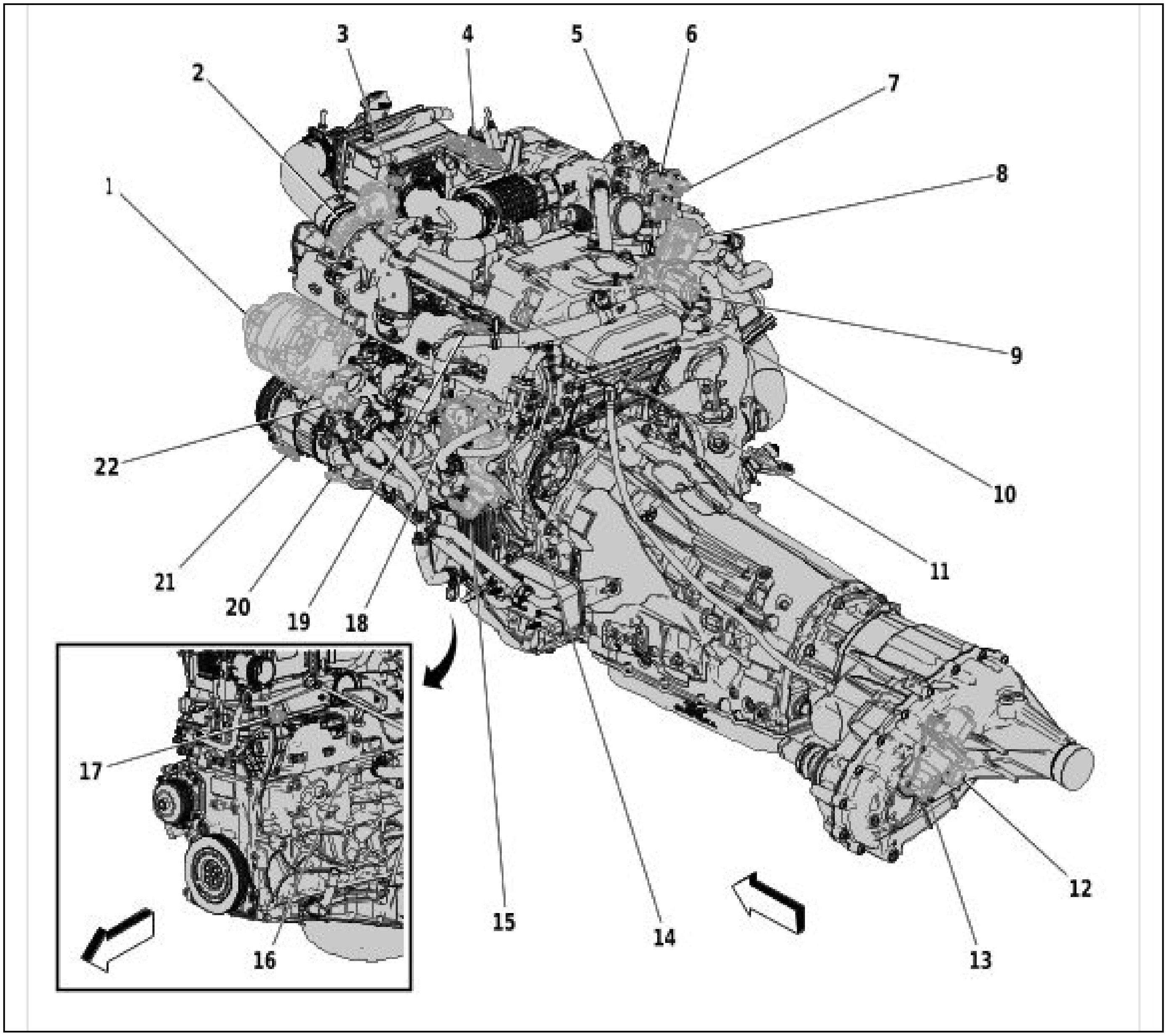


5978881

Items
(1) T8H Ignition Coil 8 (L84 / L87)
(2) T8F Ignition Coil 6 (L84 / L87)
(3) T8D Ignition Coil 4 (L3B / L84 / L87)

Items
(4) T8B Ignition Coil 2 (L3B / L84 / L87)
(5) Q38 Throttle Body (-LC2)
(6) G13 Generator
(7) Q2 Air Conditioning Clutch
(8) Q44 Engine Oil Pressure Control Solenoid Valve (L3B / L87 / LZ0)
(9) G1 Air Conditioning Compressor
(10) Q46 Air Conditioning Compressor Solenoid Valve
(11) B35 Engine Oil Level Indicator Switch (L84 / L87)
(12) M64 Starter
(13) B26 Crankshaft Position Sensor
(14) B68B Knock Sensor 2 (L3B / L84 / L87)

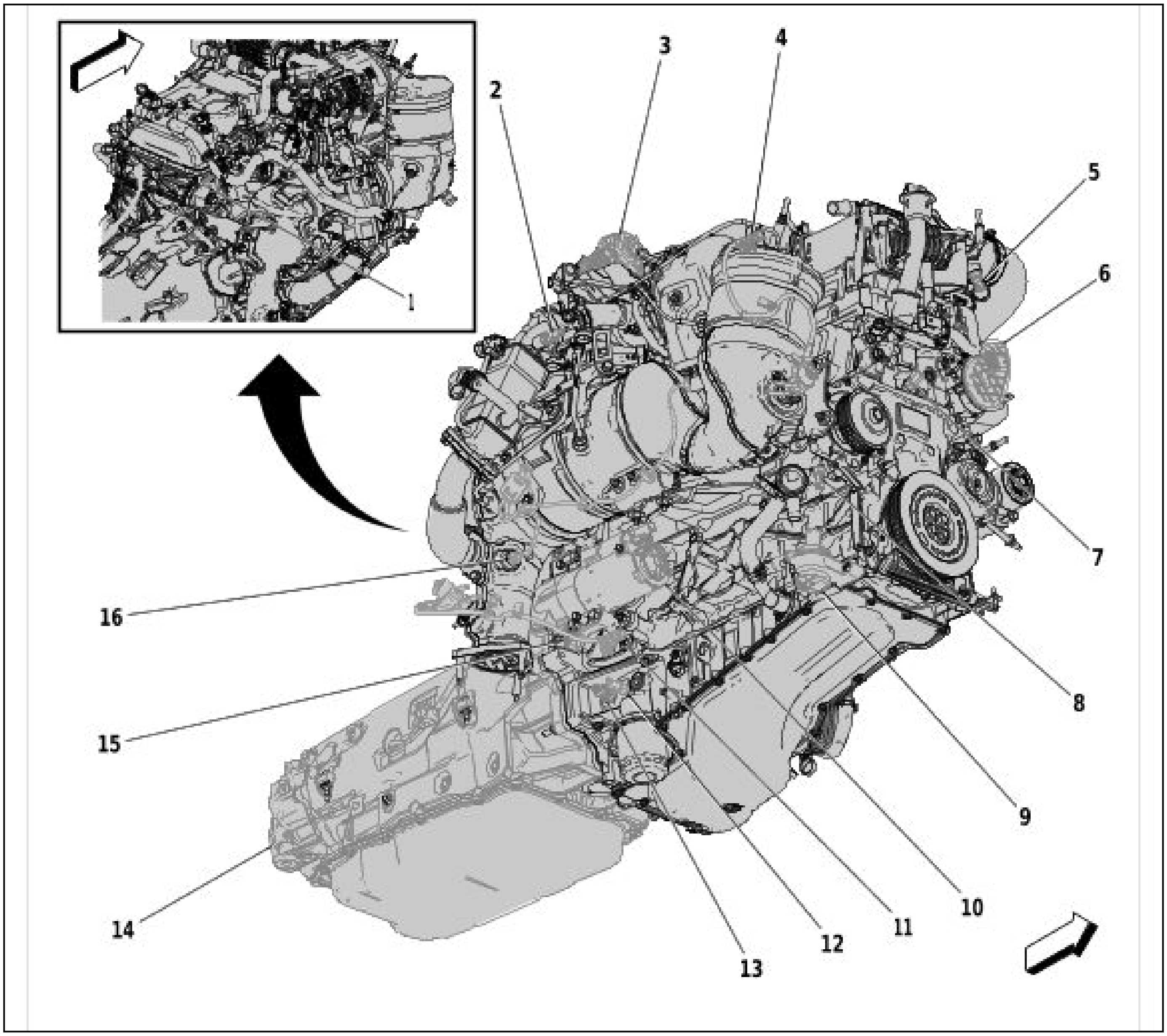
Engine Components - Left Rear (LZ0)



6141571

Items
(1) G13 Generator
(2) Q20 Intake Airflow Control Valve (LZ0)
(3) B193A Charge Air Cooler Air Temperature Sensor - Inlet (LZ0)
(4) B195A Nitrogen Oxides Sensor 1 (LZ0)
(5) B345P Exhaust Pressure Differential Sensor - Particulate Filter (LZ0)
(6) B359B Exhaust Gas Temperature Sensor Module 2 (LZ0)
(7) B345R Exhaust Pressure Differential Sensor - Exhaust Gas Recirculation (LZ0)
(8) Q14B Exhaust Gas Recirculation Valve 2 (LZ0)
(9) Q14A Exhaust Gas Recirculation Valve 1 (LZ0)
(10) B321 Crankcase Pressure Sensor (LZ0)
(11) Q18B Fuel Pressure Regulator 2 (LZ0)
(12) B139 Transfer Case Two/Four Wheel Drive Actuator Position Sensor (NP0 / NQH)
(13) A16 Transfer Case Four Wheel Drive Actuator (NP0 / NQH)
(14) Q18C Fuel Pressure Regulator 3 (LZ0)
(15) Q18A Fuel Pressure Regulator 1 (LZ0)
(16) B34 Engine Coolant Temperature Sensor (L84 / L87 / LZ0)
(17) B47B Fuel Rail Pressure Sensor
(18) Q74 Engine Coolant Bypass Valve (L3B / LZ0)
(19) B65 Manifold Absolute Pressure and Intake Air Temperature Sensor (LZ0)
(20) Q2 Air Conditioning Clutch
(21) Q46 Air Conditioning Compressor Solenoid Valve
(22) Q97M Engine Coolant Flow Control Valve - Main (LZ0)

Engine Components - Right Front (LZ0)

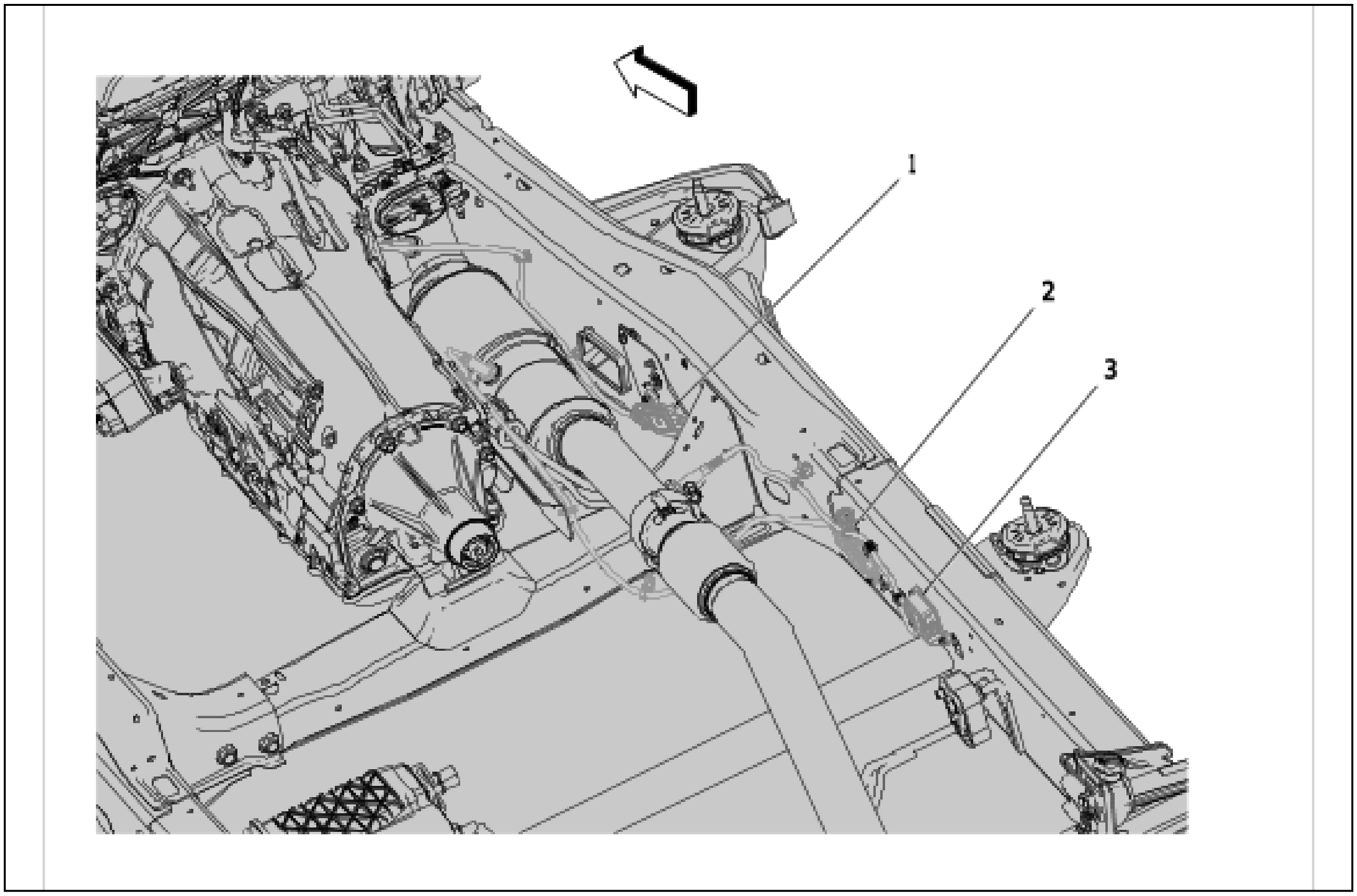


6141570

Items
(1) B23 Camshaft Position Sensor (L84 / L87 / LZ0)
(2) B130C Exhaust Gas Recirculation Temperature Sensor 3 (LZ0)
(3) M103 Turbocharger Vane Position Actuator (LZ0)
(4) Q61 Reductant Fluid Injector (LZ0)
(5) B193B Charge Air Cooler Air Temperature Sensor - Outlet (LZ0)
(6) Q22 Intake Manifold Tuning Solenoid Valve (LZ0)
(7) B96 Cylinder Head Temperature Sensor (LZ0)
(8) B34B Engine Coolant Temperature Sensor 2 (L3B / LZ0)
(9) G8 Engine Coolant Pump - Auxiliary (LZ0 / L84 / L87)
(10) M64 Starter
(11) Q61B Reductant Fluid Injector 2 (LZ0)

Items
(12) B36 Engine Oil Temperature Sensor (L3B / LZ0)
(13) B37B Engine Oil Pressure Sensor
(14) T12 Automatic Transmission
(15) B26 Crankshaft Position Sensor
(16) B359 Exhaust Gas Temperature Sensor Module (LZ0)

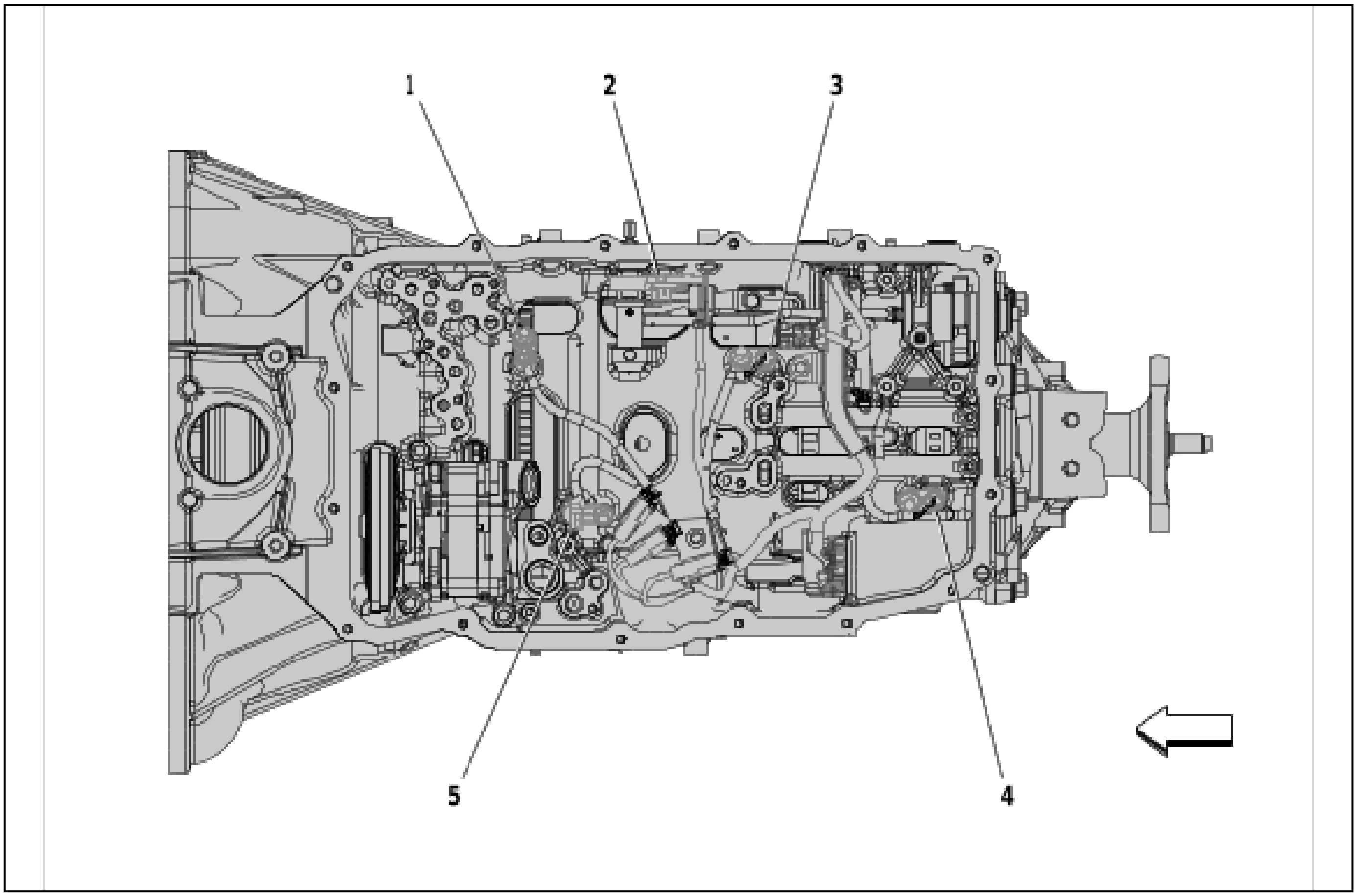
Engine Components - Exhaust Sensors (LZ0)



5978886

Items
(1) B195B Nitrogen Oxides Sensor 2 (LZ0)
(2) B195C Nitrogen Oxides Sensor 3 (LZ0)
(3) B136 Exhaust Particulate Matter Sensor (LZ0)

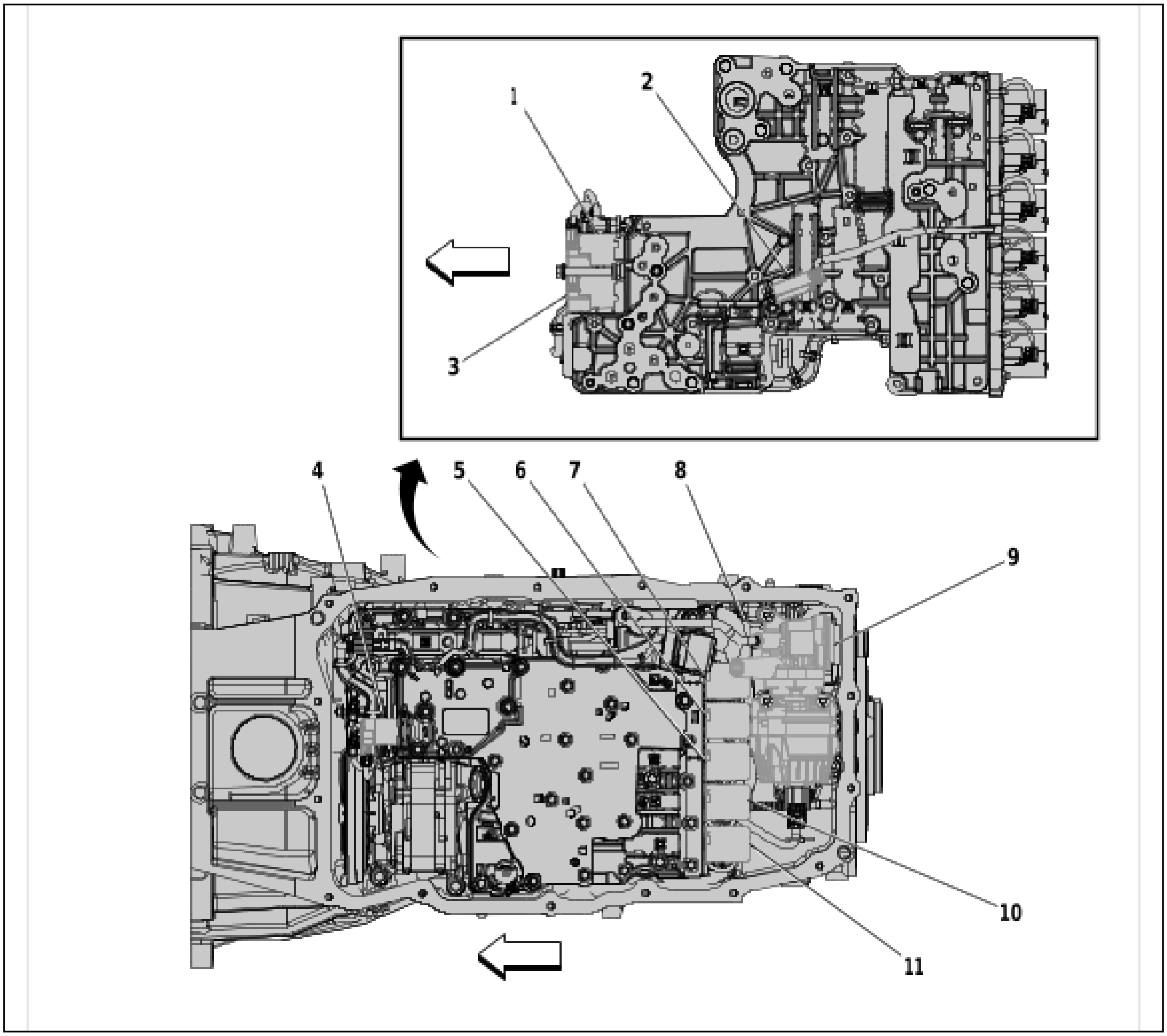
Automatic Transmission Components - Case (MQB)



6952417

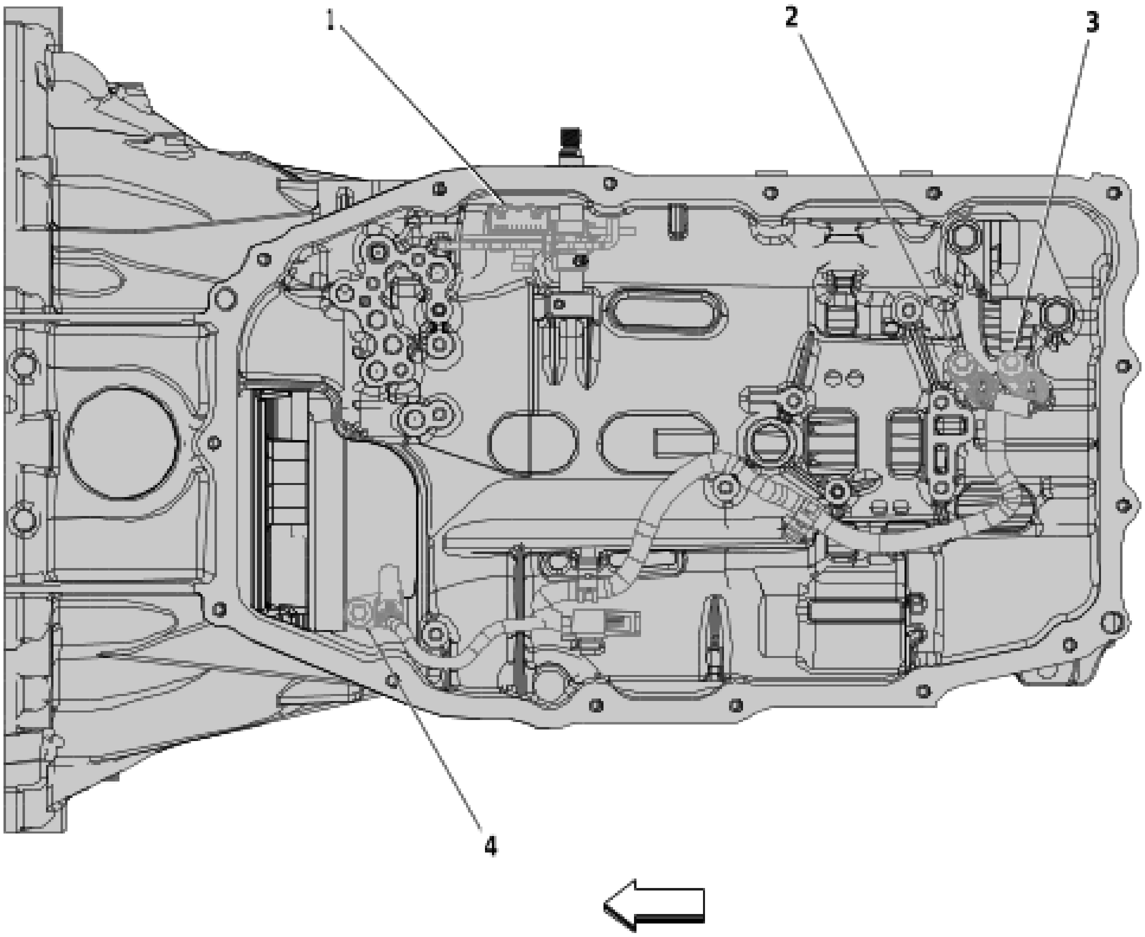
Items
(1) B14DA Automatic Transmission Intermediate Speed Sensor 1
(2) B303 Transmission Range Sensor
(3) B14DB Automatic Transmission Intermediate Speed Sensor 2
(4) B14A Automatic Transmission Output Speed Sensor
(5) B14C Automatic Transmission Input Speed Sensor

Automatic Transmission Components - Valve Body (MQB)



Items
(1) Q77G Transmission Control Solenoid Valve 7
(2) B13 Automatic Transmission Fluid Temperature Sensor
(3) Q77H Transmission Control Solenoid Valve 8
(4) Q77J Transmission Control Solenoid Valve 9
(5) Q77B Transmission Control Solenoid Valve 2
(6) Q77E Transmission Control Solenoid Valve 5
(7) Q77F Transmission Control Solenoid Valve 6
(8) Q77C Transmission Control Solenoid Valve 3
(9) G5 Automatic Transmission Auxiliary Fluid Pump (MHS / MHT / MQB / MQC)
(10) Q77A Transmission Control Solenoid Valve 1
(11) Q77D Transmission Control Solenoid Valve 4

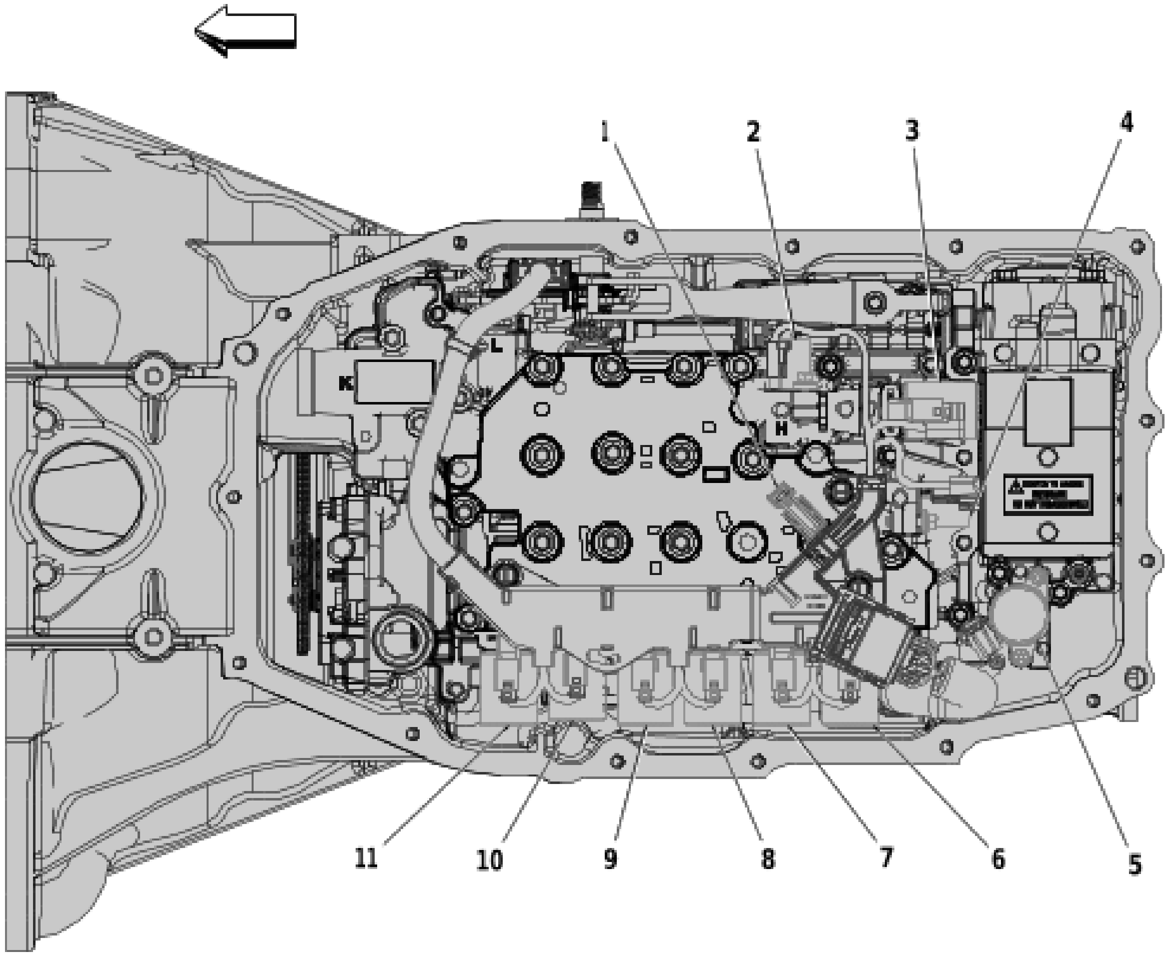
Automatic Transmission Components - Case (MFC)



6952419

Items
(1) B303 Transmission Range Sensor
(2) B14D Automatic Transmission Intermediate Speed Sensor
(3) B14A Automatic Transmission Output Speed Sensor
(4) B14C Automatic Transmission Input Speed Sensor

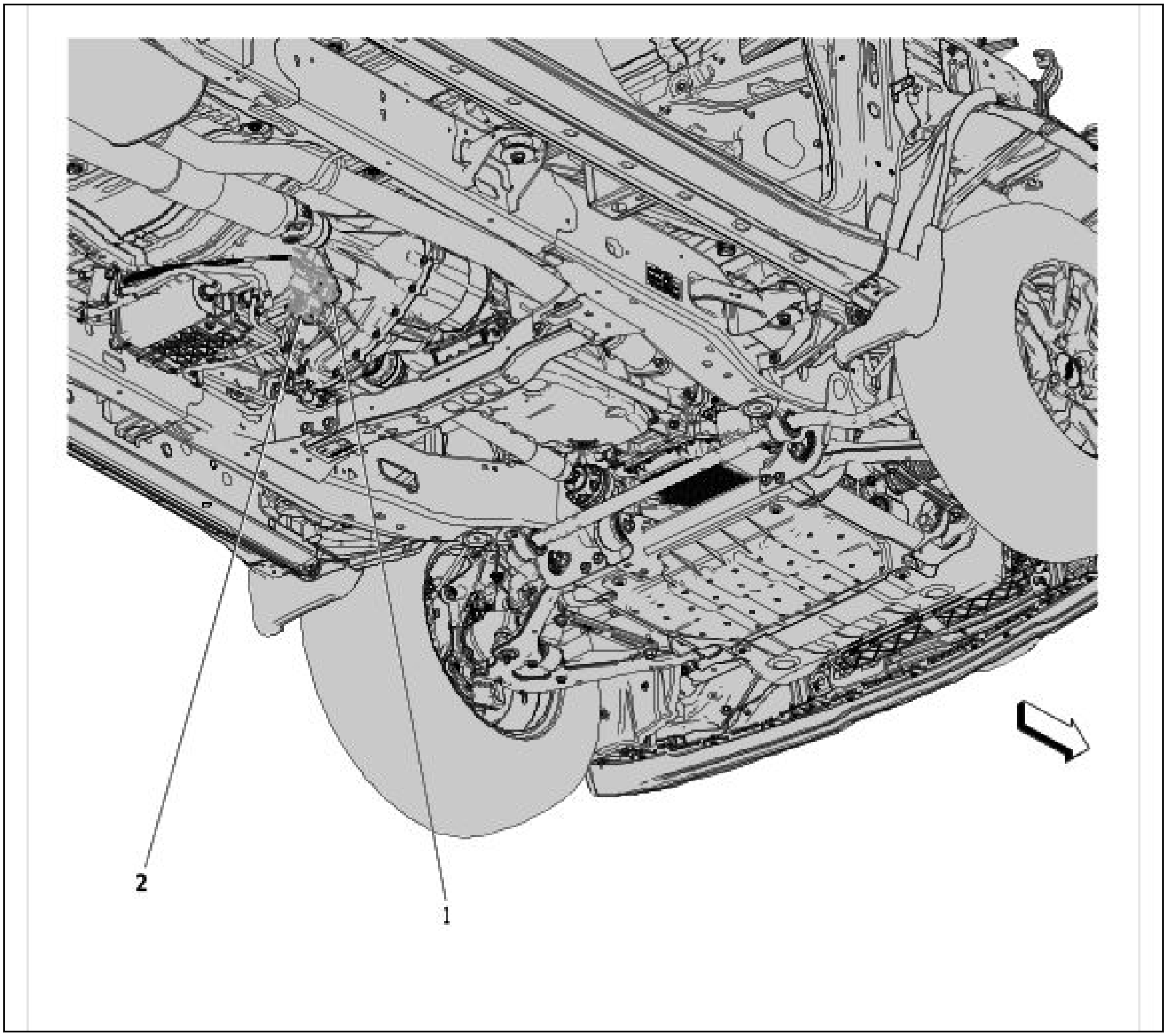
Automatic Transmission Components - Valve Body (MFC)



5978890

Items
(1) B13 Automatic Transmission Fluid Temperature Sensor
(2) Q77H Transmission Control Solenoid Valve 8
(3) Q77F Transmission Control Solenoid Valve 6
(4) Q77J Transmission Control Solenoid Valve 9
(5) B280 Transmission Fluid Pressure Accumulator Solenoid Valve (MFC)
(6) Q77B Transmission Control Solenoid Valve 2
(7) Q77A Transmission Control Solenoid Valve 1
(8) Q77E Transmission Control Solenoid Valve 5
(9) Q77C Transmission Control Solenoid Valve 3
(10) Q77D Transmission Control Solenoid Valve 4
(11) Q77G Transmission Control Solenoid Valve 7

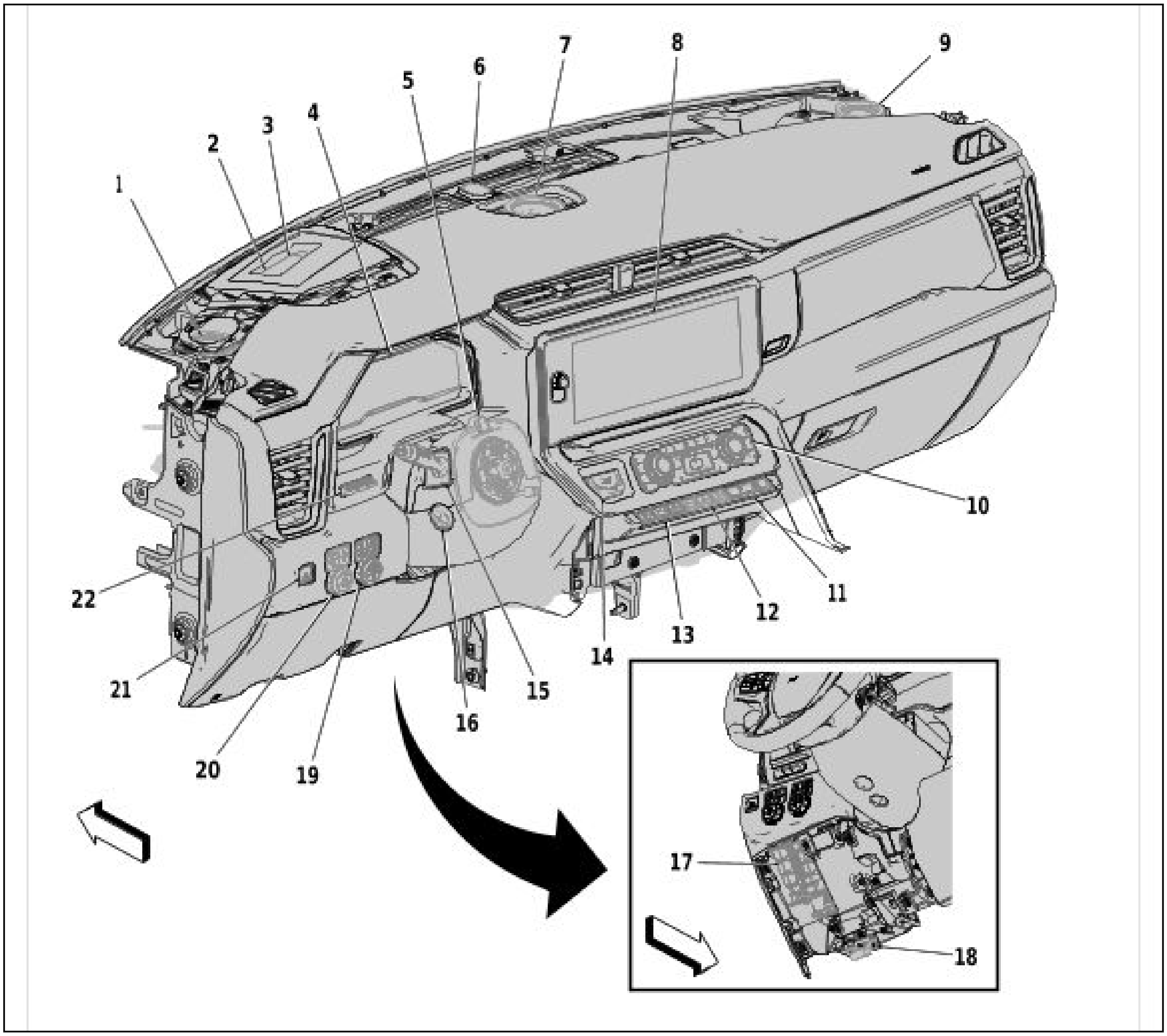
Transfer Case Components (NP0 / NQH)



5978875

Items
(1) B139 Transfer Case Two/Four Wheel Drive Actuator Position Sensor (NP0 / NQH)
(2) A16 Transfer Case Four Wheel Drive Actuator (NP0 / NQH)

Instrument Panel - Front (IOK)

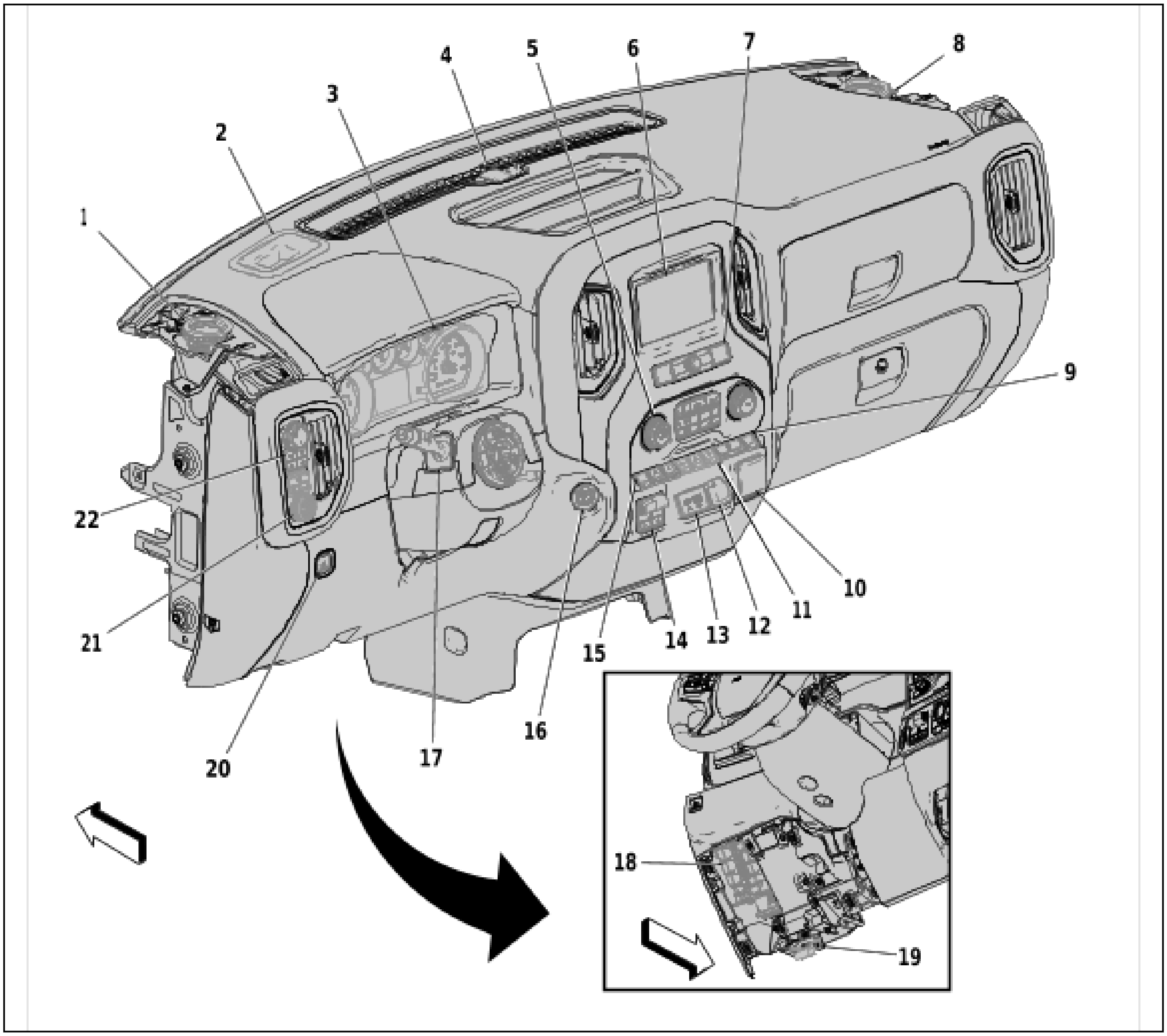


5978891

Items
(1) P19J Radio Front Speaker - Instrument Panel Left
(2) P29 Head-Up Display (UV6)
(3) P43 Forward Collision Alert Display ((UHX / UEU) - UV6)
(4) P16 Instrument Panel Cluster Control Module
(5) B292 Driver Monitoring Camera (UKL)
(6) B10D Sun Load and Ambient Light and Security Indicator Sensor
(7) P19B Radio Front Center Speaker (UQS)
(8) A22 Radio Control (IOK)
(9) P19W Radio Front Speaker - Instrument Panel Right
(10) A26 Heater and Air Conditioning User Interface Control - Front

Items
(11) S171R Instrument Panel Center Accessory Function Switch - Right
(12) S86 Vehicle Stability Control System Switch
(13) S171L Instrument Panel Center Accessory Function Switch - Left
(14) S38 On/Off Vehicle Switch (BTM)
(15) S78 Turn Signal Switch
(16) S71 Steering Column Tilt Wheel and Telescope Switch
(17) X53AF Body Wiring Harness Junction Block
(18) X84 Data Link Connector
(19) S30 Headlamp Switch
(20) S126 Ride Control Switch
(21) S91 Parking Brake Control Switch
(22) S27 Head-Up Display Switch (UV6)

Instrument Panel - Front (IOR)

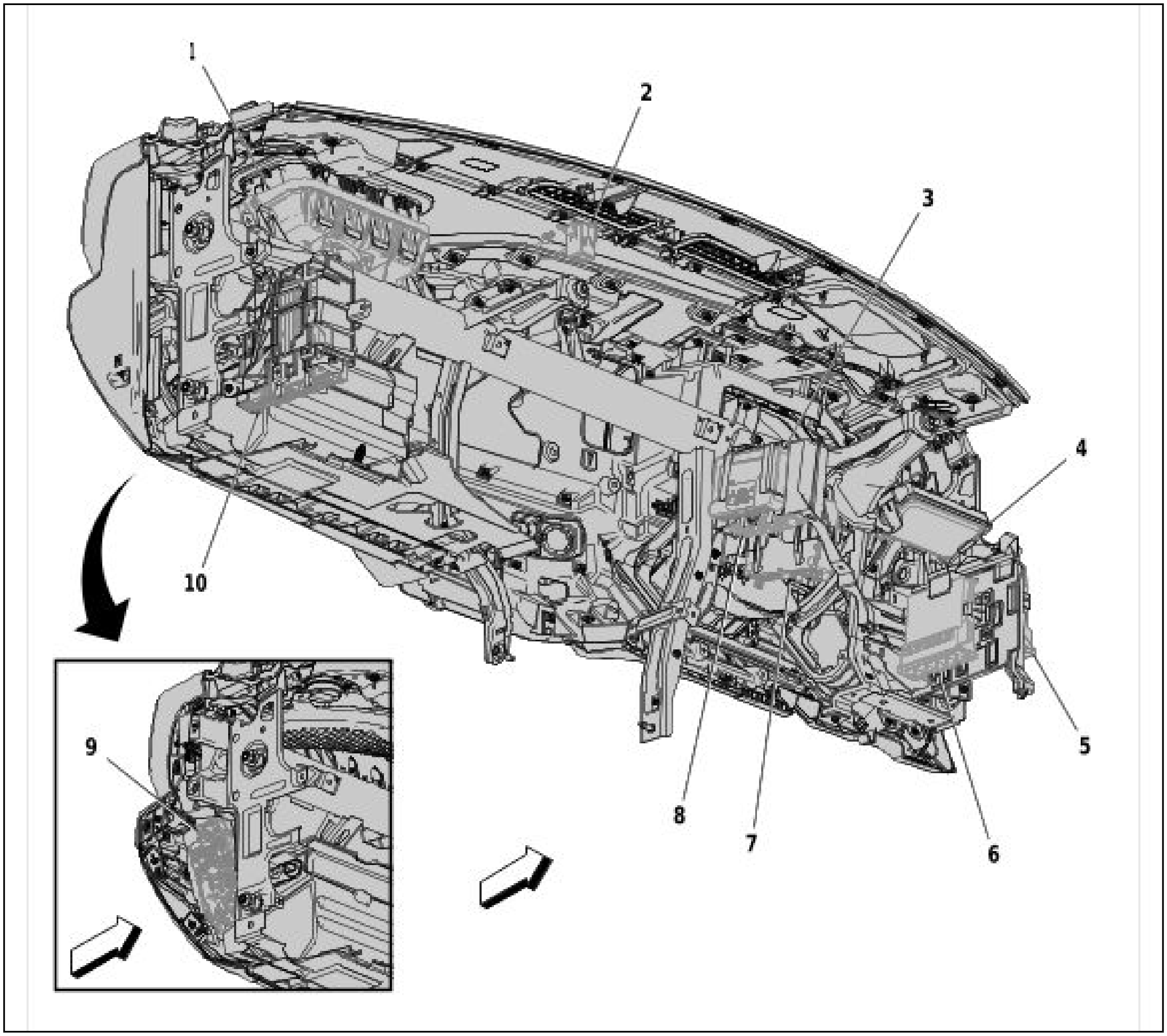


5971975

Items
(1) P19J Radio Front Speaker - Instrument Panel Left
(2) P43 Forward Collision Alert Display ((UHX / UEU) - UV6)
(3) P16 Instrument Panel Cluster Control Module
(4) B10D Sun Load and Ambient Light and Security Indicator Sensor
(5) A26 Heater and Air Conditioning User Interface Control - Front
(6) P53 Driver Information Display (IOR)
(7) A22 Radio Function Switch (IOR)
(8) P19W Radio Front Speaker - Instrument Panel Right
(9) S171R Instrument Panel Center Accessory Function Switch - Right
(10) X81FSA Accessory Power Receptacle - Front Center Seat Rear Cover 110V AC (AZ3+KI4)

Items
(11) S86 Vehicle Stability Control System Switch
(12) X80G Accessory Power Receptacle - Instrument Panel
(13) X92IP USB 2 Port Receptacle - Instrument Panel
(14) S76 Trailer Brake Control Switch
(15) S171L Instrument Panel Center Accessory Function Switch - Left
(16) S38 On/Off Vehicle Switch (BTM)
(17) S78 Turn Signal Switch
(18) X53AF Body Wiring Harness Junction Block
(19) X84 Data Link Connector
(20) S91 Parking Brake Control Switch
(21) S30 Headlamp Switch
(22) S126 Ride Control Switch

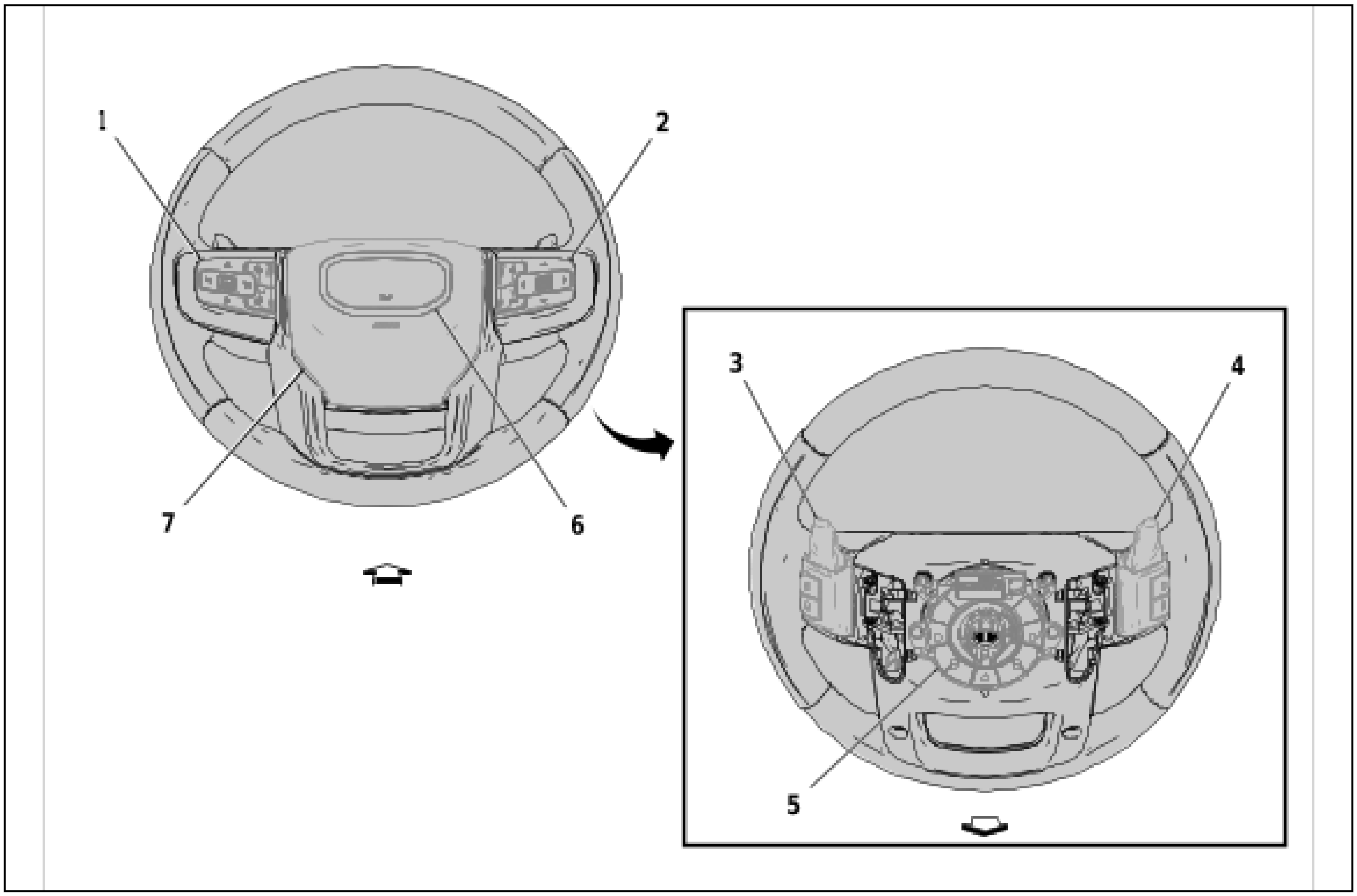
Instrument Panel - Rear



5978892

Items
(1) F101 Instrument Panel Airbag
(2) T4TA Auxiliary Wireless Communication Interface Antenna
(3) K179 Automated Driving Mapping Module (UKL)
(4) K180 Driver Monitoring System Module (UKL)
(5) K9 Body Control Module
(6) K219 Lighting Control Module
(7) K73 Telematic Control Module (UE1)
(8) K56 Serial Data Gateway Module
(9) X51R Instrument Panel Wiring Harness Junction Block - Right
(10) A11 Radio

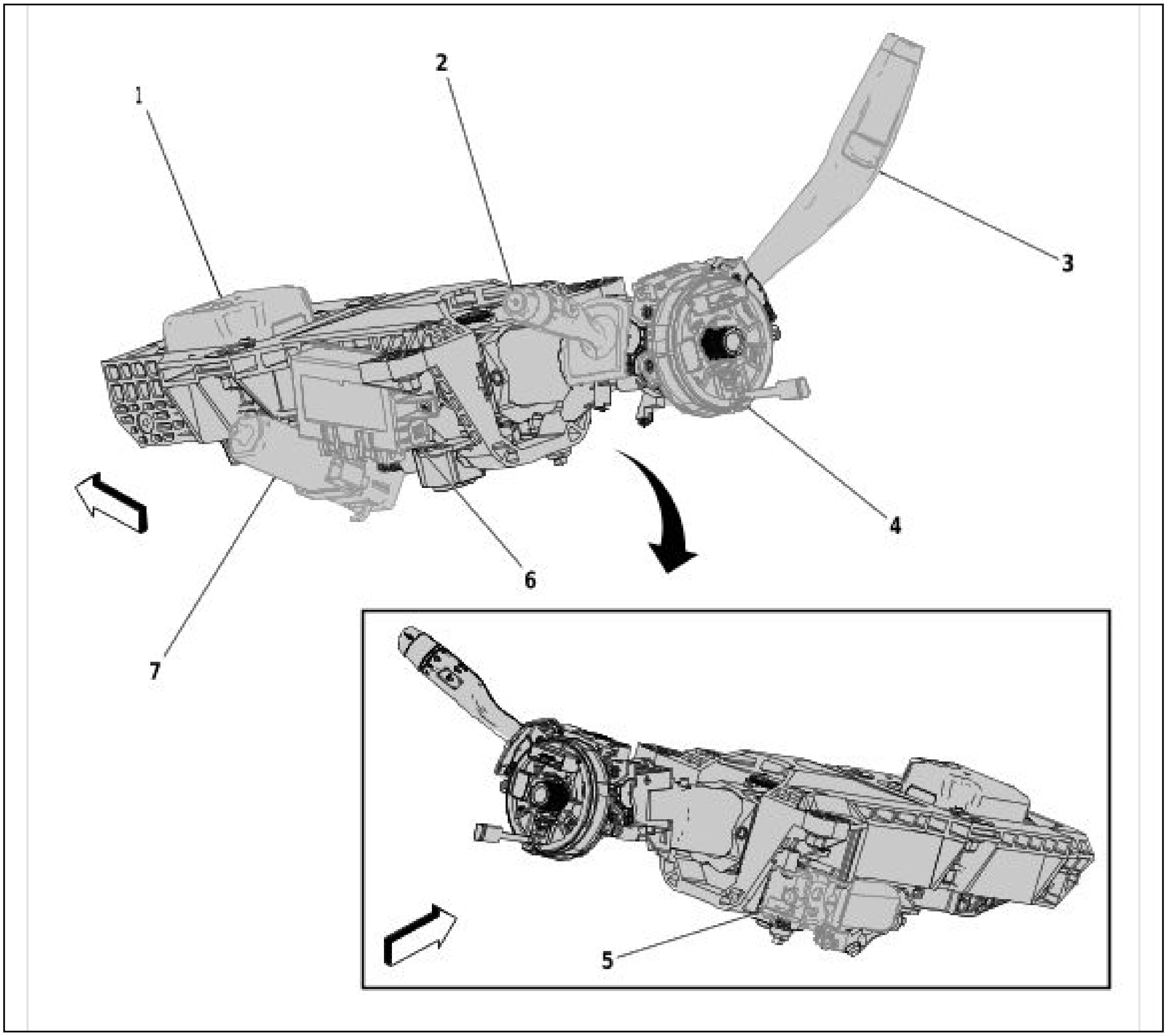
Steering Wheel Components



6050083

Items
(1) S70L Cruise Control Switch
(2) S70R Radio Control Switch - Steering Wheel
(3) S70F Radio Volume Switch - Steering Wheel
(4) S70E Radio Favorites Switch - Steering Wheel
(5) X85 Steering Wheel Airbag Coil
(6) S33 Steering Wheel Horn Contact
(7) F107 Steering Wheel Airbag

Steering Column Components



5978893

Items

(1) K60 Column Lock Module (BTM)

(2) S78 Turn Signal Switch

(3) S3C Automatic Transmission Control Lever (MHT / MQB / MFC)

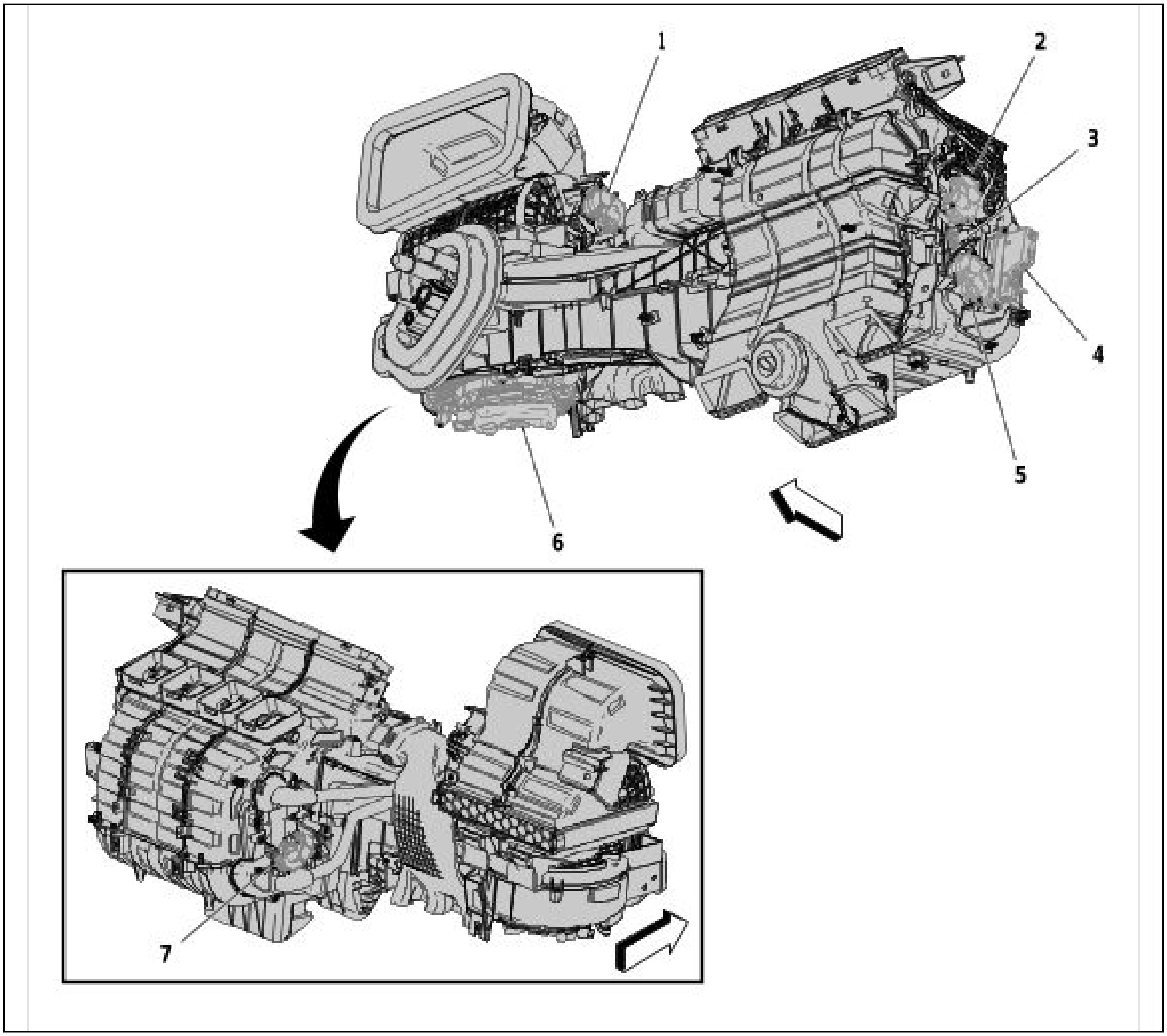
(4) X85 Steering Wheel Airbag Coil

(5) M68 Steering Column Tilt Wheel Actuator (N38)

(6) K99 Steering Column Control Module

(7) M65 Steering Column Telescope Actuator (N38)

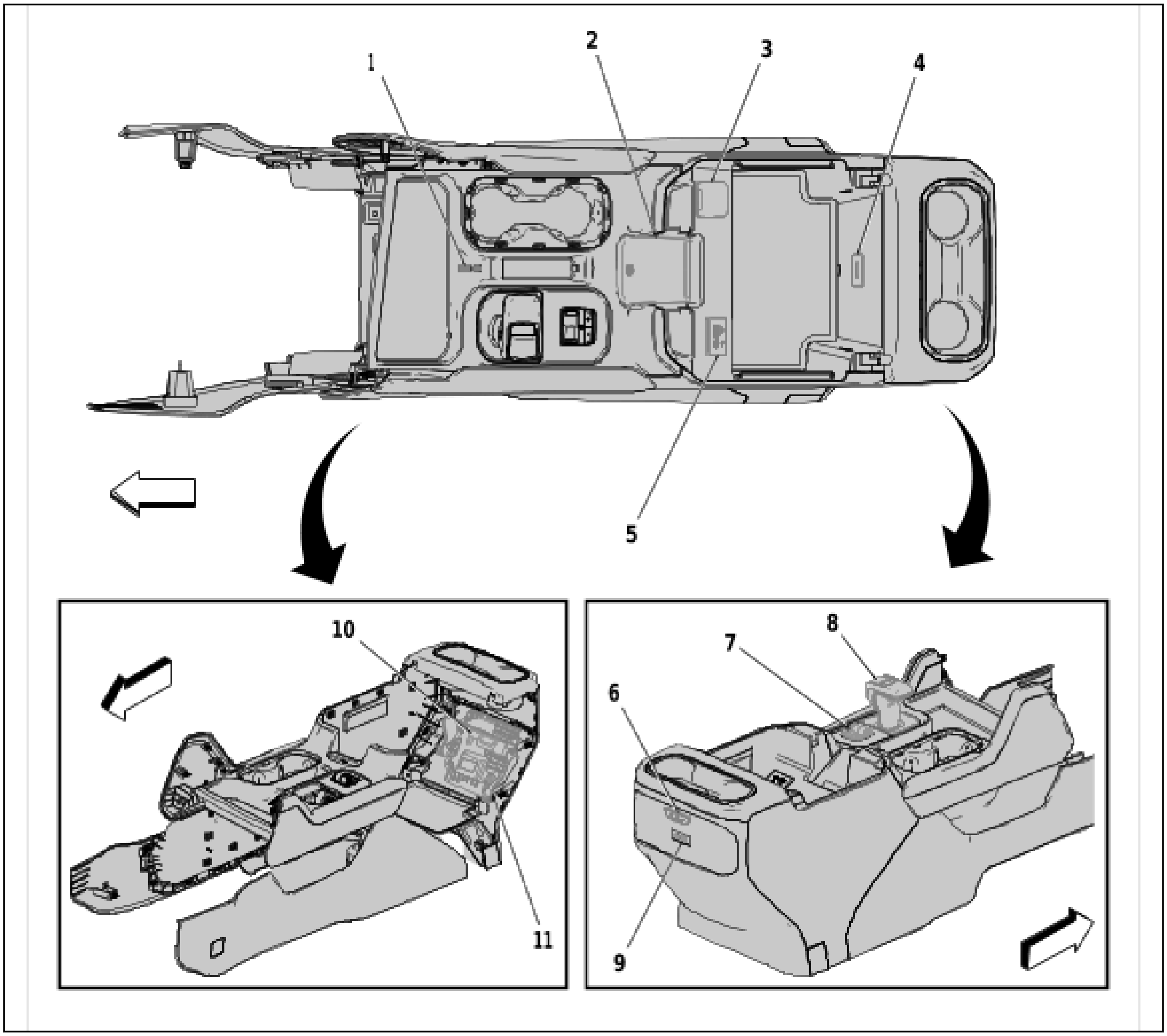
HVAC Components



6791672

Items
(1) M4 Air Inlet Valve Actuator
(2) M37 Mode Valve Actuator
(3) B39 Air Conditioning Evaporator Air Temperature Sensor
(4) E40 Air Heater (C32)
(5) M6L Temperature Valve Actuator - Left
(6) M8 Blower Motor
(7) M6R Temperature Valve Actuator - Right

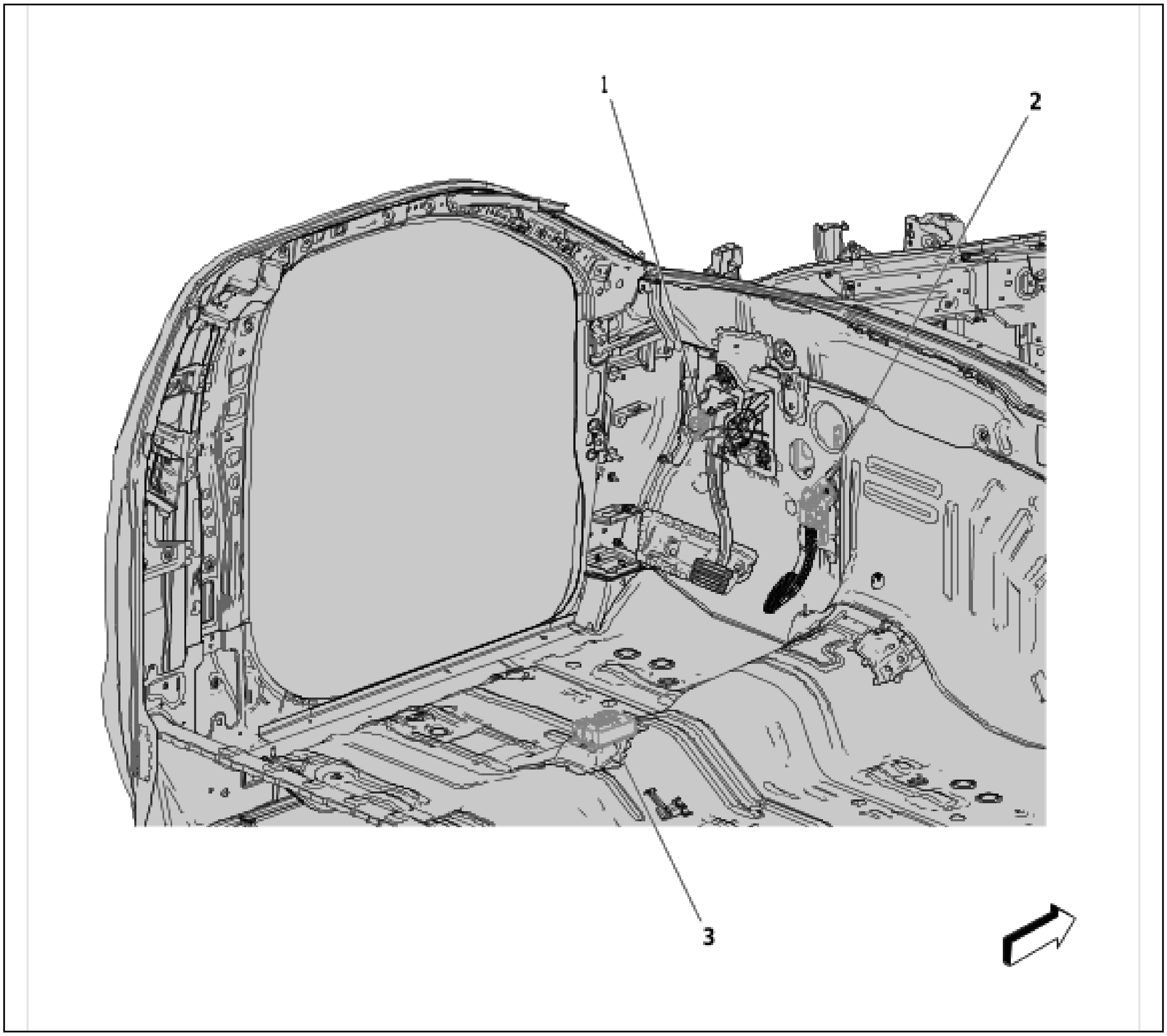
Floor Console Components



6791673

Items
(1) X92CF USB 2 Port Receptacle - Floor Console Front
(2) T22 Wireless Accessory Charging Module (K4C)
(3) X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC (KI5+D07)
(4) E28 Front Floor Console Compartment Lamp (D07)
(5) X83B Audio/Video Receptacle (UBC)
(6) S32LR Rear Seat Heater Switch - Left (KA6)
(7) S76 Trailer Brake Control Switch
(8) K212 Gear Shift Control Module (MHS / MQC)
(9) X92CD Dual Charge Only Receptacle - Floor Console Rear (D07+UBI)
(10) T10J Low Frequency Instrument Panel Antenna (-D7)
(11) K124 Image Processing Module (UGN / UKL)

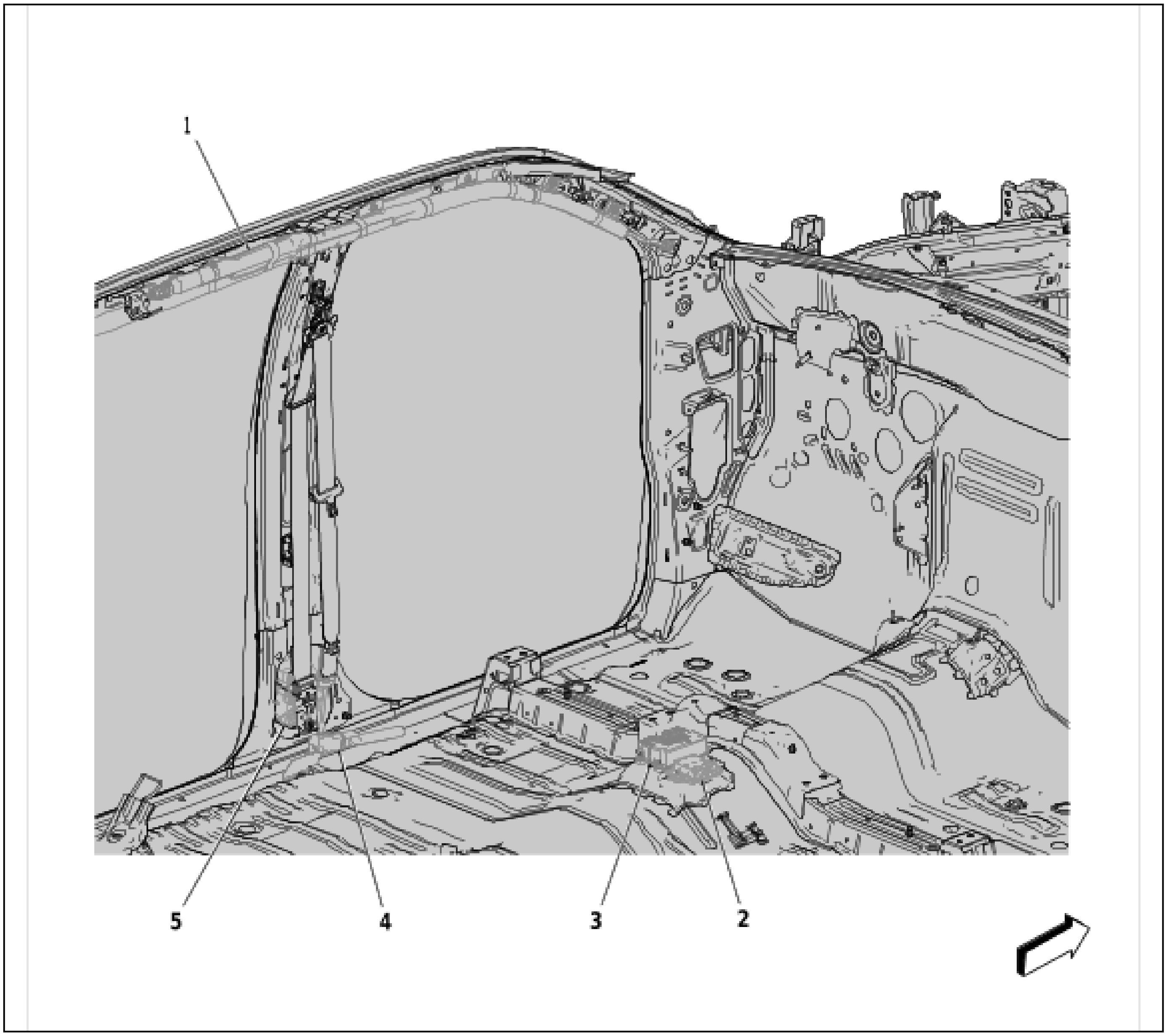
Passenger Compartment - Left Front - Regular Cab



5978894

Items
(1) B22 Brake Pedal Position Sensor
(2) B107 Accelerator Pedal Position Sensor
(3) K36 Restraints Control Module

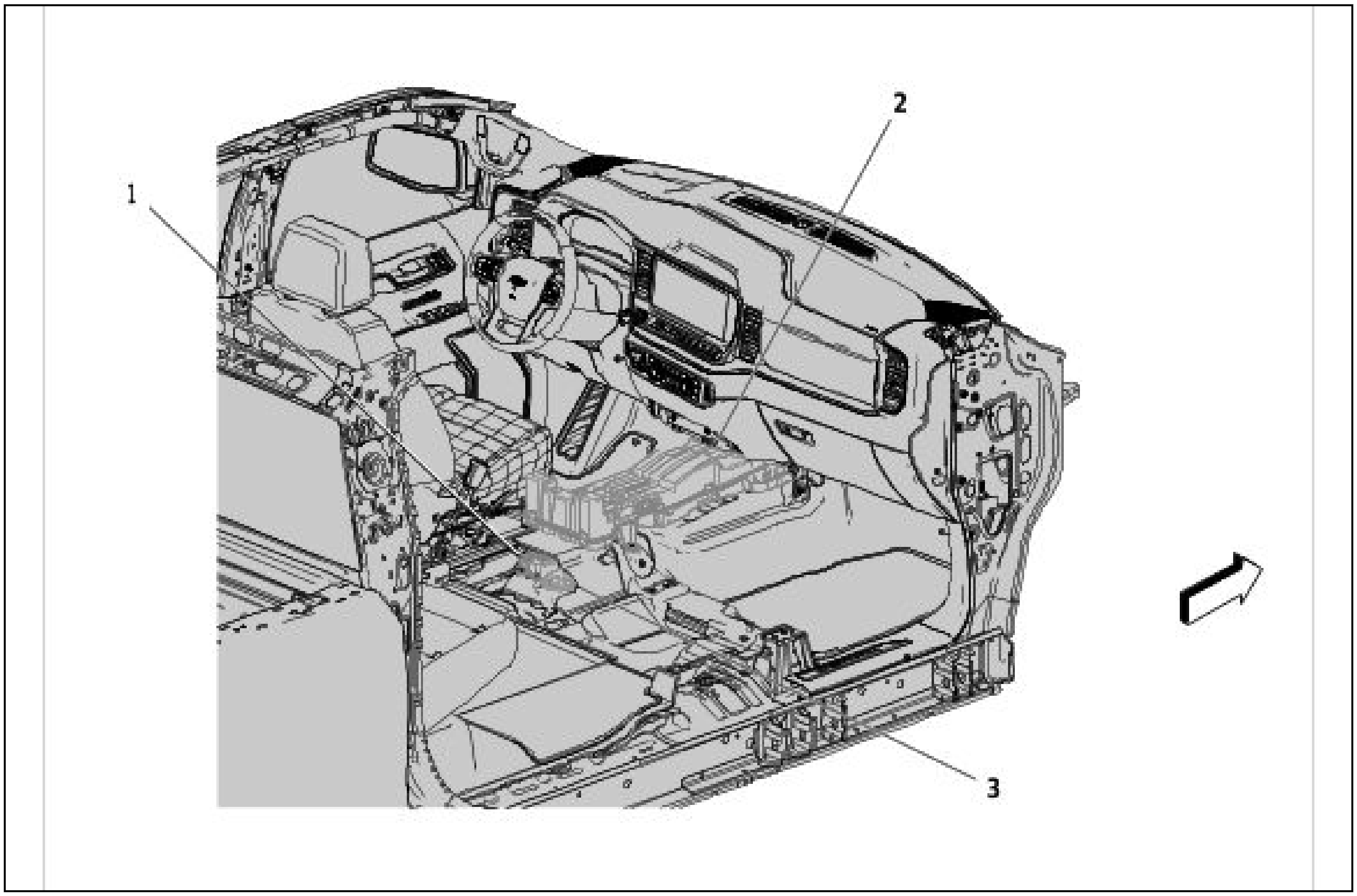
Passenger Compartment - Left Front - Double Cab/Crew Cab



5978895

Items
(1) F105LF Front Row Roof Rail Airbag - Left
(2) B284 Vehicle Dynamics Sensor (UKL)
(3) K36 Restraints Control Module
(4) F113D Front Seat Belt Anchor Plate Tensioner - Driver
(5) F112D Front Seat Belt Retractor - Driver

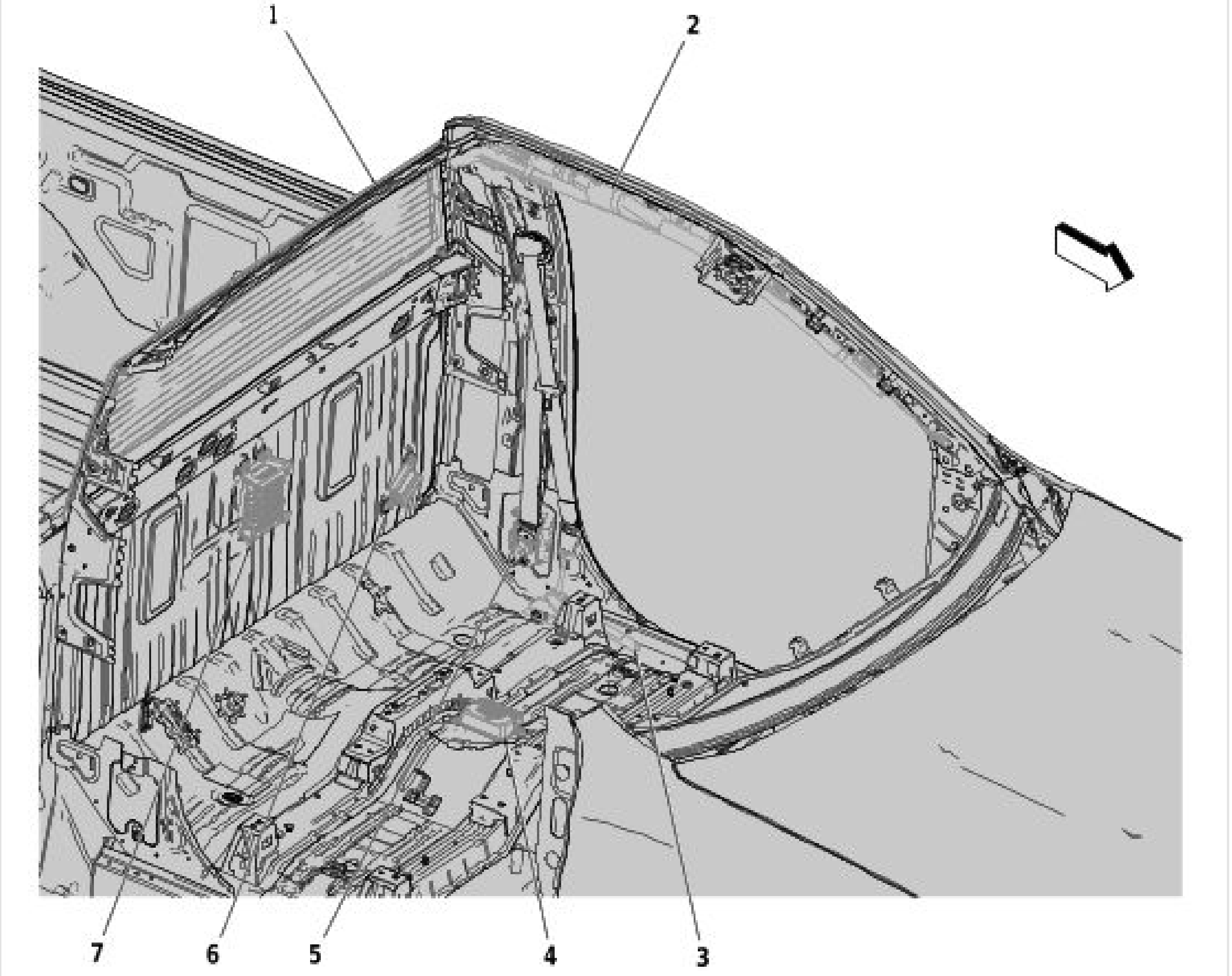
Passenger Compartment - Middle Front



5978896

Items
(1) K36 Restraints Control Module
(2) P19AFC Front Floor Speaker - Console (UQA / UQS)
(3) B284 Vehicle Dynamics Sensor (UKL)

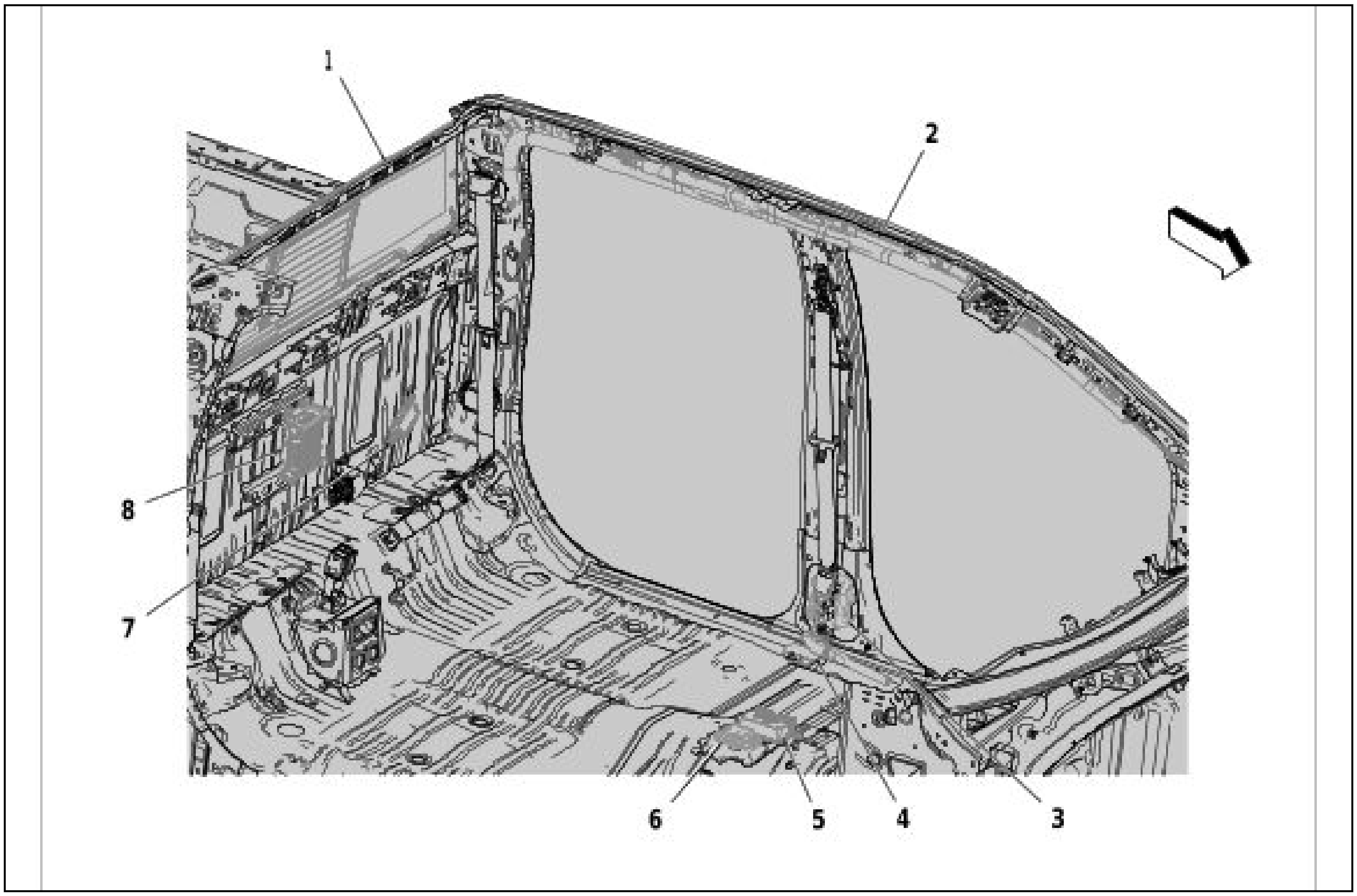
Passenger Compartment - Left Rear - Regular Cab



5978897

Items
(1) E18 Rear Window Defogger Grid
(2) F105LF Front Row Roof Rail Airbag - Left
(3) F113D Front Seat Belt Anchor Plate Tensioner - Driver
(4) K36 Restraints Control Module
(5) F112D Front Seat Belt Retractor - Driver
(6) K182 Parking Assist Control Module (UD5 / UD7)
(7) T1 DC/AC Converter Control Module ((KI4/KI5)-08R)

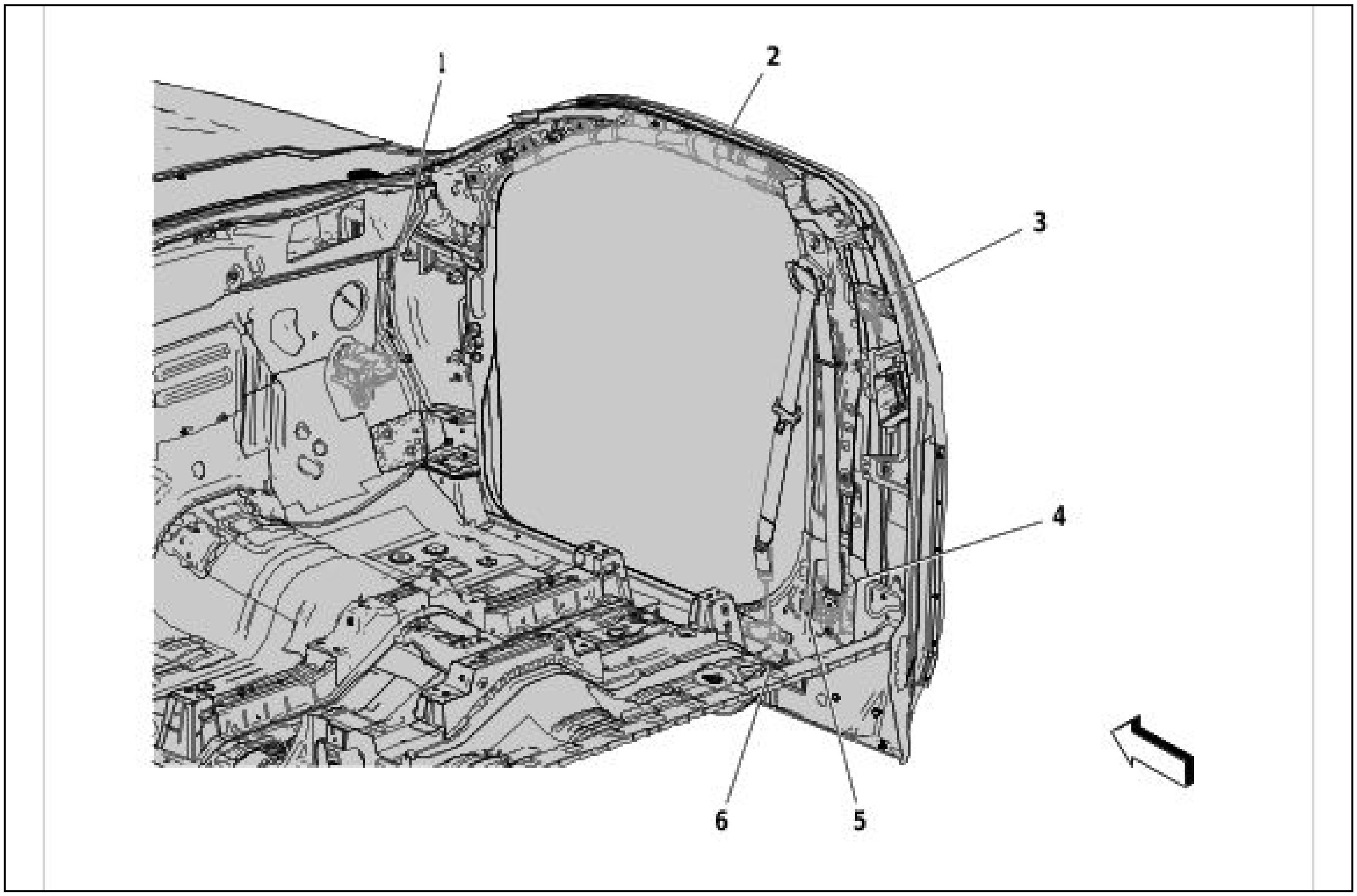
Passenger Compartment - Left Rear - Double Cab/Crew Cab



5978898

Items
(1) E18 Rear Window Defogger Grid
(2) F105LF Front Row Roof Rail Airbag - Left
(3) F112D Front Seat Belt Retractor - Driver
(4) F113D Front Seat Belt Anchor Plate Tensioner - Driver
(5) K36 Restraints Control Module
(6) B284 Vehicle Dynamics Sensor (UKL)
(7) K182 Parking Assist Control Module (UD5 / UD7)
(8) T1 DC/AC Converter Control Module ((KI4/KI5)-08R)

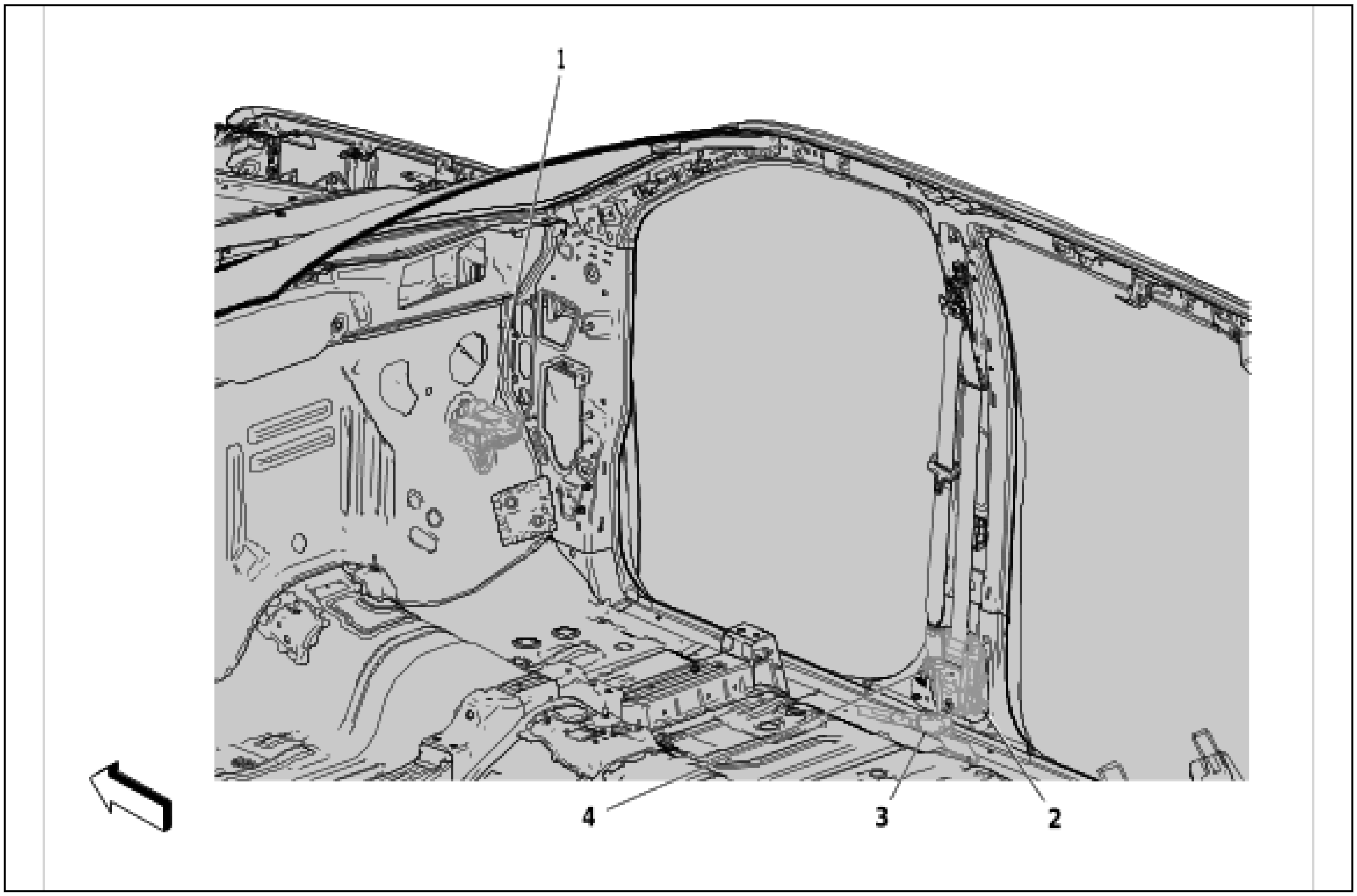
Passenger Compartment - Right Front - Regular Cab



5978899

Items
(1) T19 Multifunction Power Supply Converter
(2) F105RF Front Row Roof Rail Airbag - Right
(3) K77 Remote Function Actuator Module
(4) F112P Front Seat Belt Retractor - Passenger
(5) B61P Seat Belt Tension Sensor - Passenger
(6) F113P Front Seat Belt Anchor Plate Tensioner - Passenger

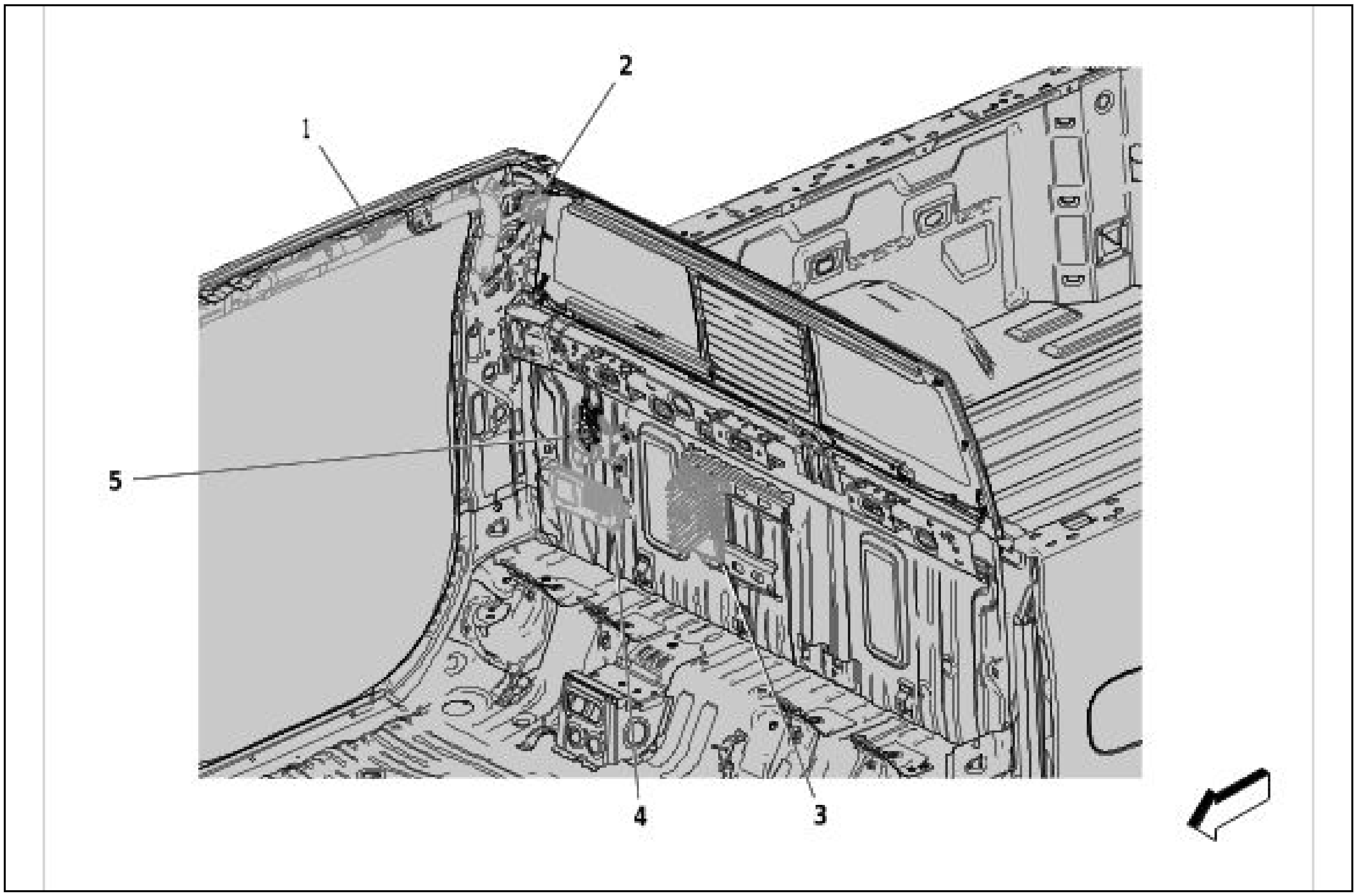
Passenger Compartment - Right Front - Double Cab/Crew Cab



5978900

Items
(1) T19 Multifunction Power Supply Converter
(2) F112P Front Seat Belt Retractor - Passenger
(3) F113P Front Seat Belt Anchor Plate Tensioner - Passenger
(4) B61P Seat Belt Tension Sensor - Passenger

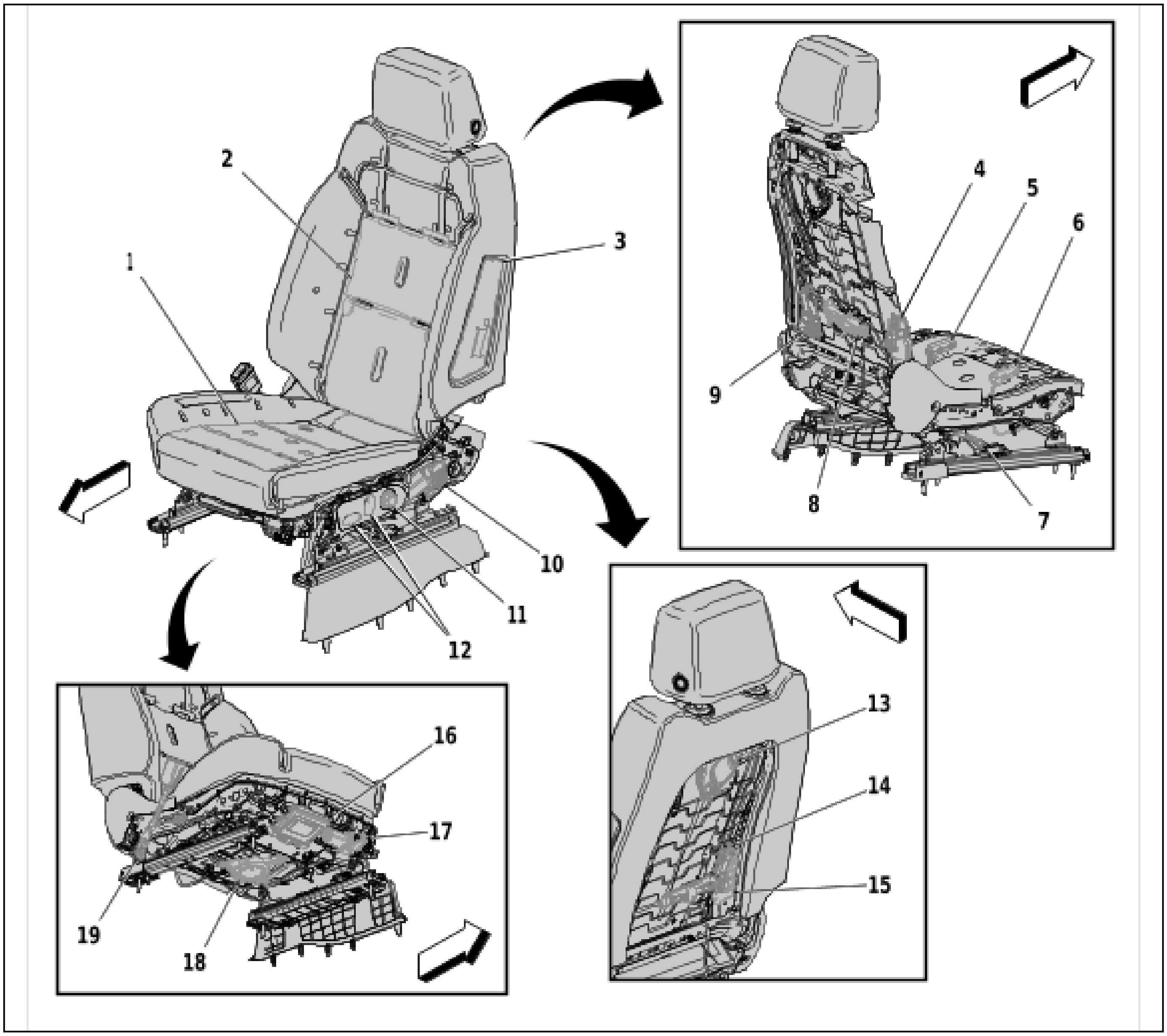
Passenger Compartment - Right Rear - Double Cab/Crew Cab



5978901

Items
(1) F105RF Front Row Roof Rail Airbag - Right
(2) K77 Remote Function Actuator Module
(3) T3 Audio Amplifier (UQA / UQF / UQS)
(4) K157 Video Processing Module (UVI / UV2)
(5) M63 Rear Sliding Window Motor (A48)

Driver Seat Components

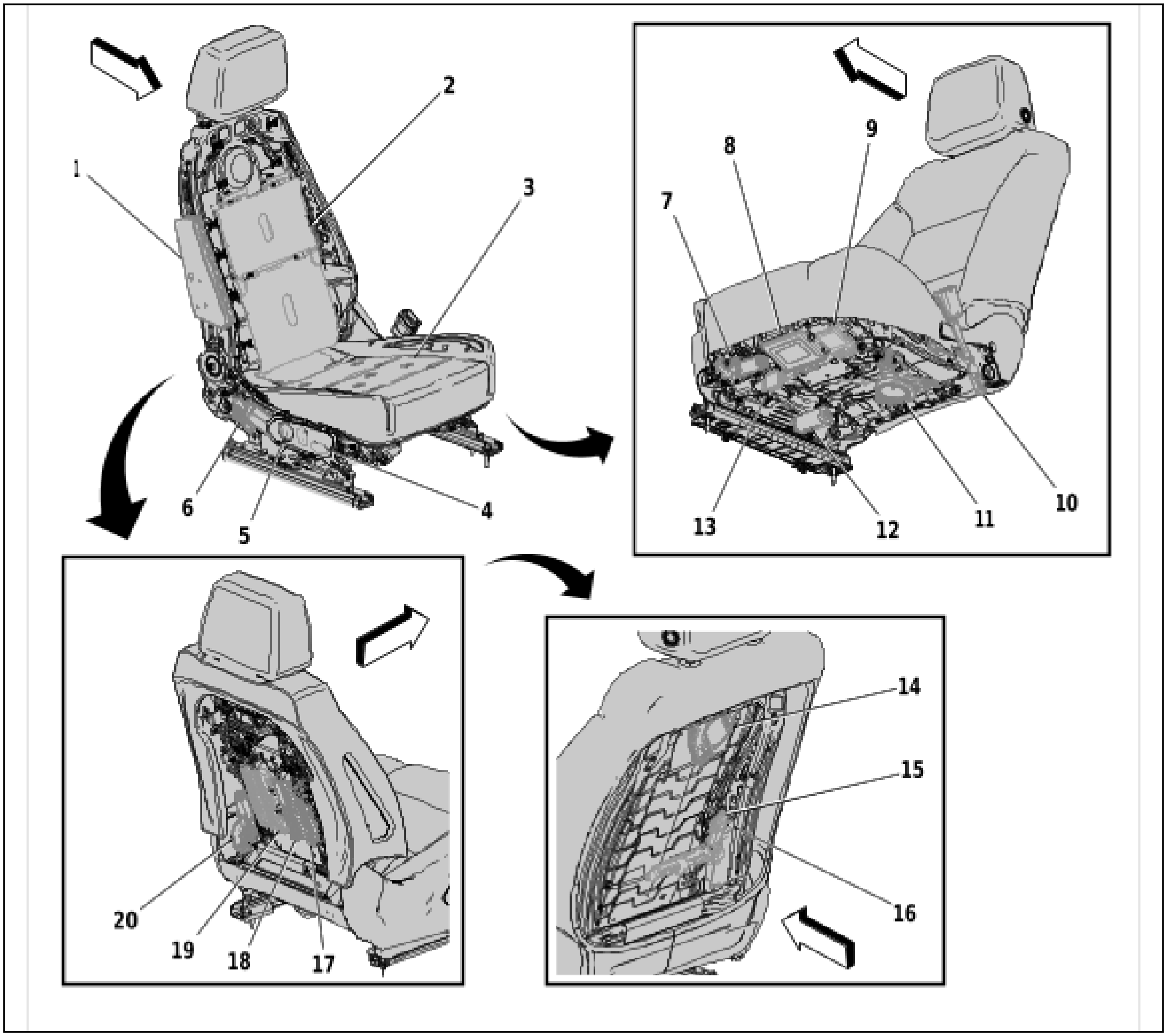


5978902

Items
(1) E14B Front Seat Cushion Heater - Driver (KA1 / KQV)
(2) E14A Front Seat Back Heater - Driver (KA1 / KQV)
(3) F106D Front Seat Outboard Seat Back Airbag - Driver
(4) G31D Front Seat Back Lumbar Pump - Driver
(5) P45L Front Seat Lane Departure Warning Actuator - Left (HS1)
(6) P45R Front Seat Lane Departure Warning Actuator - Right (HS1)
(7) M51D Front Seat Adjuster Actuator - Driver
(8) K104D Front Seat Bladder Control Module - Driver
(9) M56D Front Seat Recliner Actuator - Driver
(10) M55D Front Seat Vertical Adjuster Actuator - Driver
(11) S65D Front Seat Lumbar Switch - Driver (A2X)

Items
(12) S64D Front Seat Adjuster Switch - Driver
(13) M73A Front Seat Back Ventilation Blower - Driver (KQV)
(14) M53D Front Seat Back Lumbar Motor - Driver
(15) G31D Front Seat Back Lumbar Pump - Driver
(16) K40D Driver Seat Adjuster Memory Module (A45)
(17) M50D Front Seat Tilt Adjuster Actuator - Driver
(18) M73D Front Seat Cushion Ventilation Blower - Driver (KQV)
(19) B88D Seat Belt Switch - Driver

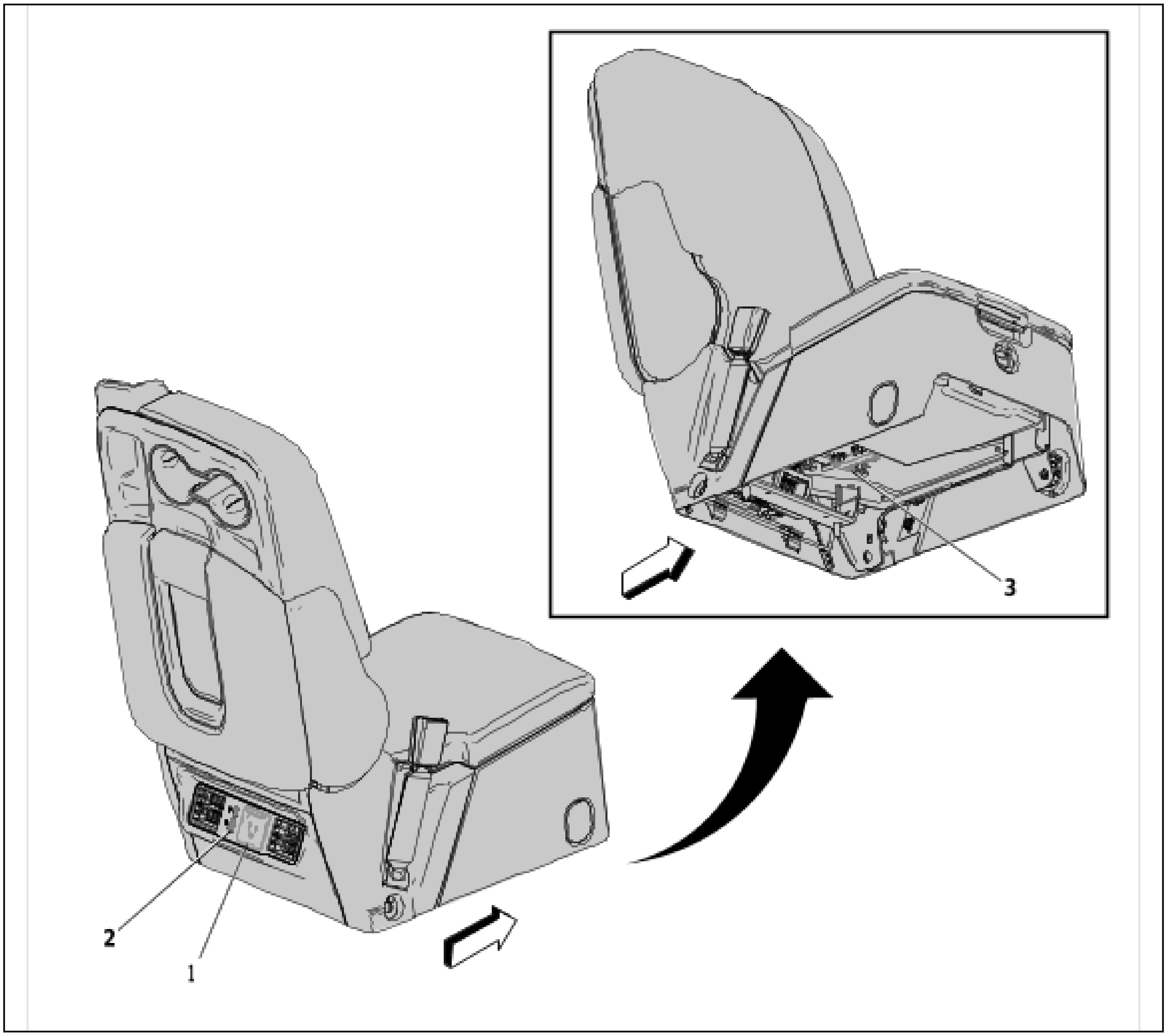
Passenger Seat Components



5978903

Items
(1) F106P Front Seat Outboard Seat Back Airbag - Passenger
(2) E14C Front Seat Back Heater - Passenger (KA1 / KQV)
(3) E14D Front Seat Cushion Heater - Passenger (KA1 / KQV)
(4) S64P Front Seat Adjuster Switch - Passenger
(5) S65P Front Seat Lumbar Switch - Passenger (A7K)
(6) M55P Front Seat Vertical Adjuster Actuator - Passenger
(7) M50P Front Seat Tilt Adjuster Actuator - Passenger
(8) K40P Passenger Seat Adjuster Memory Module (A45)
(9) K29FV Front Seat Heater Vent Control Module (KA1 / KQV)
(10) B88P Seat Belt Switch - Passenger
(11) M73P Front Seat Cushion Ventilation Blower - Passenger (KQV)
(12) M51P Front Seat Adjuster Actuator - Passenger
(13) K85P Restraints Occupant Classification System Module - Passenger
(14) M73B Front Seat Back Ventilation Blower - Passenger (KQV)
(15) M53P Front Seat Back Lumbar Motor - Passenger
(16) G31P Front Seat Back Lumbar Pump - Passenger
(17) K104P Front Seat Bladder Control Module - Passenger (A45 / AVU)
(18) K104PP Front Seat Bladder Control Module - Passenger Primary (AKE)
(19) K104PS Front Seat Bladder Control Module - Passenger Secondary (AKE)
(20) M56P Front Seat Recliner Actuator - Passenger

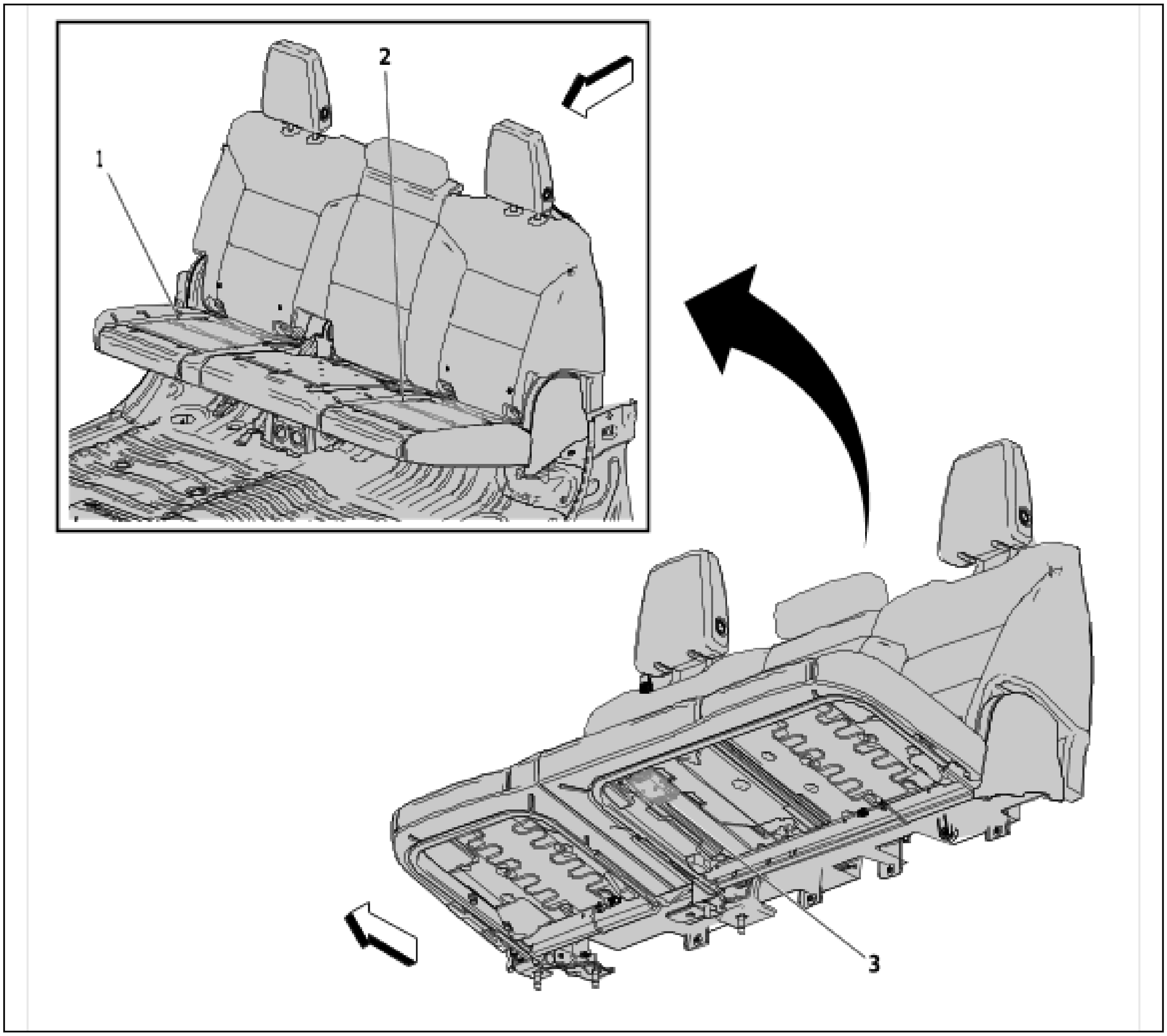
Front Center Seat Components



5978904

Items
(1) X81FSA Accessory Power Receptacle - Front Center Seat Rear Cover 110V AC (AZ3+KI4)
(2) X92FSR Dual Charge Only Receptacle - Front Center Seat Rear Cover (AZ3+UBI)
(3) T10UA Low Frequency Console Antenna

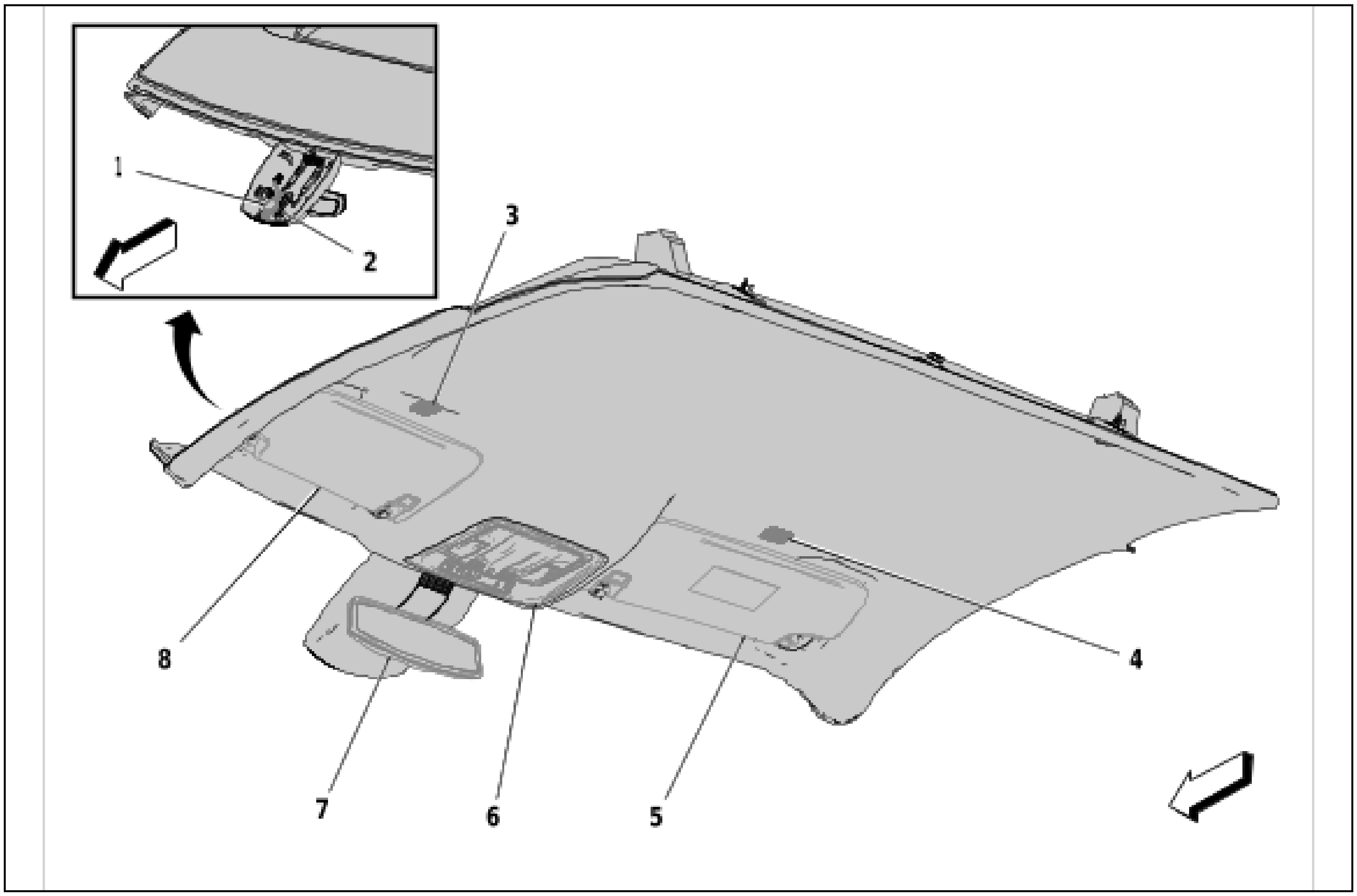
Rear Seat Components



5978905

Items
(1) E14H Rear Seat Cushion Heater - Right Rear (KA6)
(2) E14F Rear Seat Cushion Heater - Left Rear (KA6)
(3) K29R Rear Seat Heater Control Module (KA6)

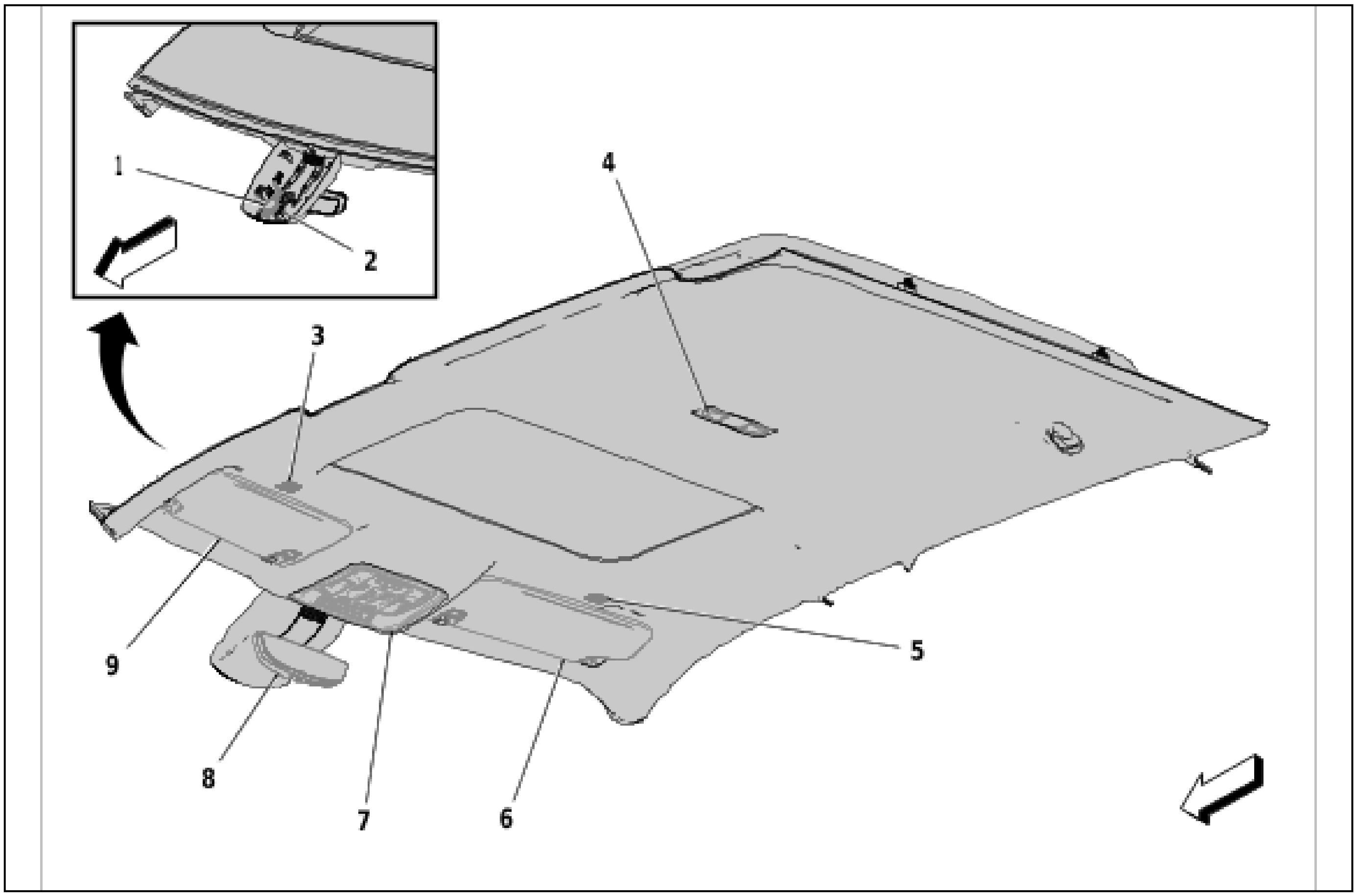
Headliner Components - Regular Cab



5978906

Items
(1) B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor
(2) B160 Inside Air Moisture and Windshield Temperature Sensor
(3) B24LF Mobile Telephone Microphone - Left Front
(4) B24RF Mobile Telephone Microphone - Right Front (IOK)
(5) A3R Sunshade - Right
(6) A103 Roof Console
(7) A10 Inside Rearview Mirror
(8) A3L Sunshade - Left

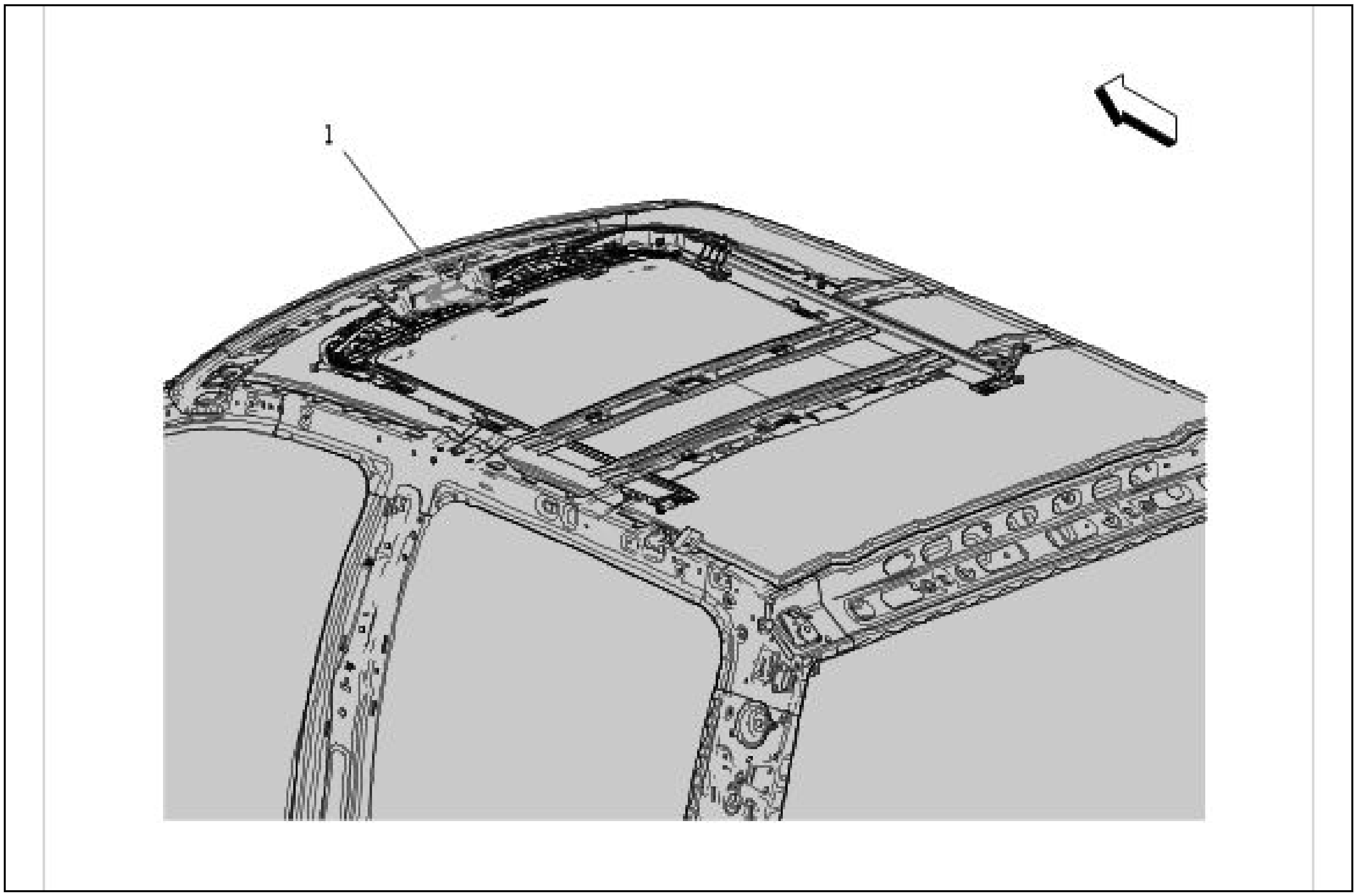
Headliner Components - Double Cab/Crew Cab



5978907

Items
(1) B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor
(2) B160 Inside Air Moisture and Windshield Temperature Sensor
(3) B24LF Mobile Telephone Microphone - Left Front
(4) E37SMC Rear Seat Position Center Reading and Courtesy Lamp (Double Cab / Crew Cab)
(5) B24RF Mobile Telephone Microphone - Right Front (IOK)
(6) A3R Sunshade - Right
(7) A103 Roof Console
(8) A10 Inside Rearview Mirror
(9) A3L Sunshade - Left

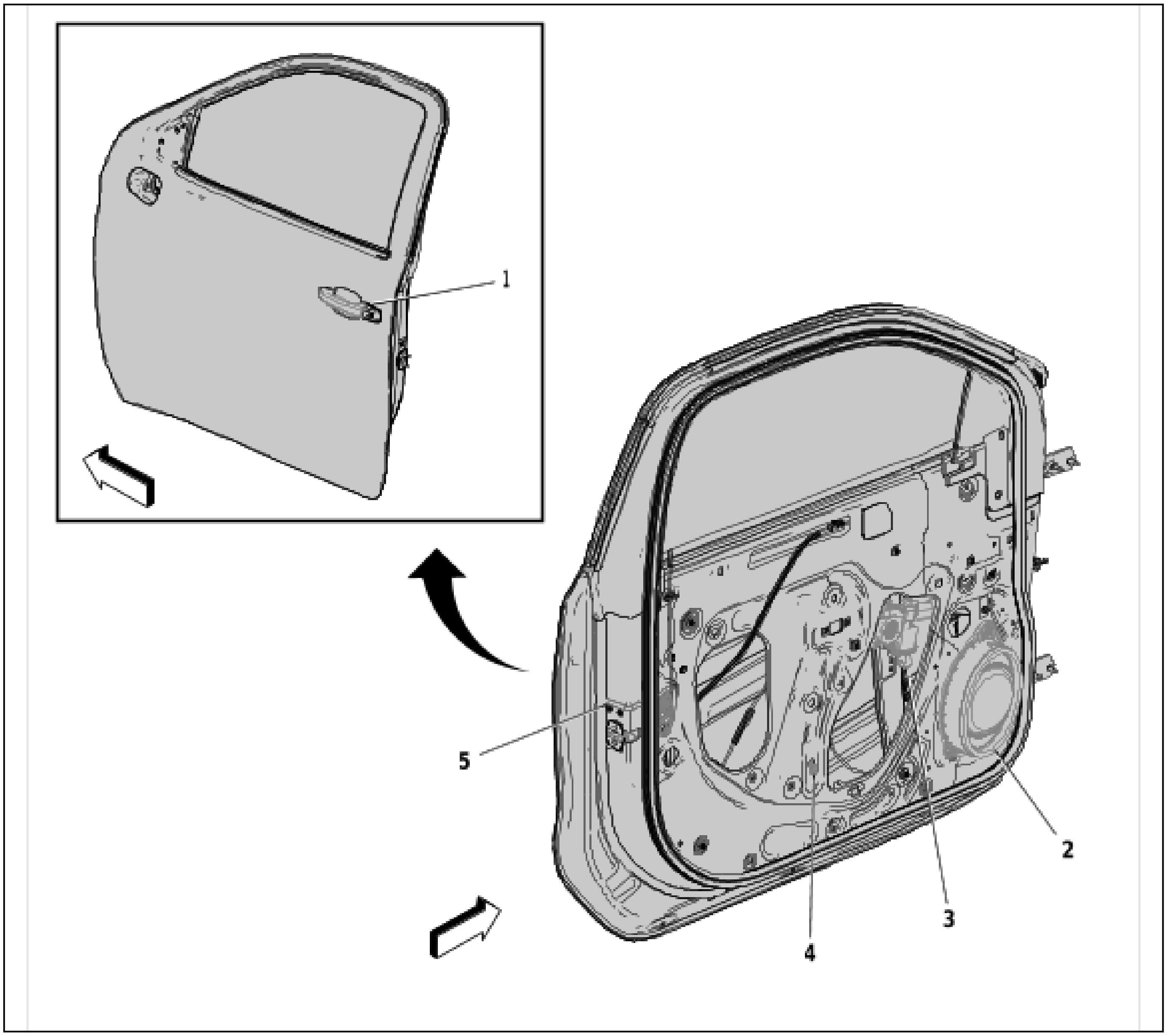
Roof Components



6050087

Items
(1) K61 Sunroof Control Module (CF5)

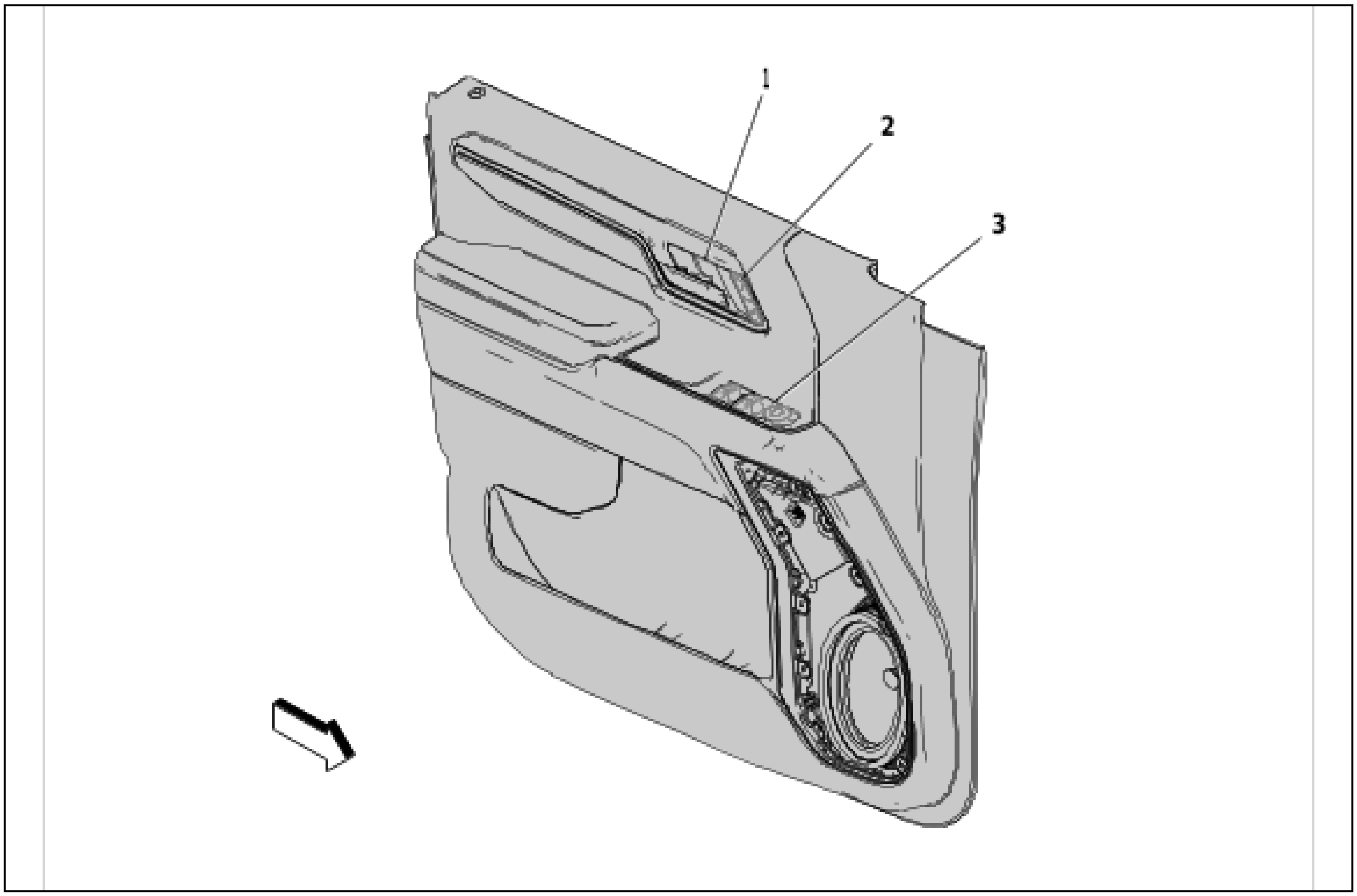
Driver Door Components



5978908

Items
(1) A24D Front Side Door Outside Handle - Left
(2) P19AG Radio Front Side Door Speaker - Left
(3) M74D Front Side Door Window Regulator Motor - Driver
(4) B63LF Airbag Side Impact Sensor - Left Front Door
(5) A23D Front Side Door Latch - Driver

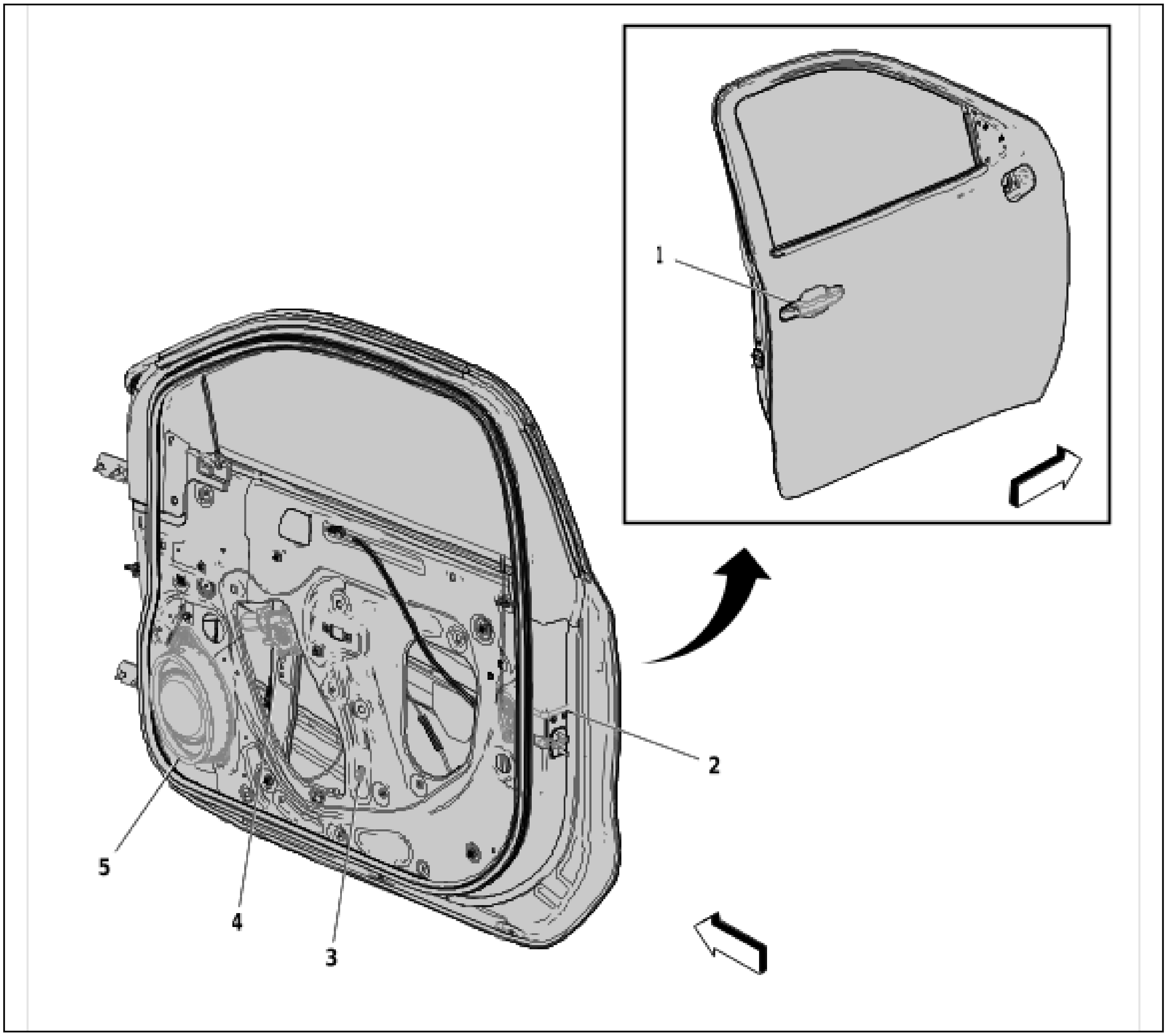
Driver Door Trim Components



5978909

Items
(1) E63D Front Side Door Inside Handle Illumination Lamp - Left
(2) S13D Door Lock Switch - Driver
(3) S79D Front Side Door Window Control Switch - Driver

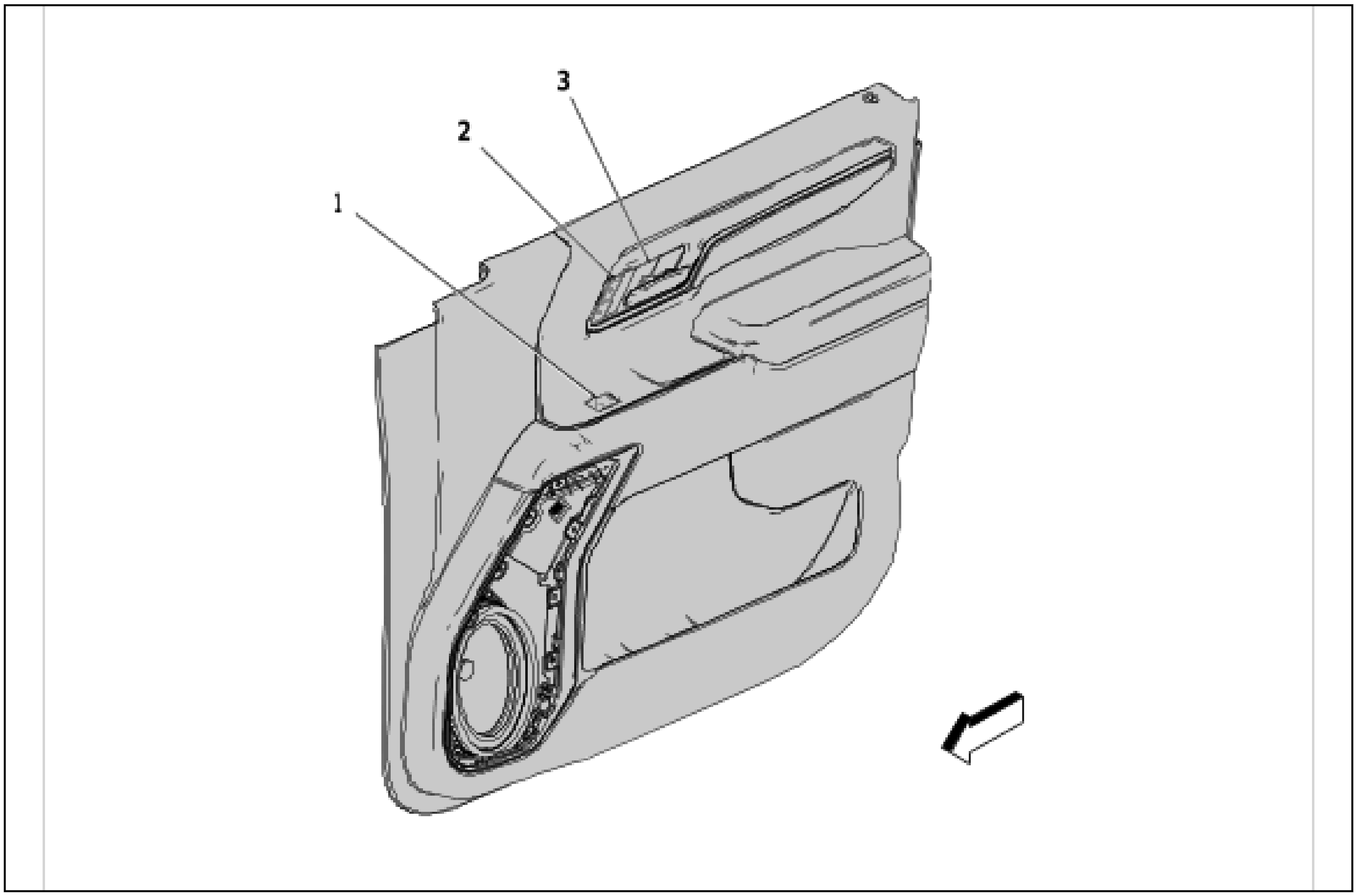
Passenger Door Components



5978910

Items
(1) A24P Front Side Door Outside Handle - Right
(2) A23P Front Side Door Latch - Passenger
(3) B63RF Airbag Side Impact Sensor - Right Front Door
(4) M74P Front Side Door Window Regulator Motor - Passenger
(5) P19AH Radio Front Side Door Speaker - Right

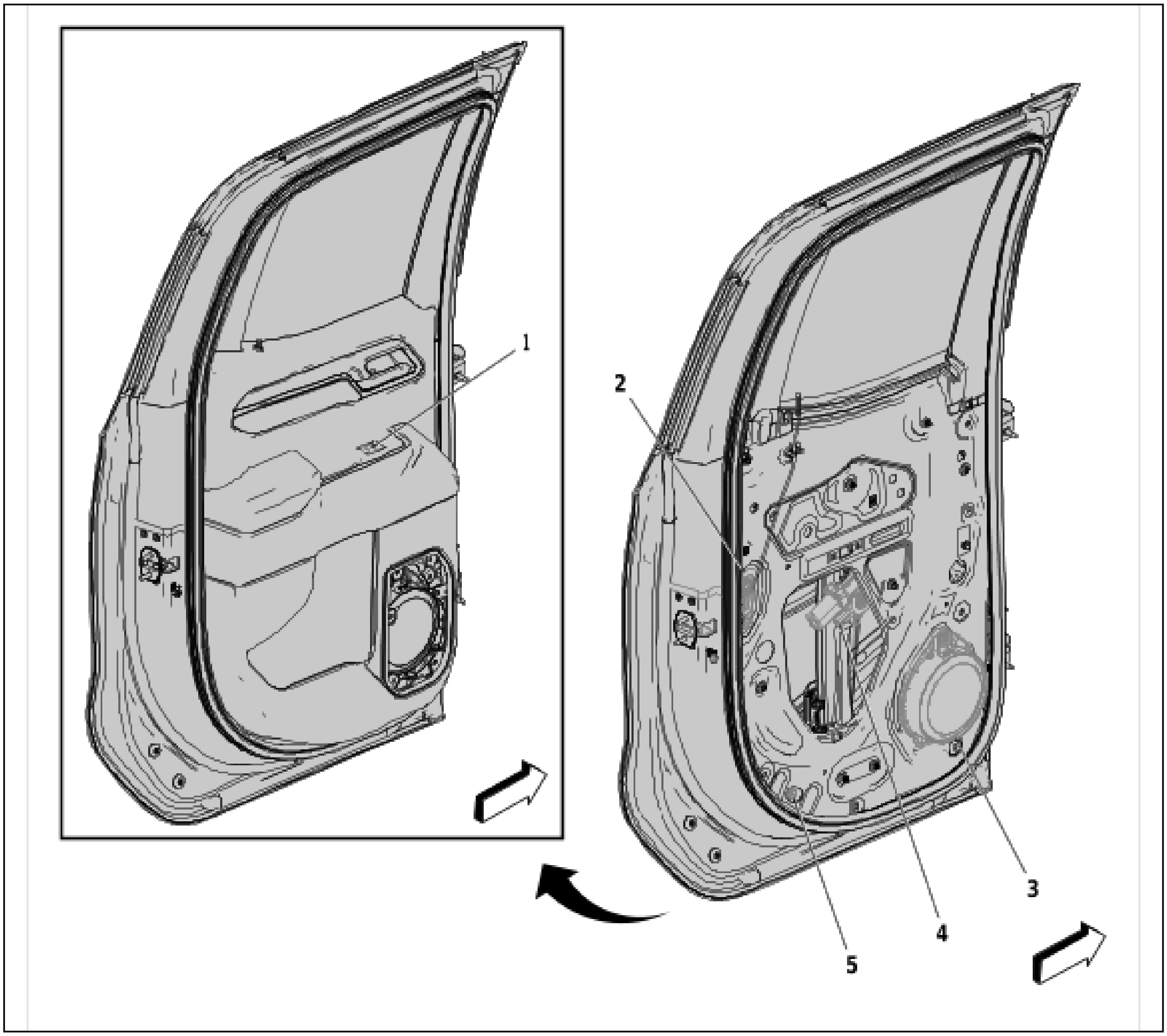
Passenger Door Trim Components



5978911

Items
(1) S79P Front Side Door Window Switch - Passenger
(2) S13P Door Lock Switch - Passenger
(3) E63P Front Side Door Inside Handle Illumination Lamp - Right

Left Rear Door Components - Double Cab



5978912

Items

(1) S79LR Rear Side Door Window Switch - Left

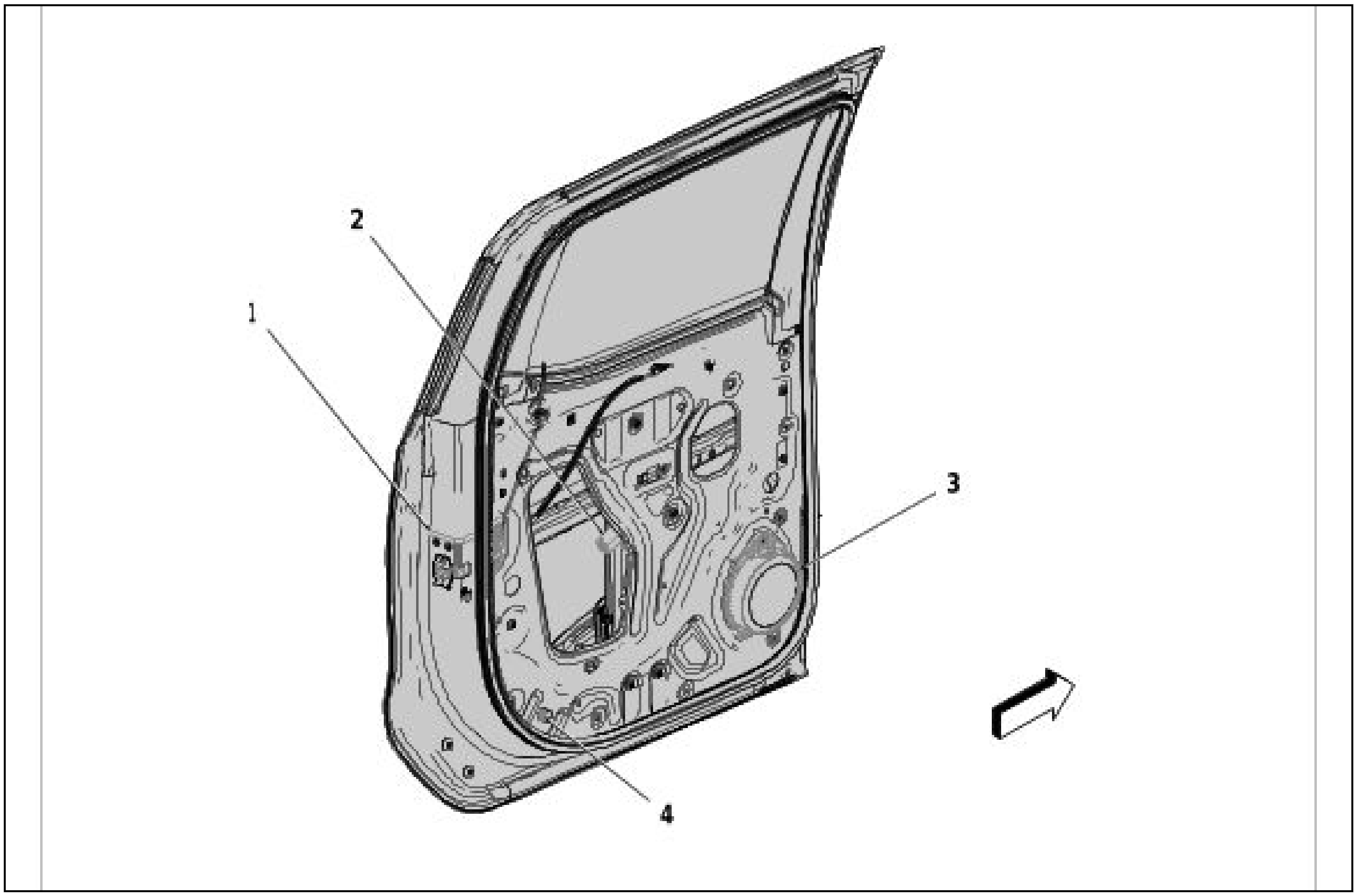
(2) A23LR Rear Side Door Latch - Left (Double Cab / Crew Cab)

(3) P19AL Radio Rear Side Door Speaker - Left

(4) M74LR Rear Side Door Window Regulator Motor - Left (Double Cab / Crew Cab)

(5) B63LR Airbag Side Impact Rear Sensor - Left Door (Double Cab / Crew Cab)

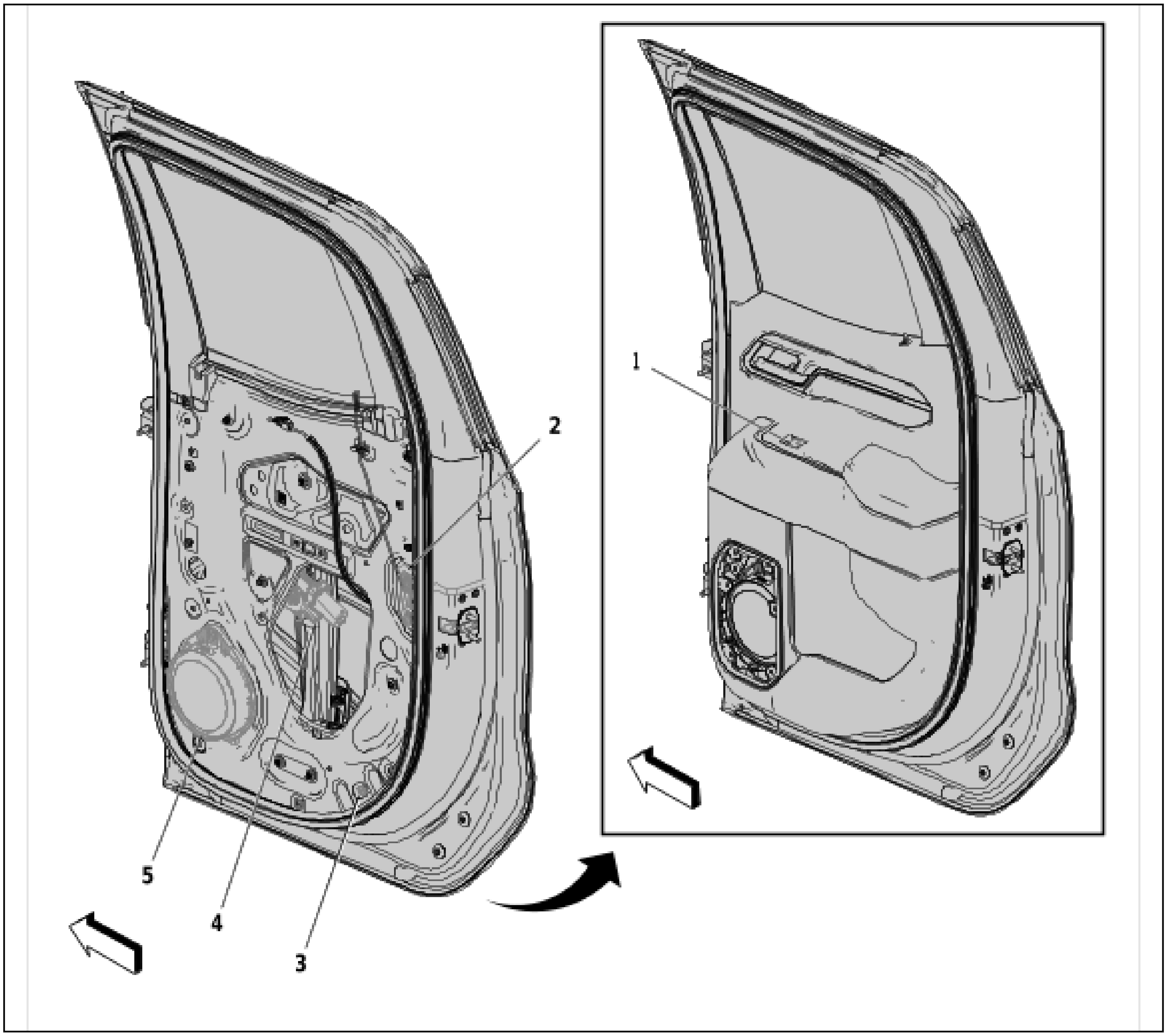
Left Rear Door Components - Crew Cab



5978913

Items
(1) A23LR Rear Side Door Latch - Left (Double Cab / Crew Cab)
(2) M74LR Rear Side Door Window Regulator Motor - Left (Double Cab / Crew Cab)
(3) P19AL Radio Rear Side Door Speaker - Left
(4) B63LR Airbag Side Impact Rear Sensor - Left Door (Double Cab / Crew Cab)

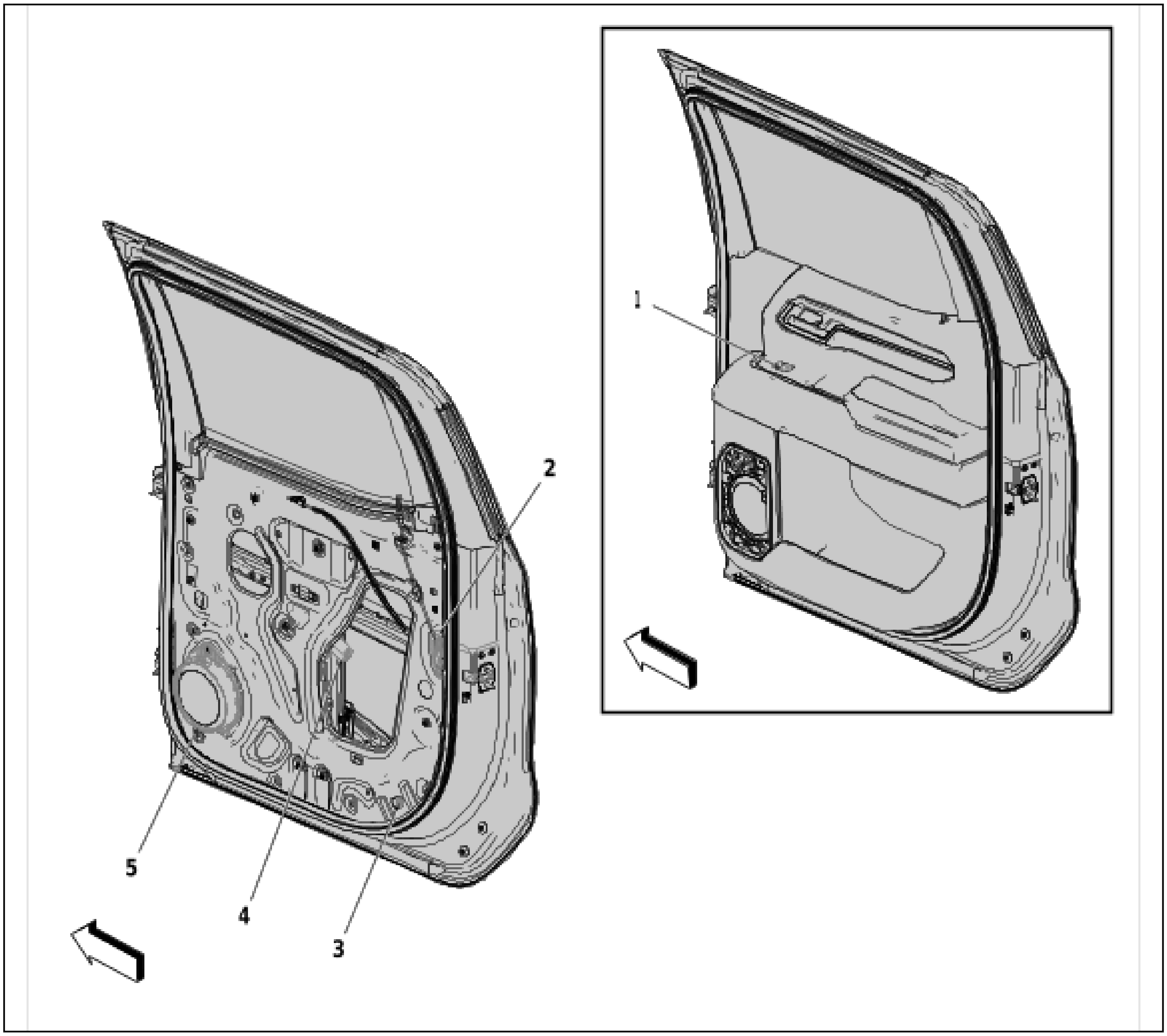
Right Rear Door Components - Double Cab



5978914

Items
(1) S79RR Rear Side Door Window Switch - Right
(2) A23RR Rear Side Door Latch - Right (Double Cab / Crew Cab)
(3) B63RR Airbag Side Impact Rear Sensor - Right Door (Double Cab / Crew Cab)
(4) B63RR Airbag Side Impact Rear Sensor - Right Door (Double Cab / Crew Cab)
(5) P19AM Radio Rear Side Door Speaker - Right

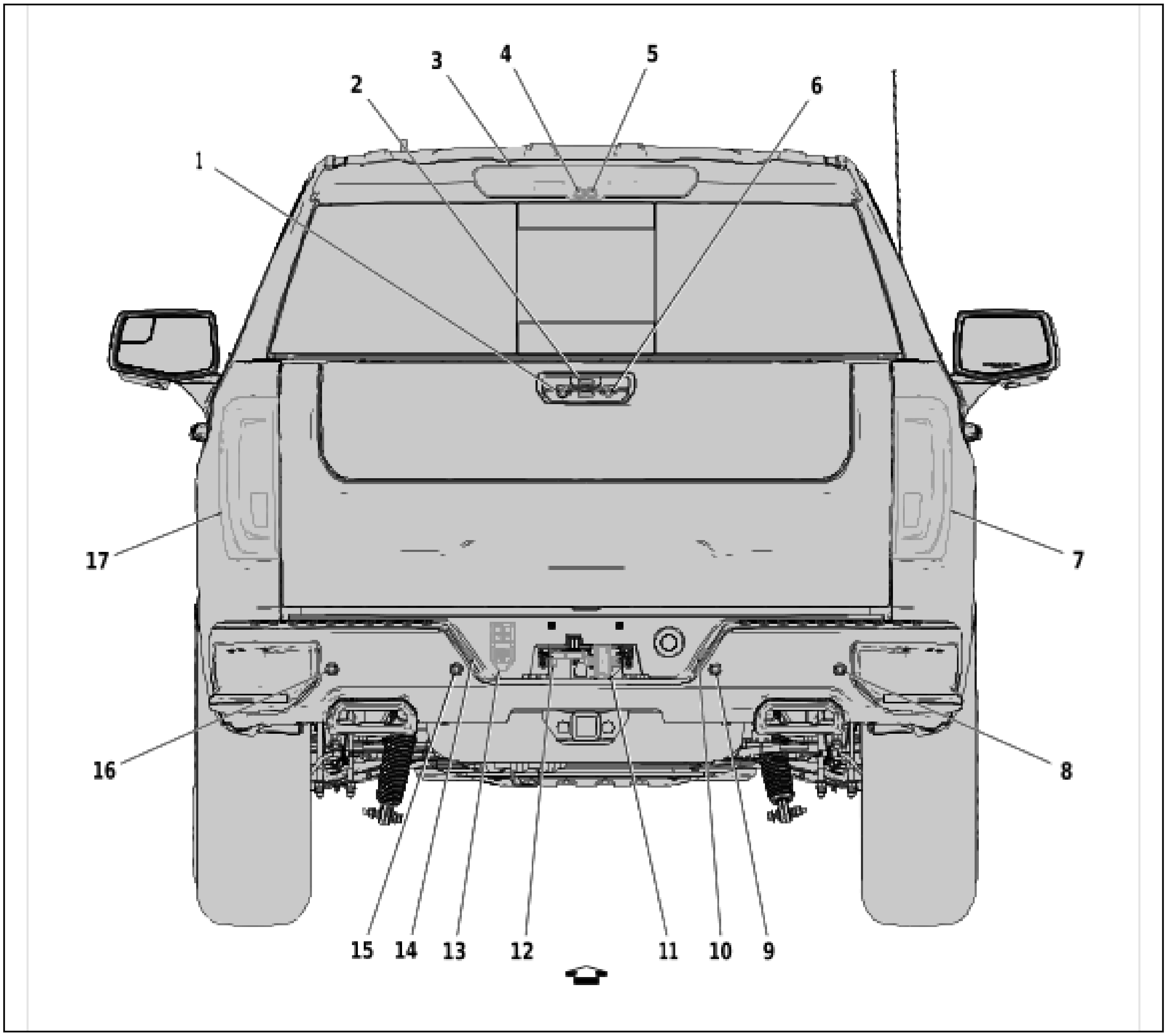
Right Rear Door Components - Crew Cab



5978915

Items
(1) S79RR Rear Side Door Window Switch - Right
(2) A23RR Rear Side Door Latch - Right (Double Cab / Crew Cab)
(3) B63RR Airbag Side Impact Rear Sensor - Right Door (Double Cab / Crew Cab)
(4) M74RR Rear Side Door Window Regulator Motor - Right (Double Cab / Crew Cab)
(5) P19AM Radio Rear Side Door Speaker - Right

Rear of Vehicle Components

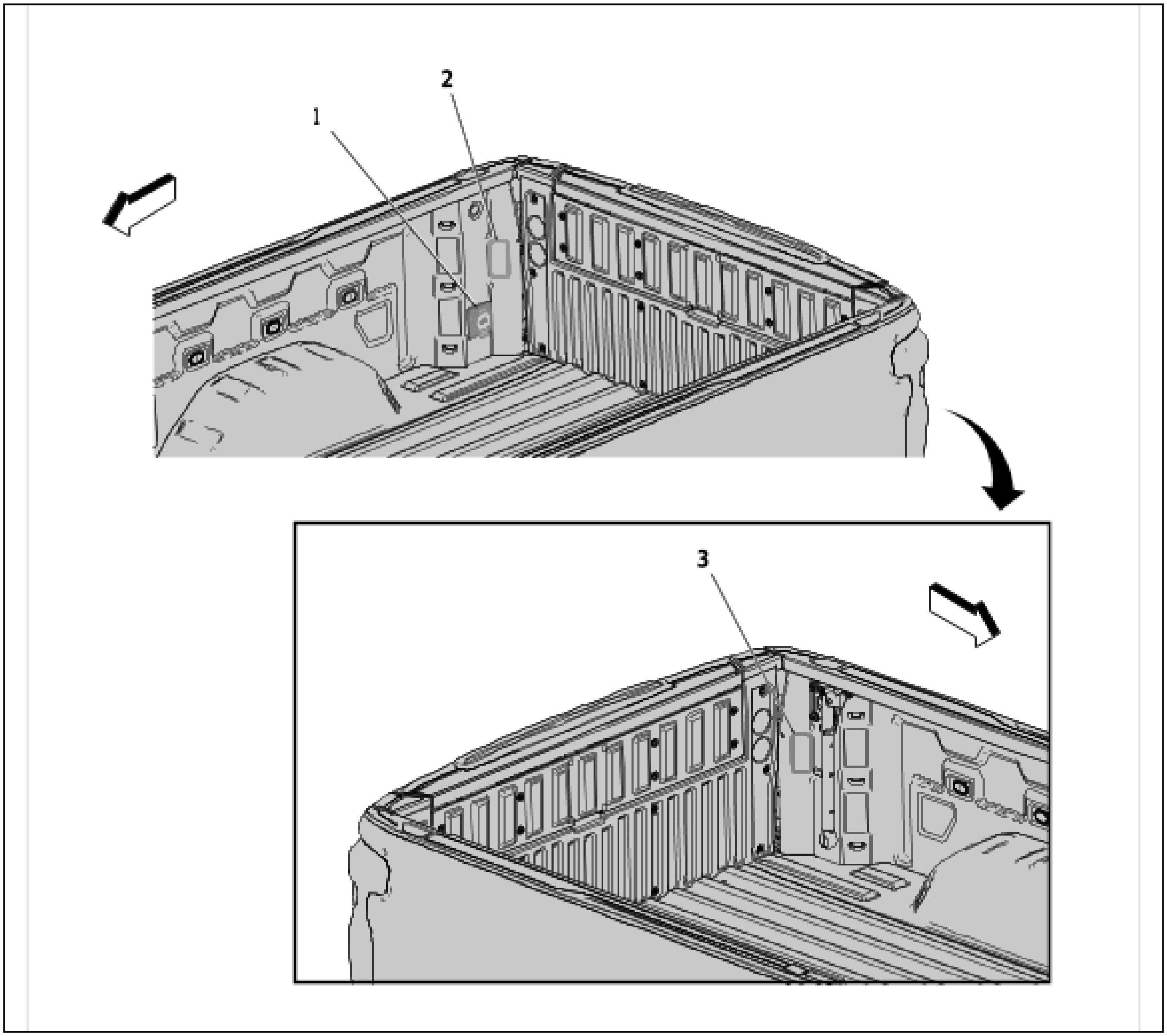


6791680

Items
(1) B87 Rearview Driver Information Camera (UVB / UVC / UV2 / UVI)
(2) S159E Liftgate Exterior Release Switch - Endgate (QT6/ QK2)
(3) E6A High Mount Stop and Cargo Lamp
(4) B352 Video Display Inside Rearview Mirror Camera (DRZ)
(5) B87CA Auxiliary Rearview Camera - Cargo Area (UVN)
(6) E33TH Rear Closure Auxiliary Signal Lamp
(7) E42R Rear Body Structure Stop Lamp - Right
(8) B306H Parking Assist Alarm Sensor - Rear Right Outer (UD5 / UD7)
(9) B306G Parking Assist Alarm Sensor - Rear Right Middle (UD5 / UD7)

Items
(10) E7R Rear License Plate Lamp - Right (E63)
(11) K214 Trailer Tire Pressure Indicator Module (UET)
(12) T10G Low Frequency Rear Bumper Antenna
(13) X88B Tow Vehicle Electrical Receptacle
(14) E7L Rear License Plate Lamp - Left (E63)
(15) B306F Parking Assist Alarm Sensor - Rear Left Middle (UD5 / UD7)
(16) B306E Parking Assist Alarm Sensor - Rear Left Outer (UD5 / UD7)
(17) E42L Rear Body Structure Stop Lamp - Left

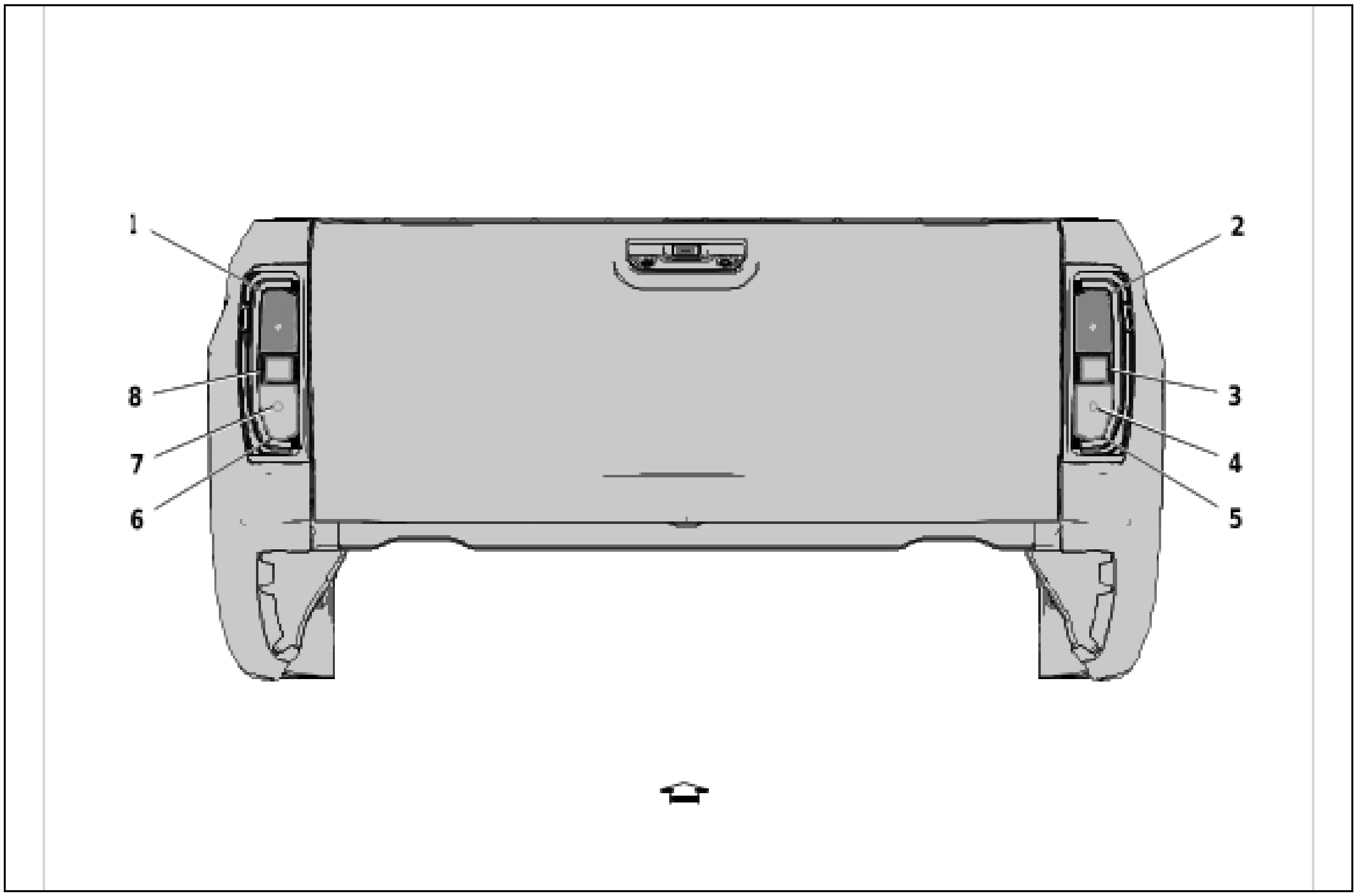
Pickup Box Components



5978918

Items
(1) X81BP Pickup Box Accessory Power Receptacle - 220V AC (KCA)
(2) E33RB Cargo Box Lamp Bulb - Right (Regular Cab)
(3) E33LB Cargo Box Lamp Bulb - Left (Regular Cab)

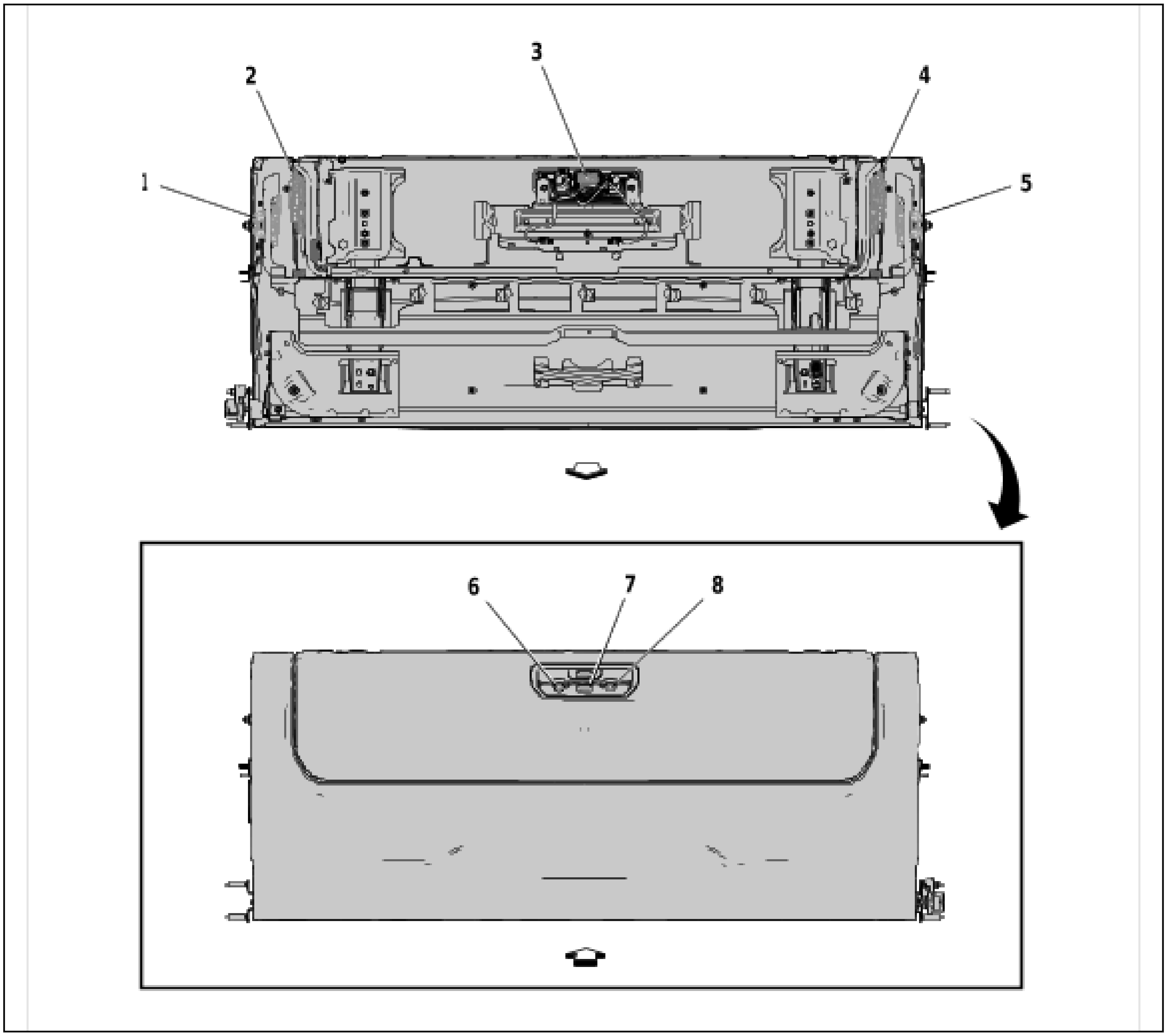
Tail Lamp Assemblies



6791682

Items
(1) E5SBU Stop and Turn Signal and Tail Lamp Bulb - Left Upper
(2) E5TBU Stop and Turn Signal and Tail Lamp Bulb - Right Upper
(3) E2RRB Side Marker Bulb - Right Rear (GFF / GFI / GFJ / GFS)
(4) E5TBL Stop and Turn Signal and Tail Lamp Bulb - Right Lower
(5) E5B Backup Bulb - Right
(6) E5A Backup Bulb - Left
(7) E5SBL Stop and Turn Signal and Tail Lamp Bulb - Left Lower
(8) E2LRB Side Marker Bulb - Left Rear (GFF / GFI / GFJ / GFS)

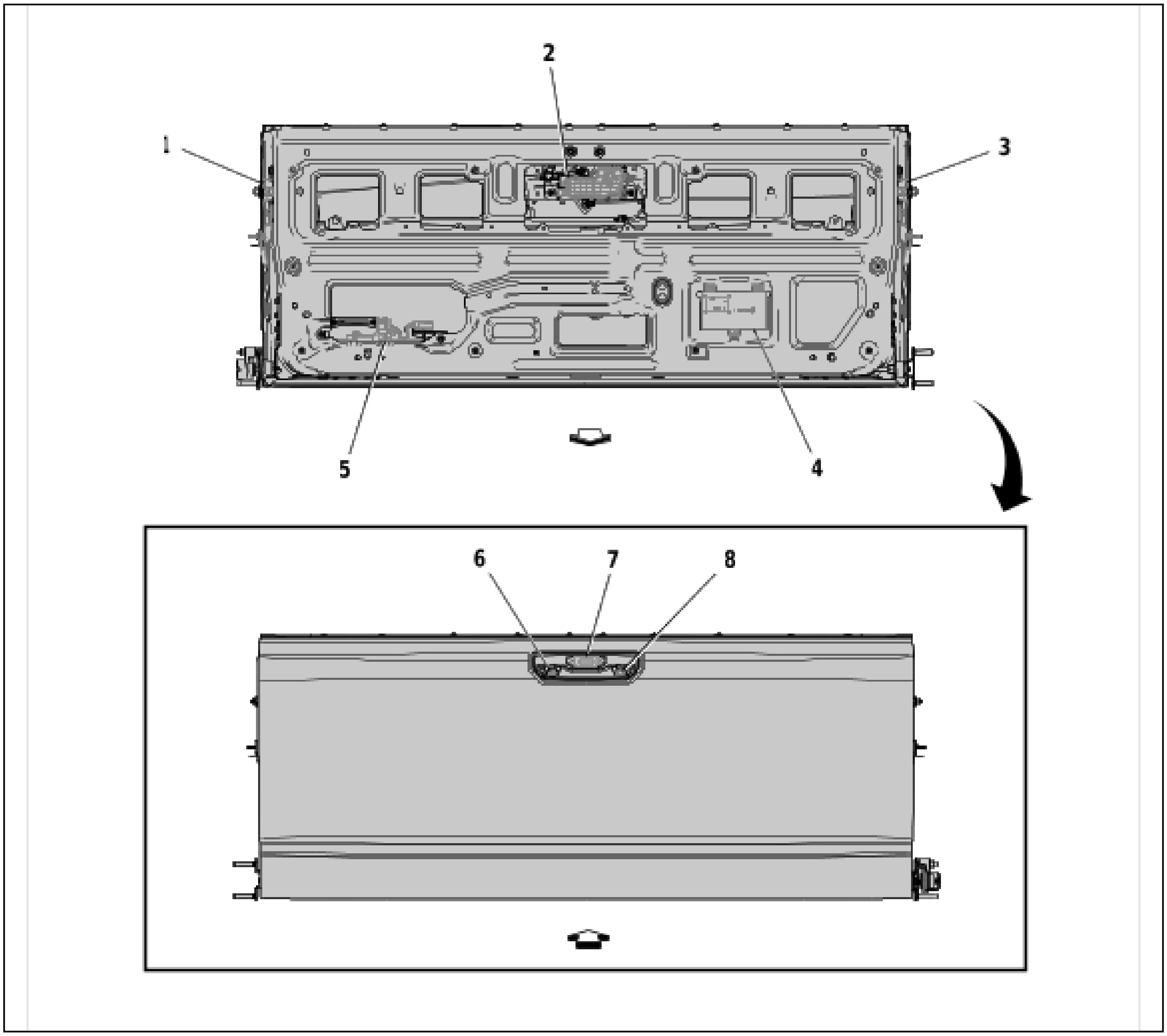
Endgate Components (QK2)



5978920

Items
(1) A99R Pickup Box Endgate Latch - Right (QK2+QT5)
(2) A100R Pickup Box Auxiliary Endgate Latch - Right (QK2)
(3) S158 Liftgate Exterior Release Switch - Auxiliary Endgate
(4) A100L Pickup Box Auxiliary Endgate Latch - Left (QK2)
(5) A99L Pickup Box Endgate Latch - Left (QK2+QT5)
(6) B87 Rearview Driver Information Camera (UVB / UVC / UV2 / UVI)
(7) S158 Liftgate Exterior Release Switch - Auxiliary Endgate
(8) E33TH Rear Closure Auxiliary Signal Lamp

Endgate Components (QK1)



5978921

Items

(1) M151R Pickup Box Endgate Cinch Latch Actuator - Right (QT6)

(2) M14A Pickup Box Endgate Lock Actuator

(3) M151L Pickup Box Endgate Cinch Latch Actuator - Left (QT6)

(4) K194 Rear Gate Module (QT6)

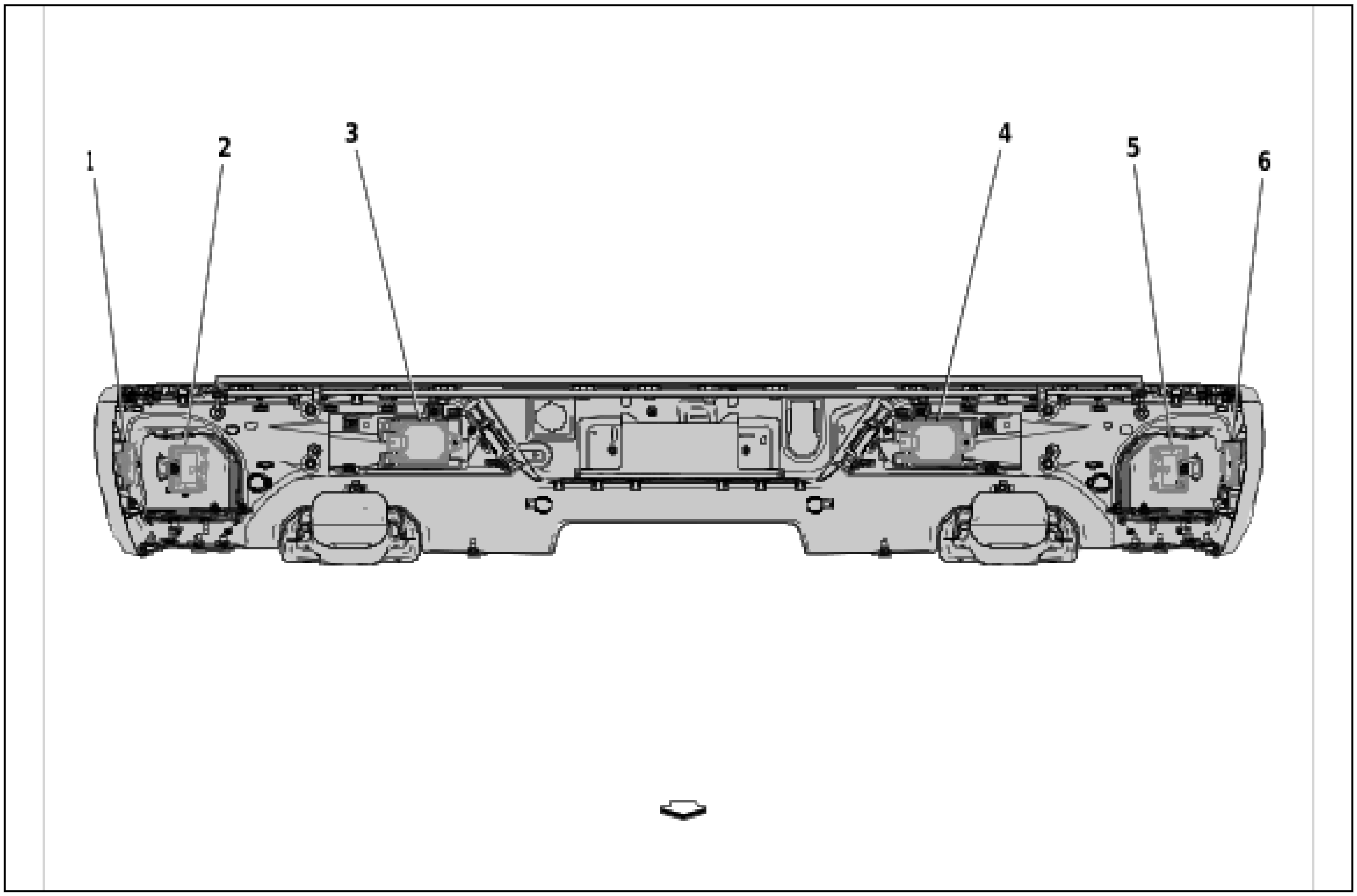
(5) M125 Pickup Box Endgate Power Assist Actuator (QT6)

(6) B87 Rearview Driver Information Camera (UVB / UVC / UV2 / UVI)

(7) S159E Liftgate Exterior Release Switch - Endgate (QT6/ QK2)

(8) E33TH Rear Closure Auxiliary Signal Lamp

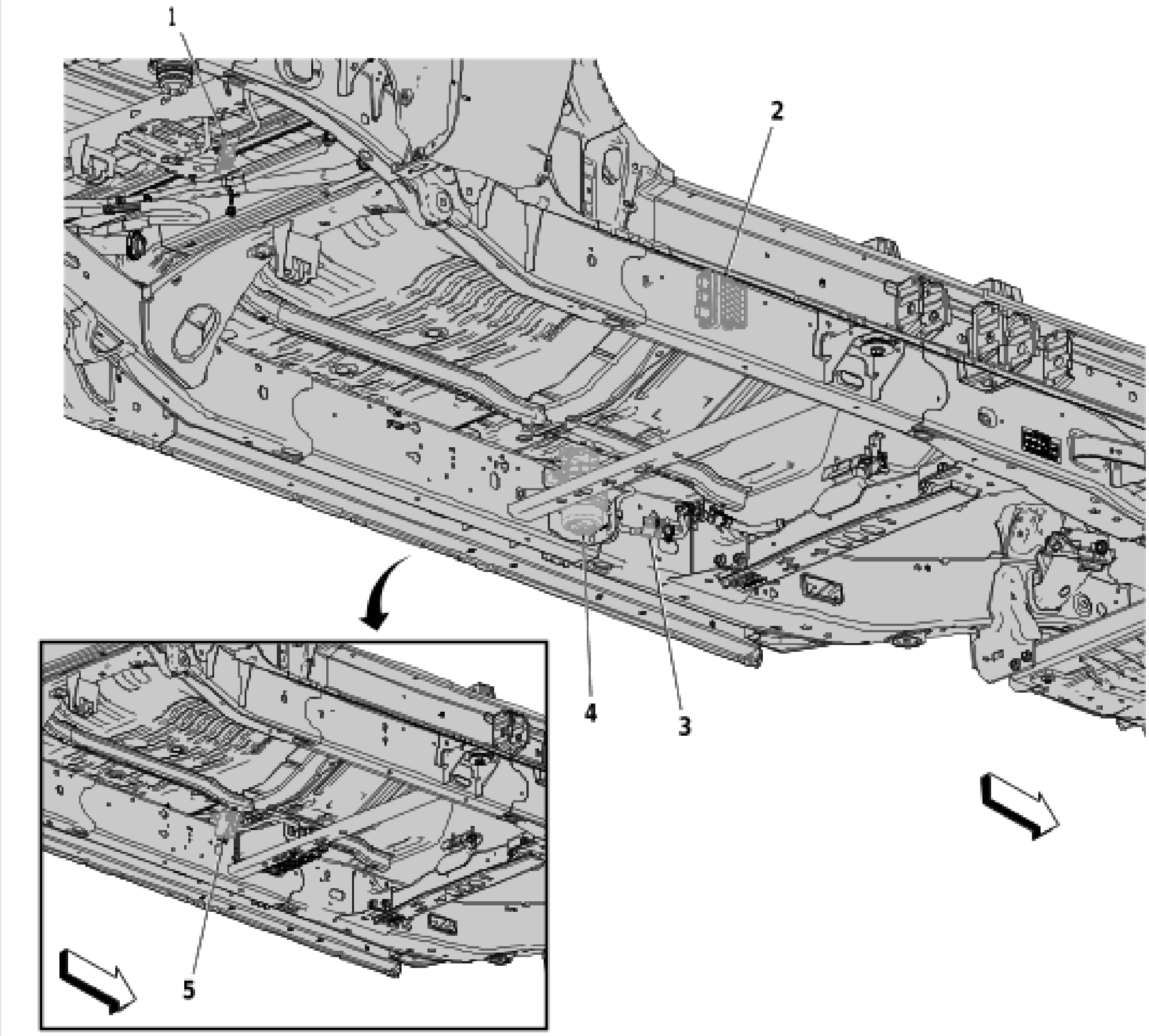
Rear Bumper - Inside



6141578

Items
(1) B233SR Short Range Radar Rear Side Sensor - Right (UKL)
(2) B218R Side Obstacle Detection Control Module - Right (UKC)
(3) B233RR Short Range Radar Rear Sensor - Right (UKL)
(4) B233LR Short Range Radar Rear Sensor - Left (UKL)
(5) B218L Side Obstacle Detection Control Module - Left (UKC)
(6) B233SL Short Range Radar Rear Side Sensor - Left (UKL)

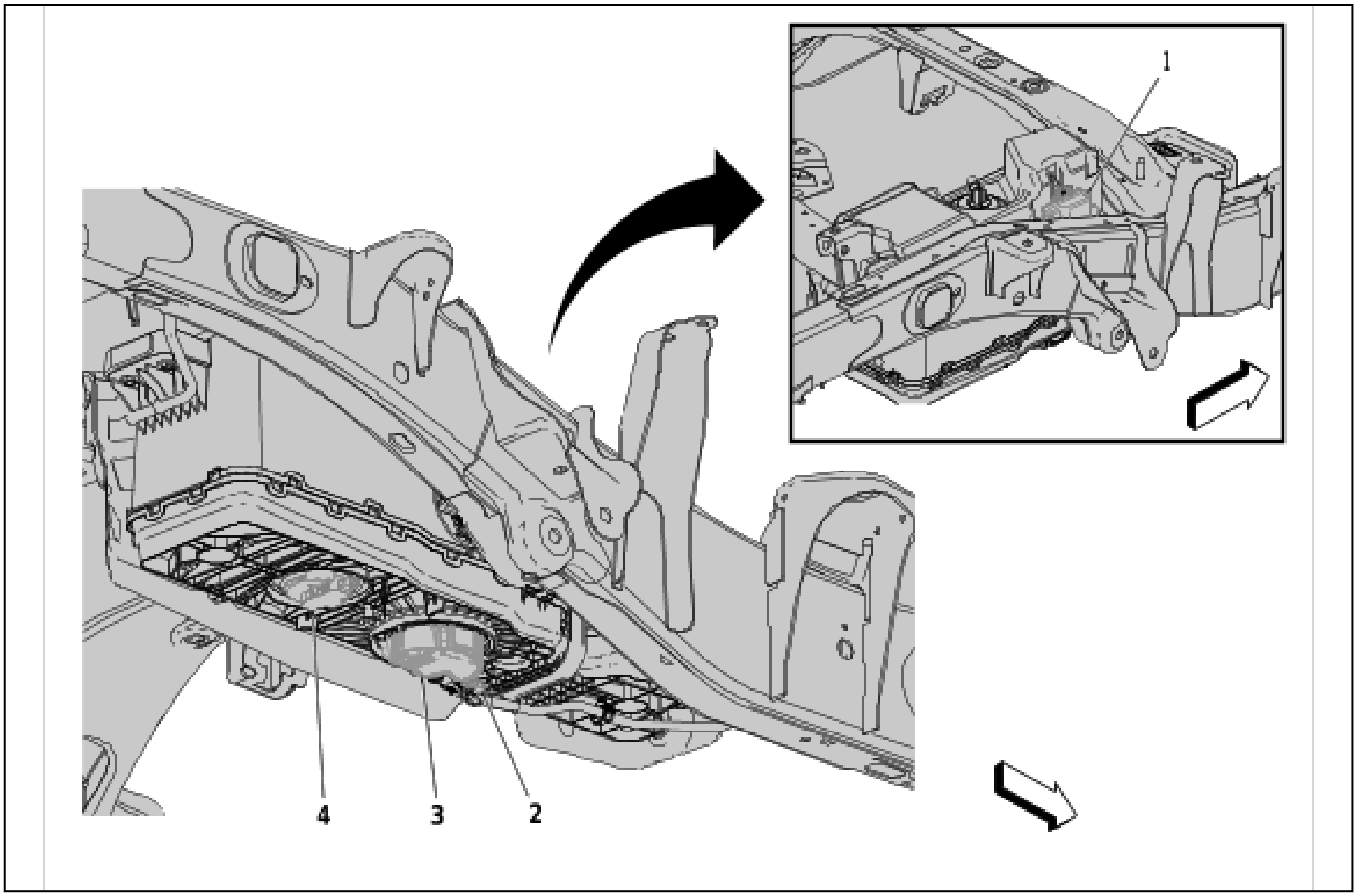
Center Underbody Components



5978922

Items
(1) K111 Fuel Pump Power Control Module
(2) K4 Running Board Control Module
(3) B47 Fuel Pressure Sensor
(4) R29 Fuel Filter (LZ0)
(5) Q13 Evaporative Emission Canister Vent Solenoid Valve

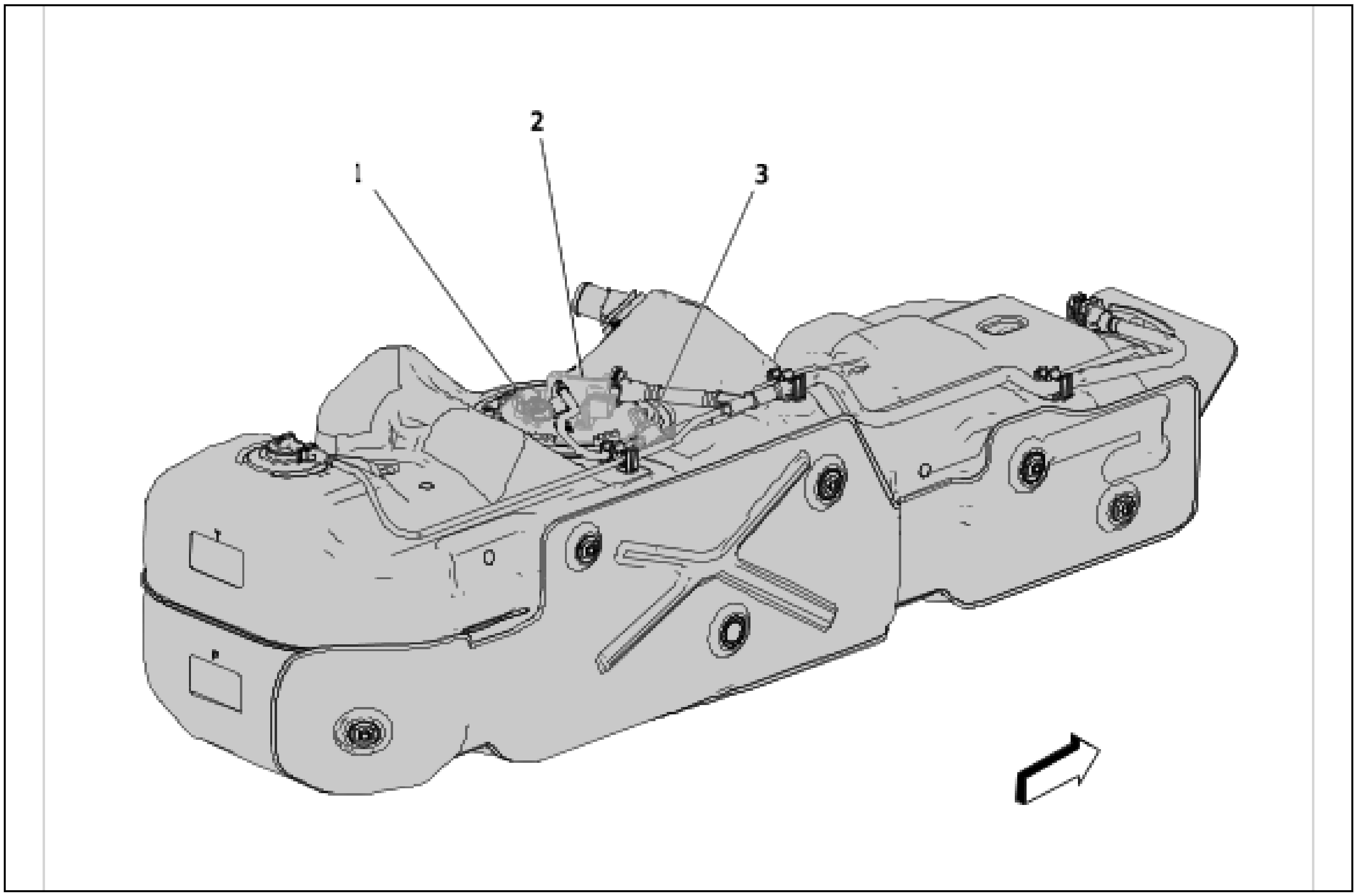
Emission Reduction Fluid Tank Reservoir (LZ0)



6050089

Items
(1) K115 Reductant Control Module (LZ0)
(2) E52 Reductant Heater 2 - Injector Supply Pipe (LZ0)
(3) A38 Reductant Tank Fluid Supply Pump Module (LZ0)
(4) B212 Reductant Tank Fluid Sensor (LZ0)

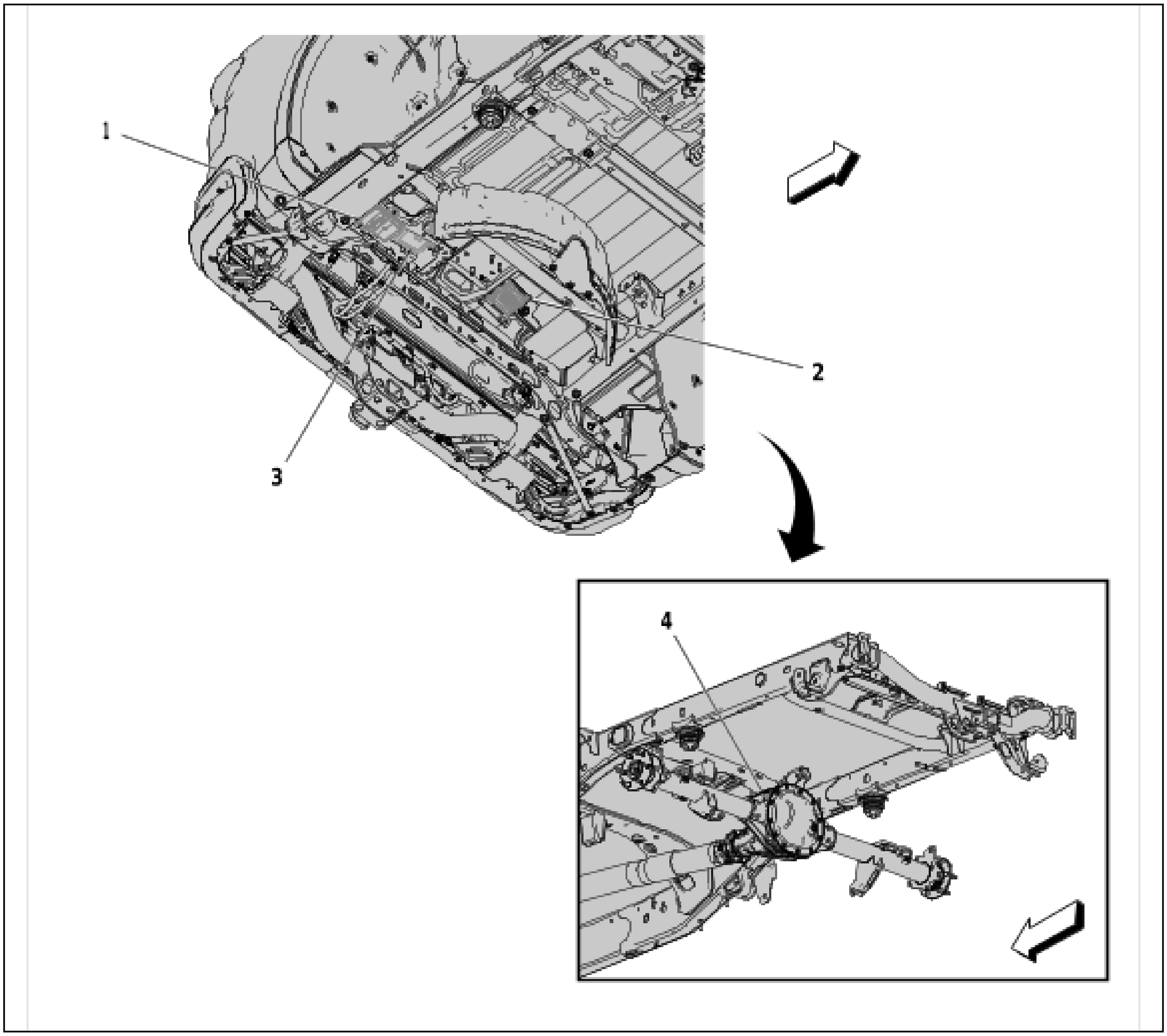
Fuel Tank Components



5978923

Items
(1) B150 Fuel Tank Pressure Sensor (L3B / L84 / L87)
(2) A7 Fuel Tank Fuel Pump Module
(3) B47 Fuel Pressure Sensor

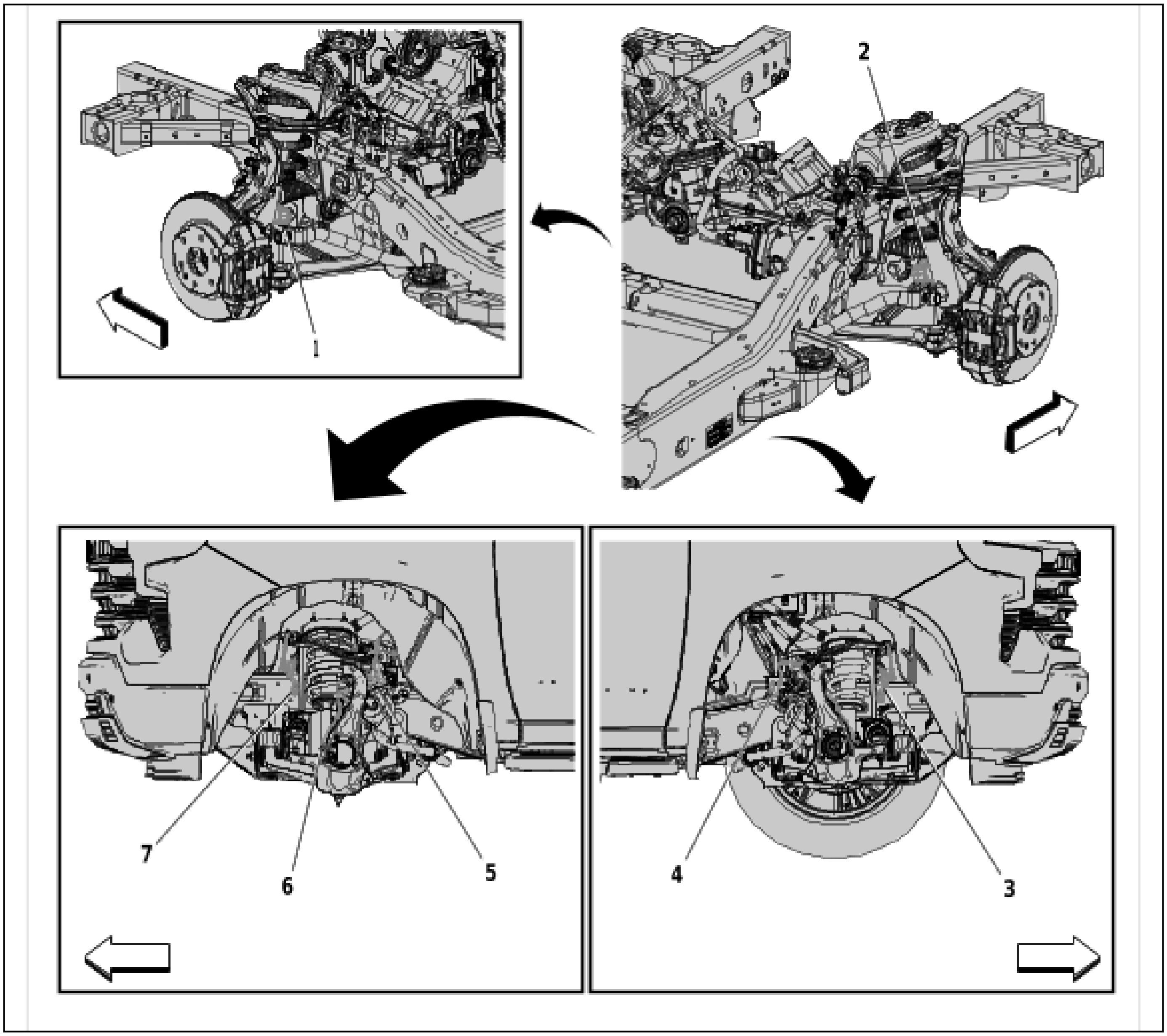
Rear Underbody Components



5978924

Items
(1) K68 Trailer Lamp Control Module (U1D)
(2) K38 Chassis Control Module
(3) K67 Trailer Brake Control Module (JL1)
(4) Q9R Differential Locking Actuator - Rear (G94)

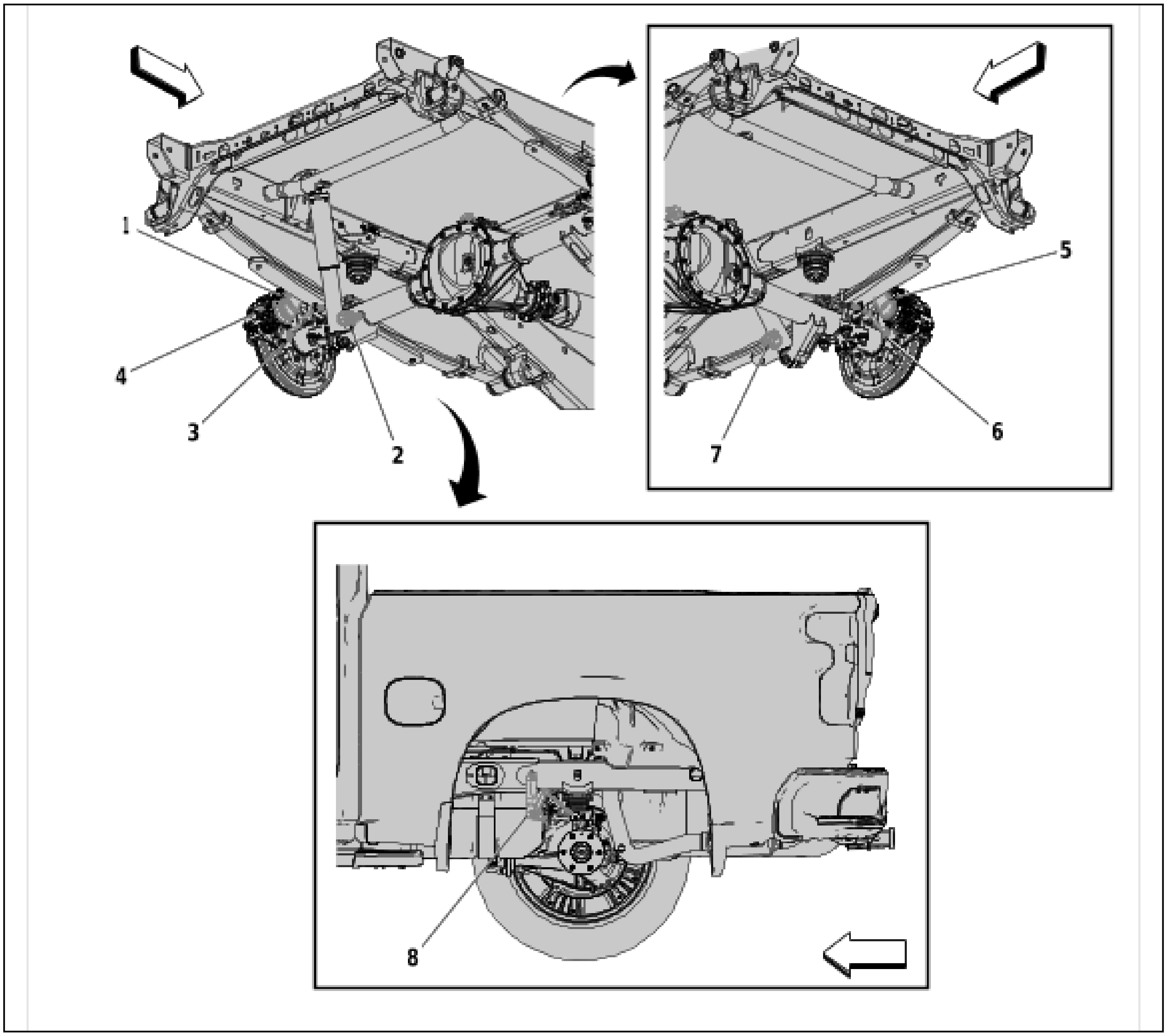
Front Brake and Suspension Components



6791676

Items
(1) Q37LFB Front Shock Absorber Actuator - Left (Z45)
(2) Q37RFB Front Shock Absorber Actuator - Right (Z45)
(3) B11RF Front Suspension 4 Corner Leveling System Position Sensor - Right
(4) B5RF Front Wheel Speed Sensor - Right
(5) B172LF Front Disc Brake Pad Wear Sensor - Left
(6) B5LF Front Wheel Speed Sensor - Left
(7) B152LF Front Suspension Automatic Forward Lighting Position Sensor - Left

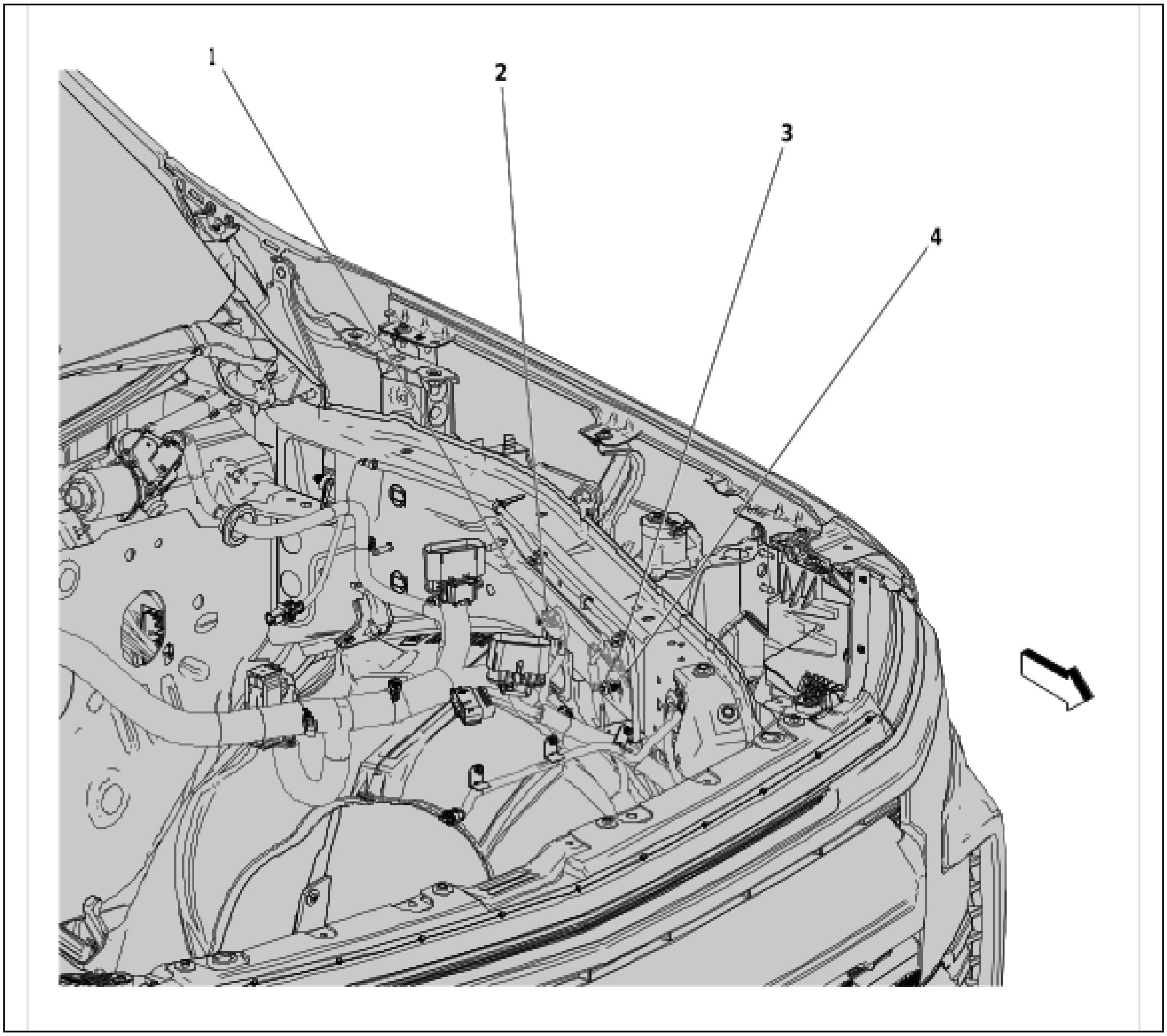
Rear Brake and Suspension Components



6791677

Items
(1) M104L Parking Brake Actuator - Left
(2) Q37LRB Rear Shock Absorber Actuator - Left (Z45)
(3) B5LR Rear Wheel Speed Sensor - Left
(4) B172LR Rear Disc Brake Pad Wear Sensor - Left
(5) M104R Parking Brake Actuator - Right
(6) B5RR Rear Wheel Speed Sensor - Right
(7) Q37RRB Rear Shock Absorber Actuator - Right (Z45)
(8) B152R Rear Suspension Automatic Forward Lighting Leveling Position Sensor

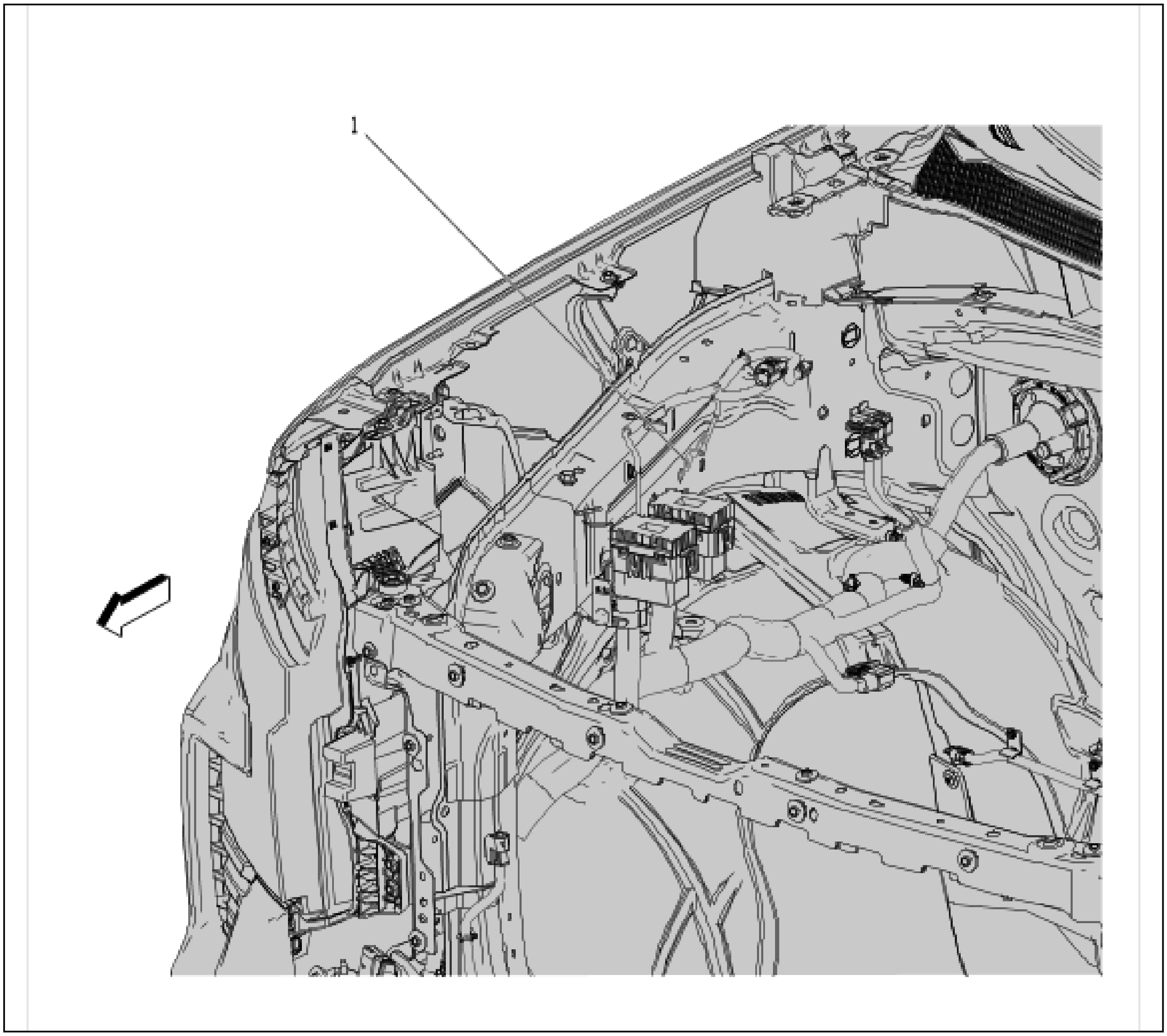
G102A, G102B, G103A and G103B



5978927

Items
(1) G103A Body Wiring Harness
(2) G103B Body Wiring Harness
(3) G102A Engine Wiring Harness
(4) G102B Body Wiring Harness

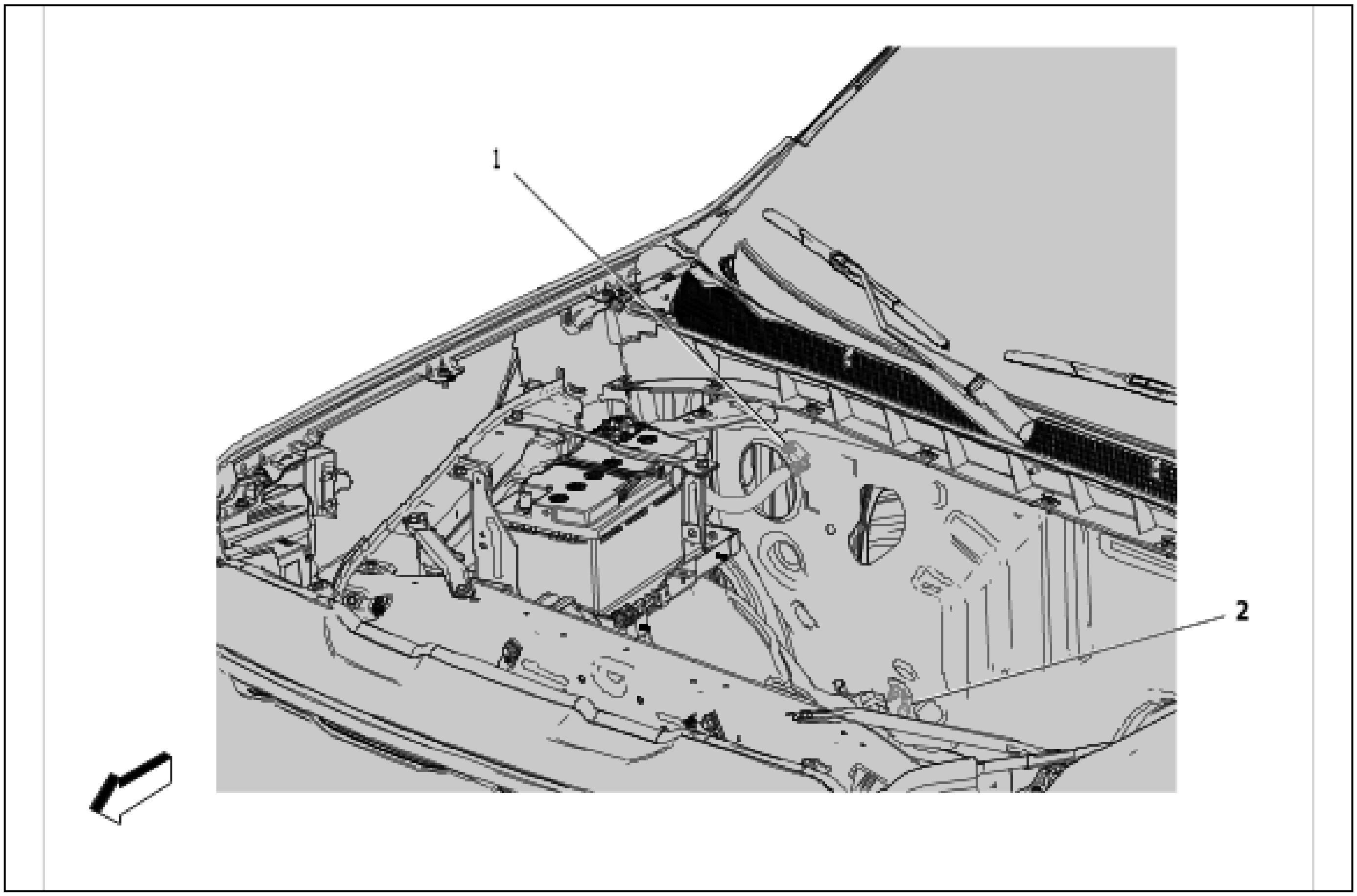
G104



5978928

Items
(1) G104 Body Wiring Harness

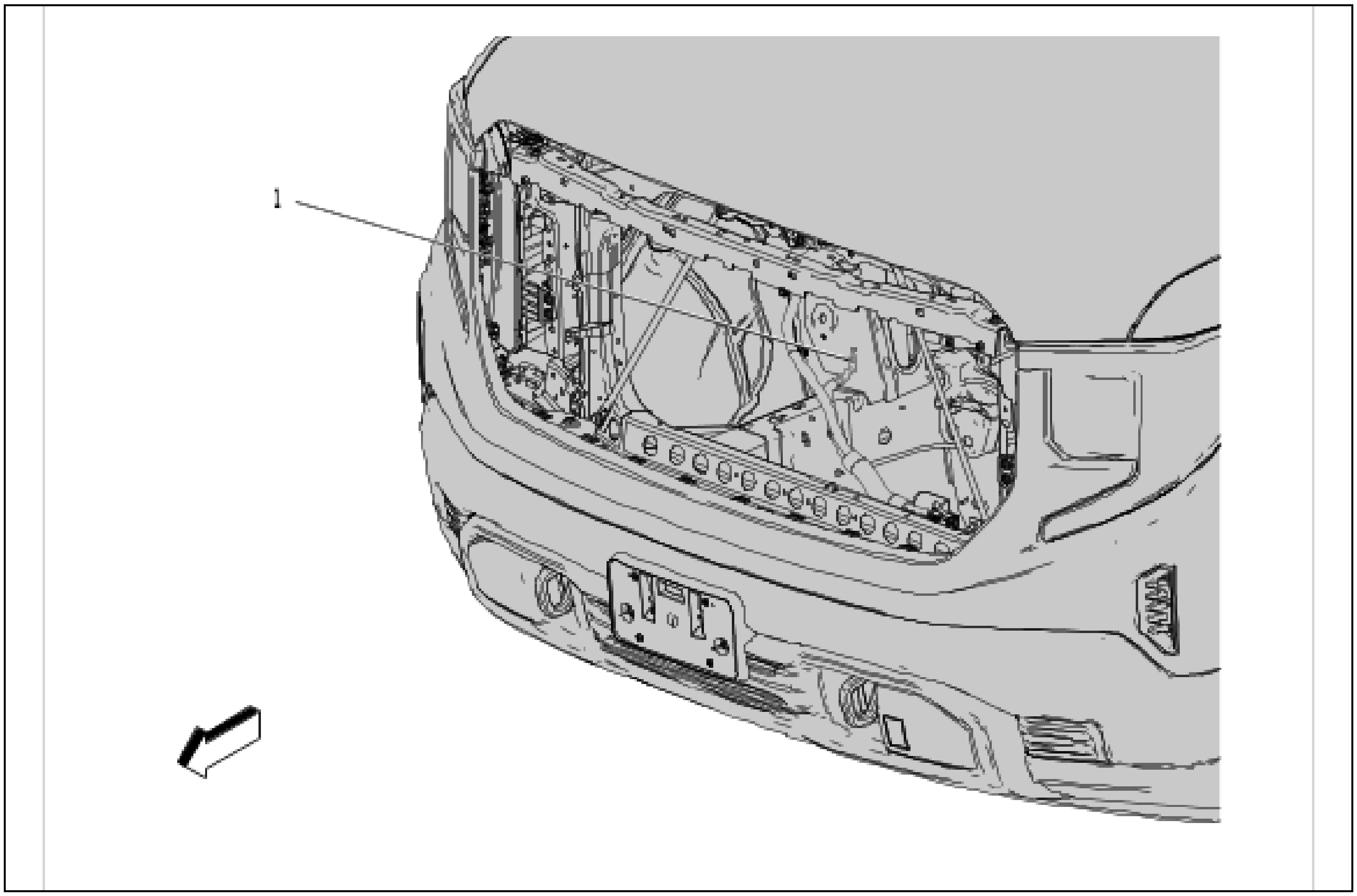
G105 and G134



6050091

Items
(1) G105 Battery Negative Cable
(2) G134 Ground Strap

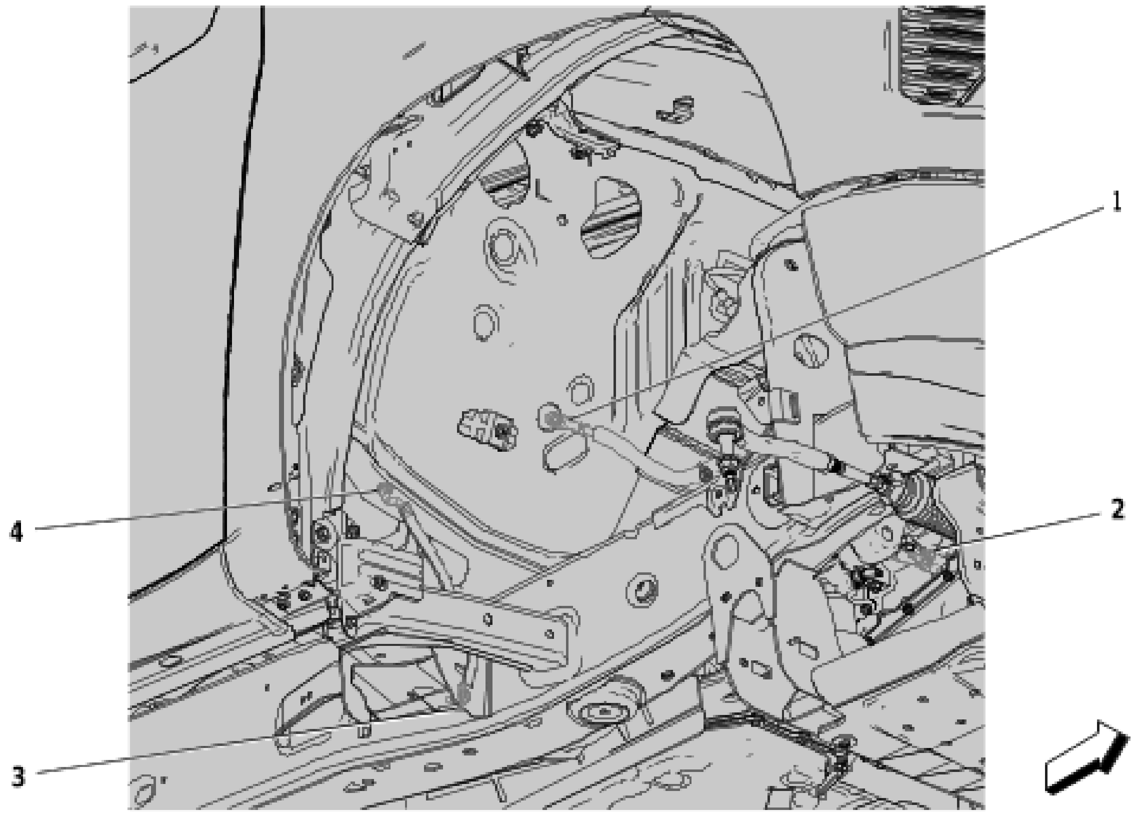
G106



6050093

Items
(1) G106 Power Steering Control Module Wiring Harness

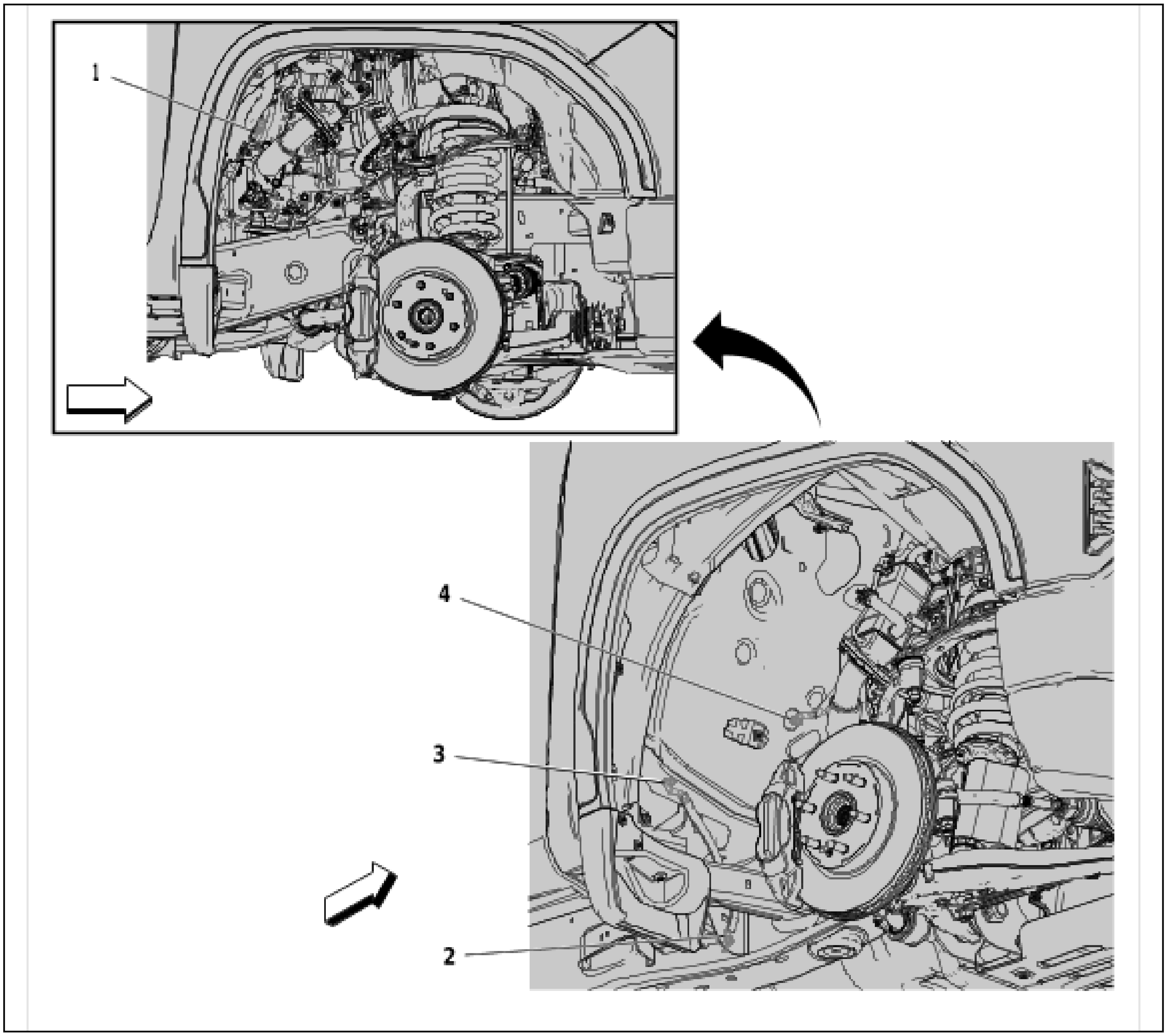
G131, G132, G133 and G134 (L3B)



6766989

Items
(1) G132 Ground Strap
(2) G134 Ground Strap
(3) G131 Ground Strap
(4) G133 Ground Strap

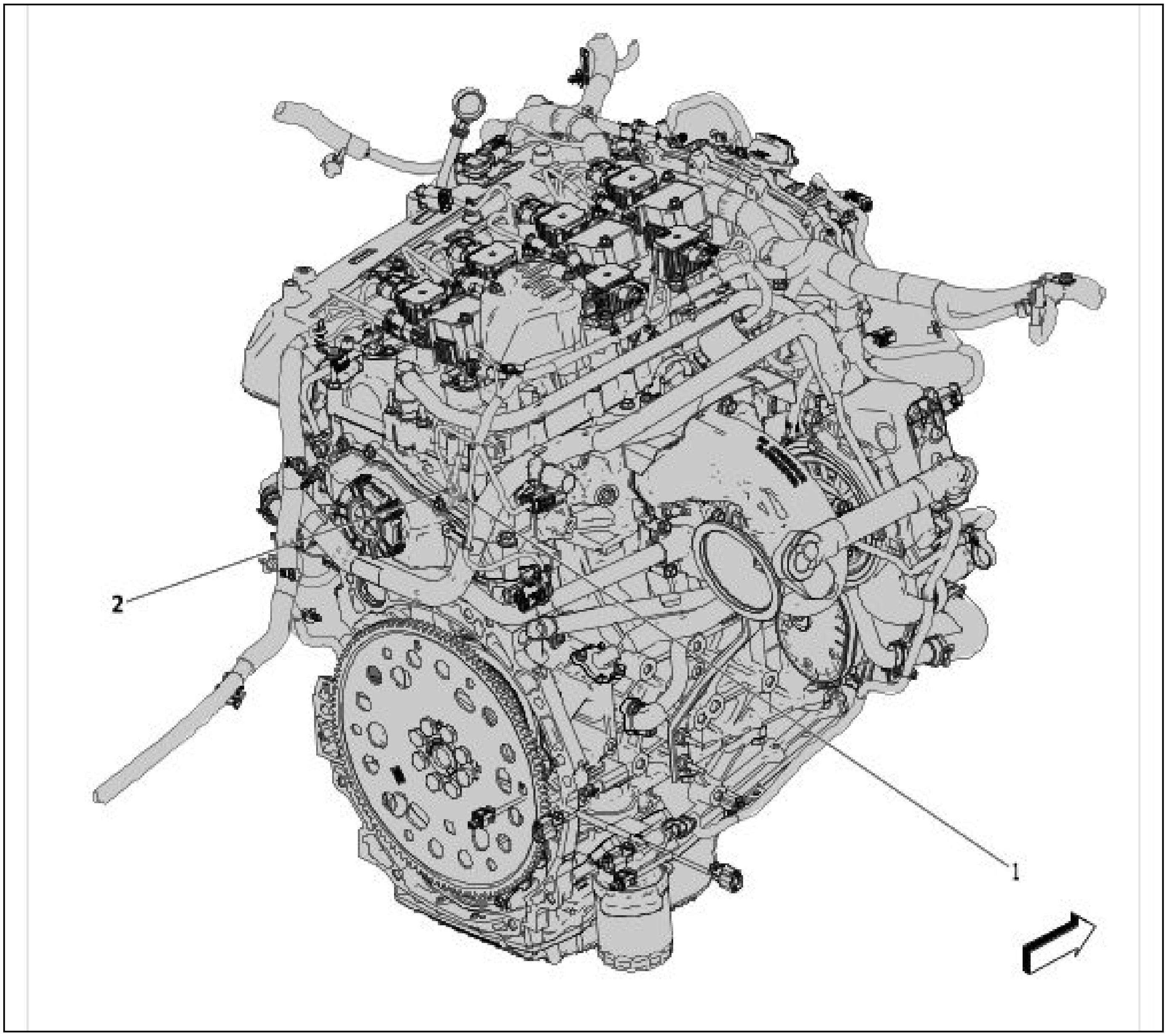
G131, G132, G133 and G134 (LZ0)



6766998

Items
(1) G134 Ground Strap
(2) G131 Ground Strap
(3) G133 Ground Strap
(4) G132 Ground Strap

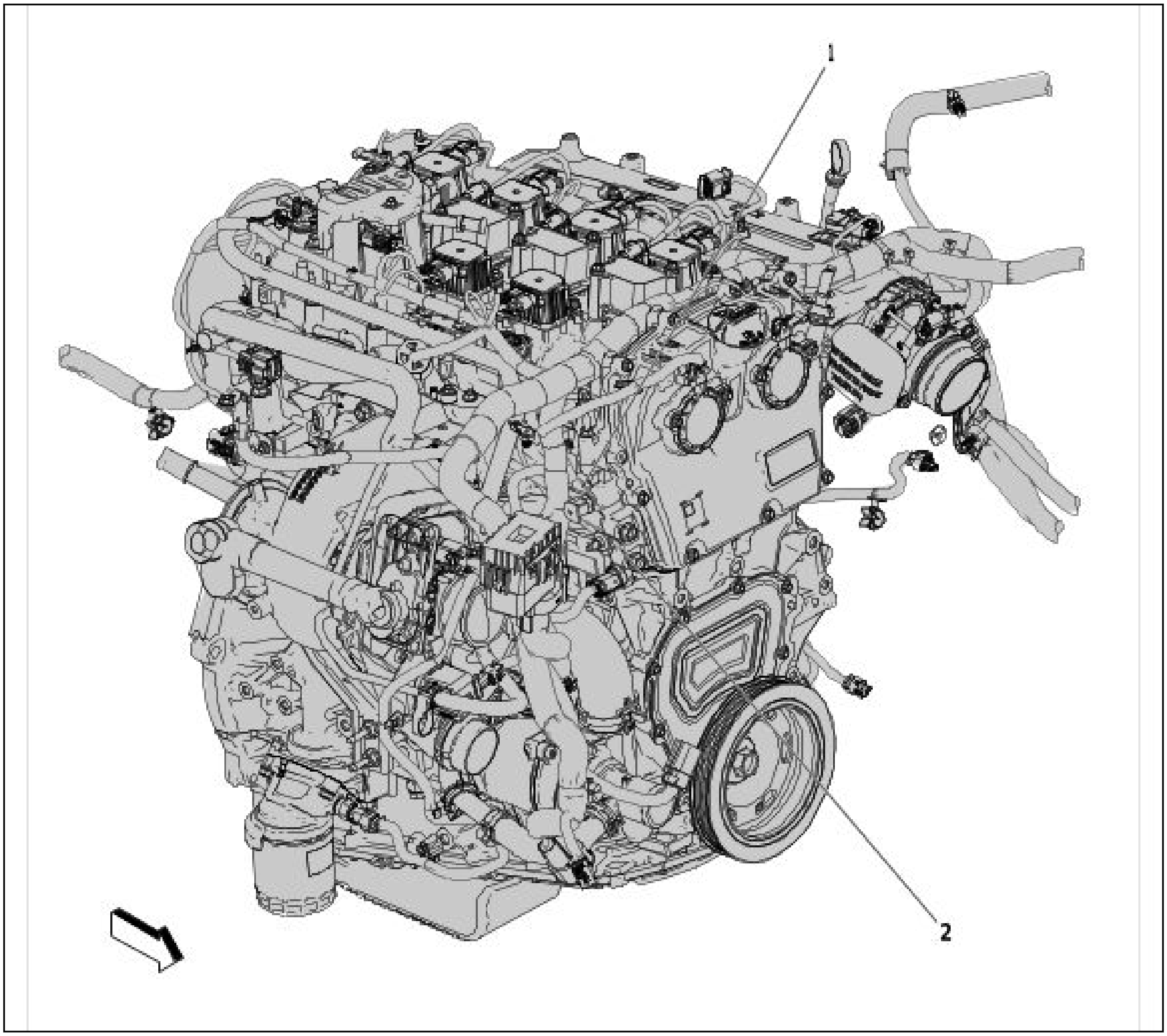
G177A and G177B (L3B)



5978929

Items
(1) G177B Engine Wiring Harness (L3B / LZ0 / L84 / L87)
(2) G177A Engine Wiring Harness (L3B / L84 / L87)

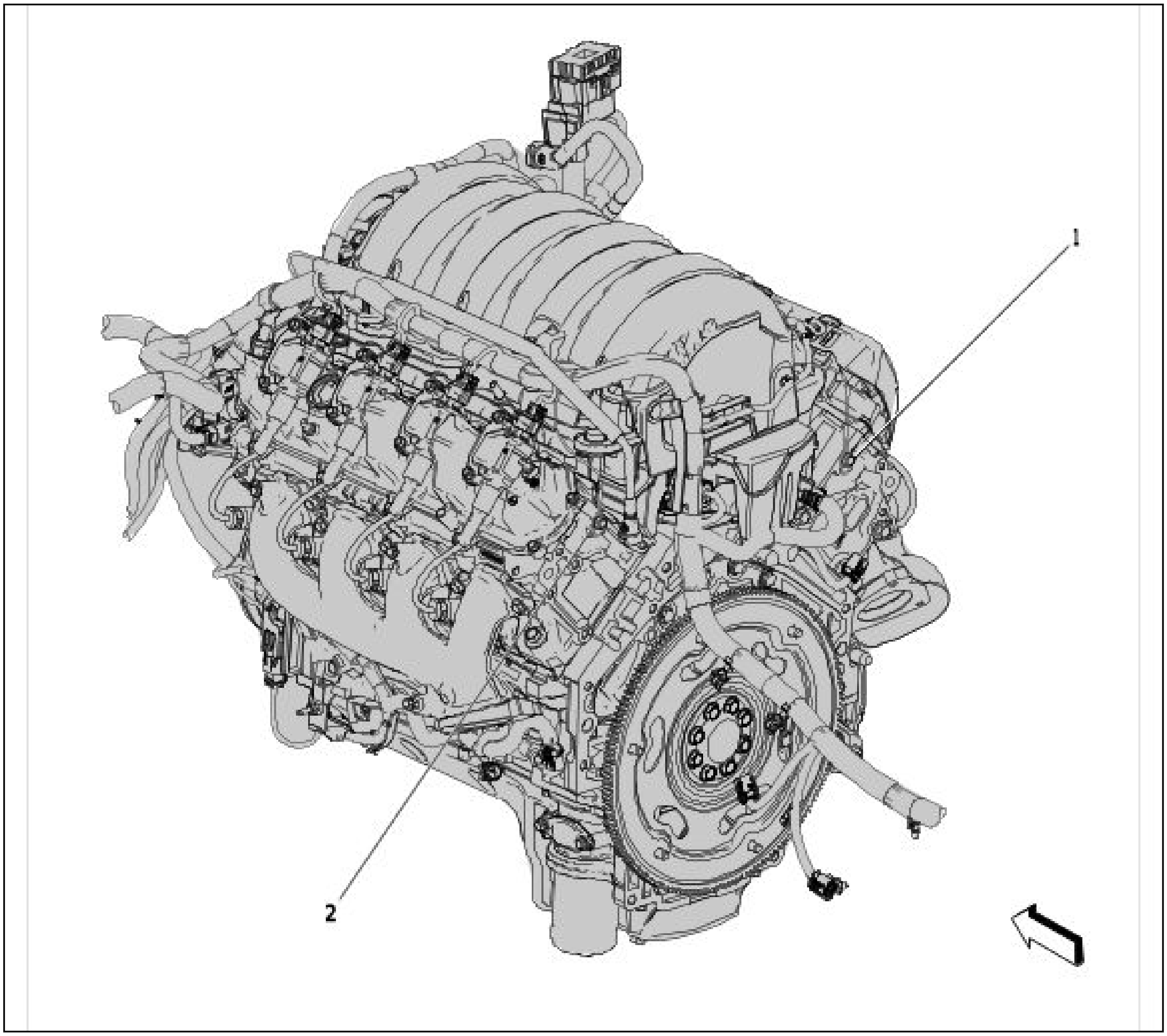
G178A and G178B (L3B)



5978930

Items
(1) G178B Engine Wiring Harness (L3B)
(2) G178A Engine Wiring Harness (L3B)

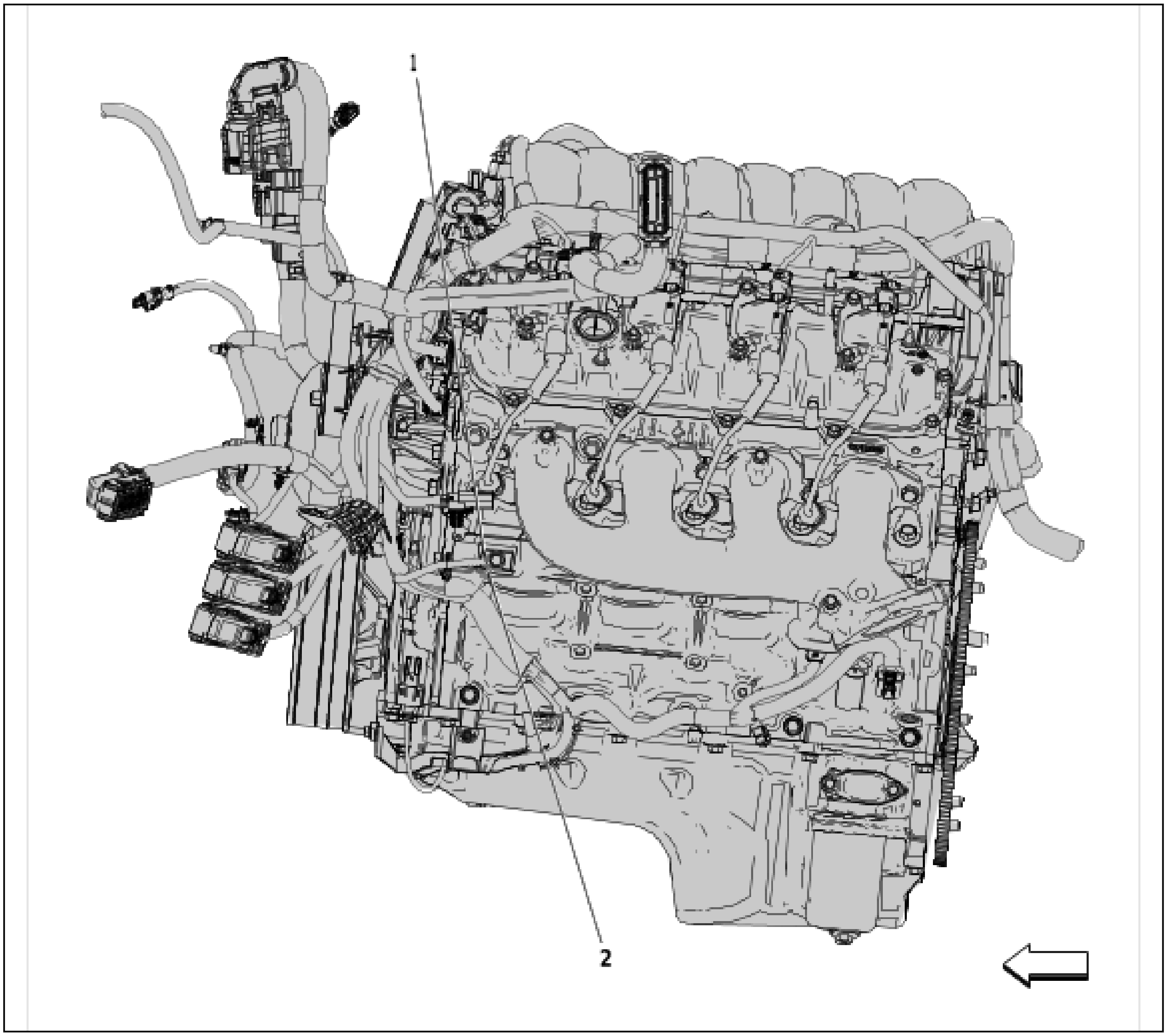
G175 and G176B (L84 / L87)



5978931

Items
(1) G175 Engine Wiring Harness (LZ0 / L84 / L87)
(2) G176B Engine Wiring Harness (L84 / L87)

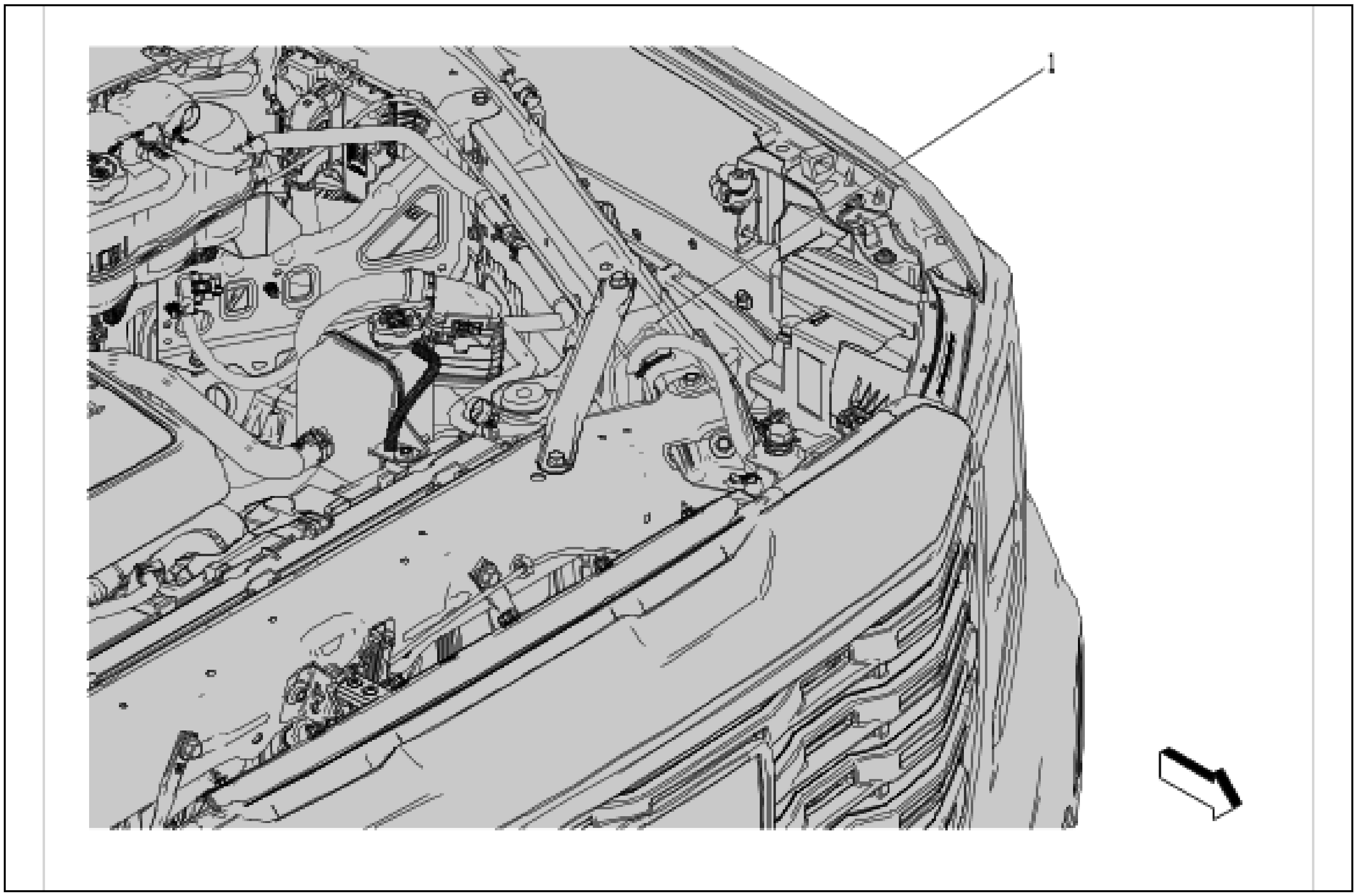
G177A and G177B (L84 / L87)



5978932

Items
(1) G177B Engine Wiring Harness (L3B / LZ0 / L84 / L87)
(2) G177A Engine Wiring Harness (L3B / L84 / L87)

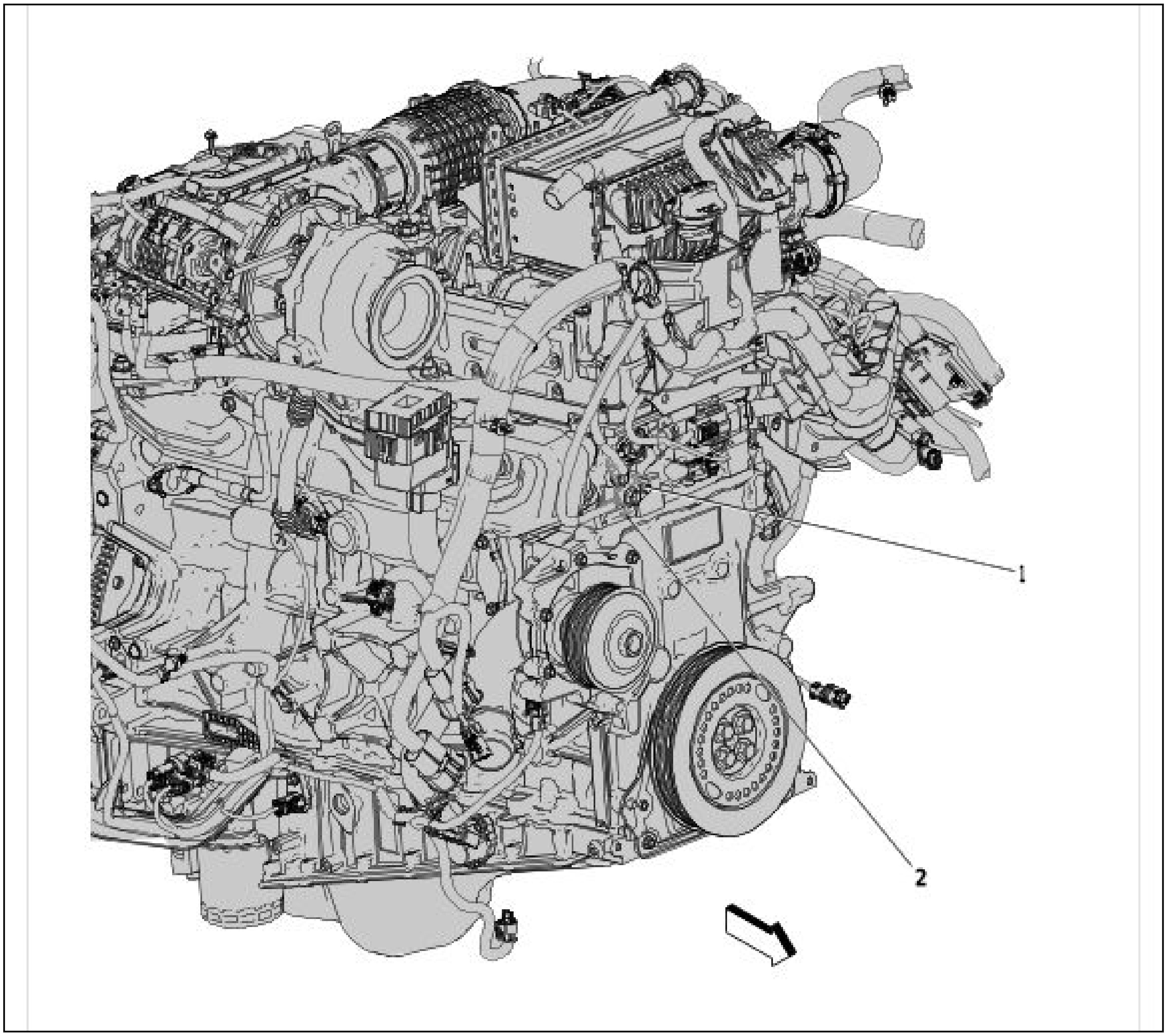
G175 (LZ0)



6141573

Items
(1) G175 Engine Wiring Harness (LZ0 / L84 / L87)

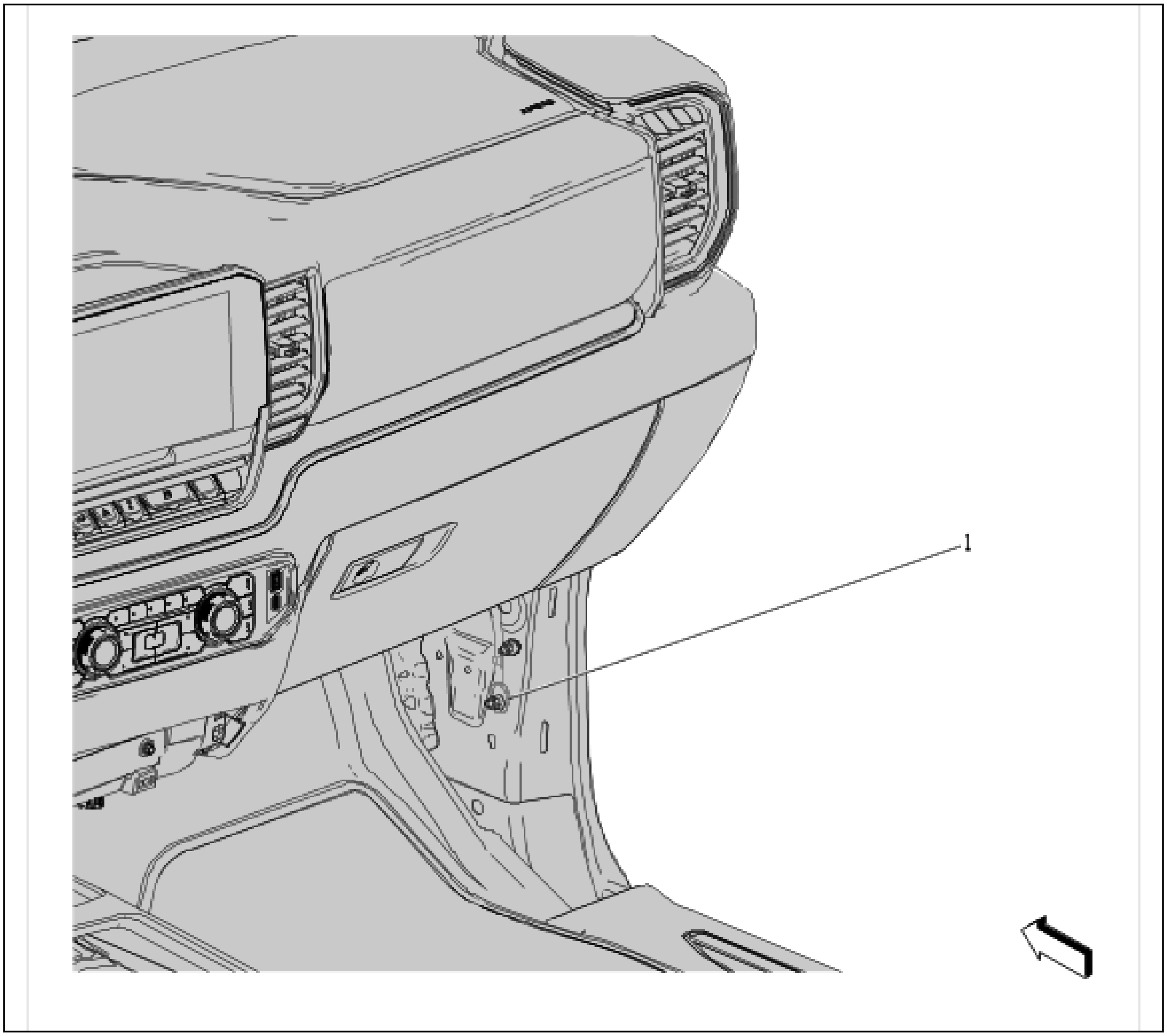
G176A and G177B (LZ0)



6141572

Items
(1) G176A Engine Wiring Harness (LZ0)
(2) G177B Engine Wiring Harness (L3B / LZ0 / L84 / L87)

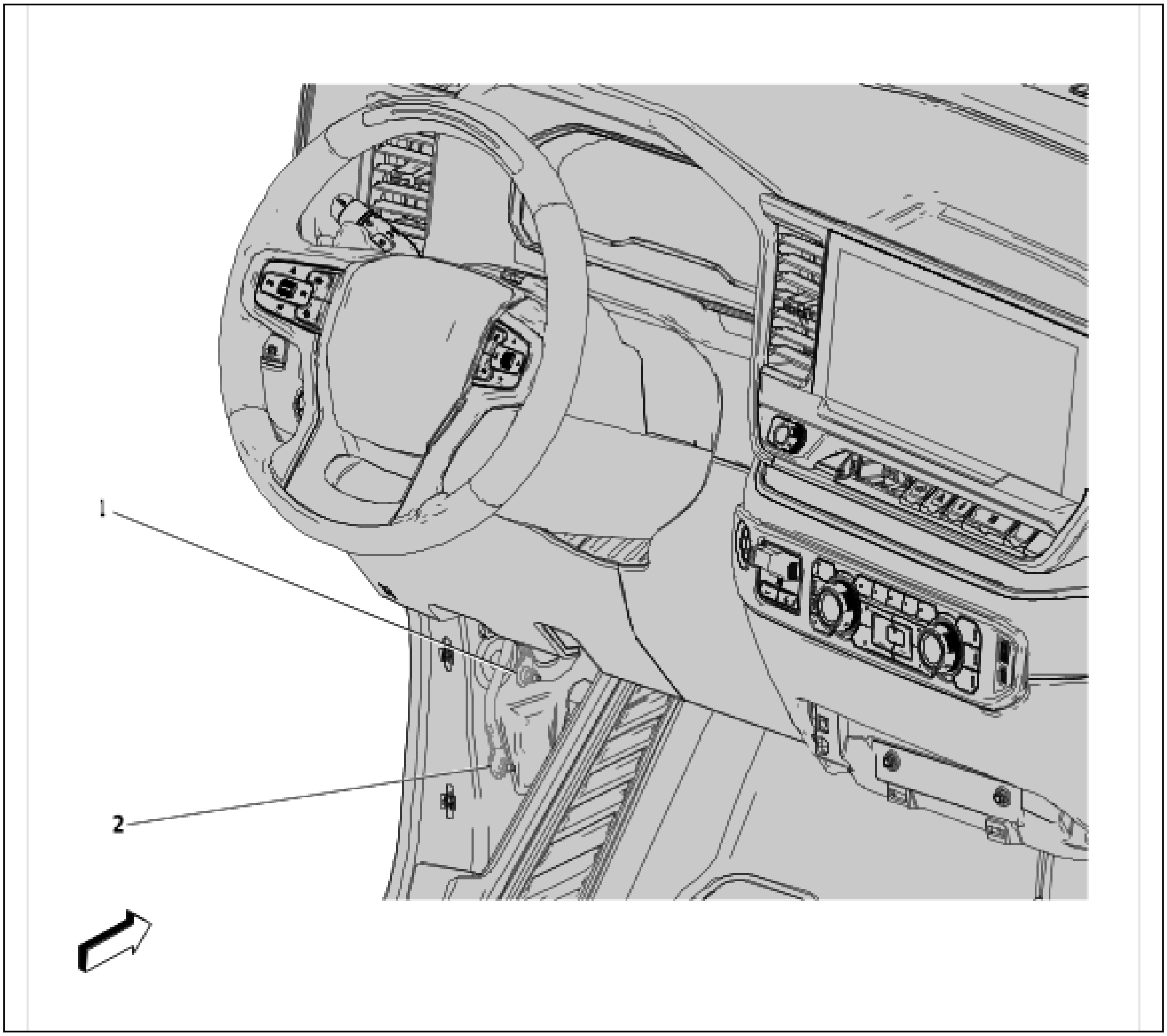
G200



5978933

Items
(1) G200 Instrument Panel Wiring Harness

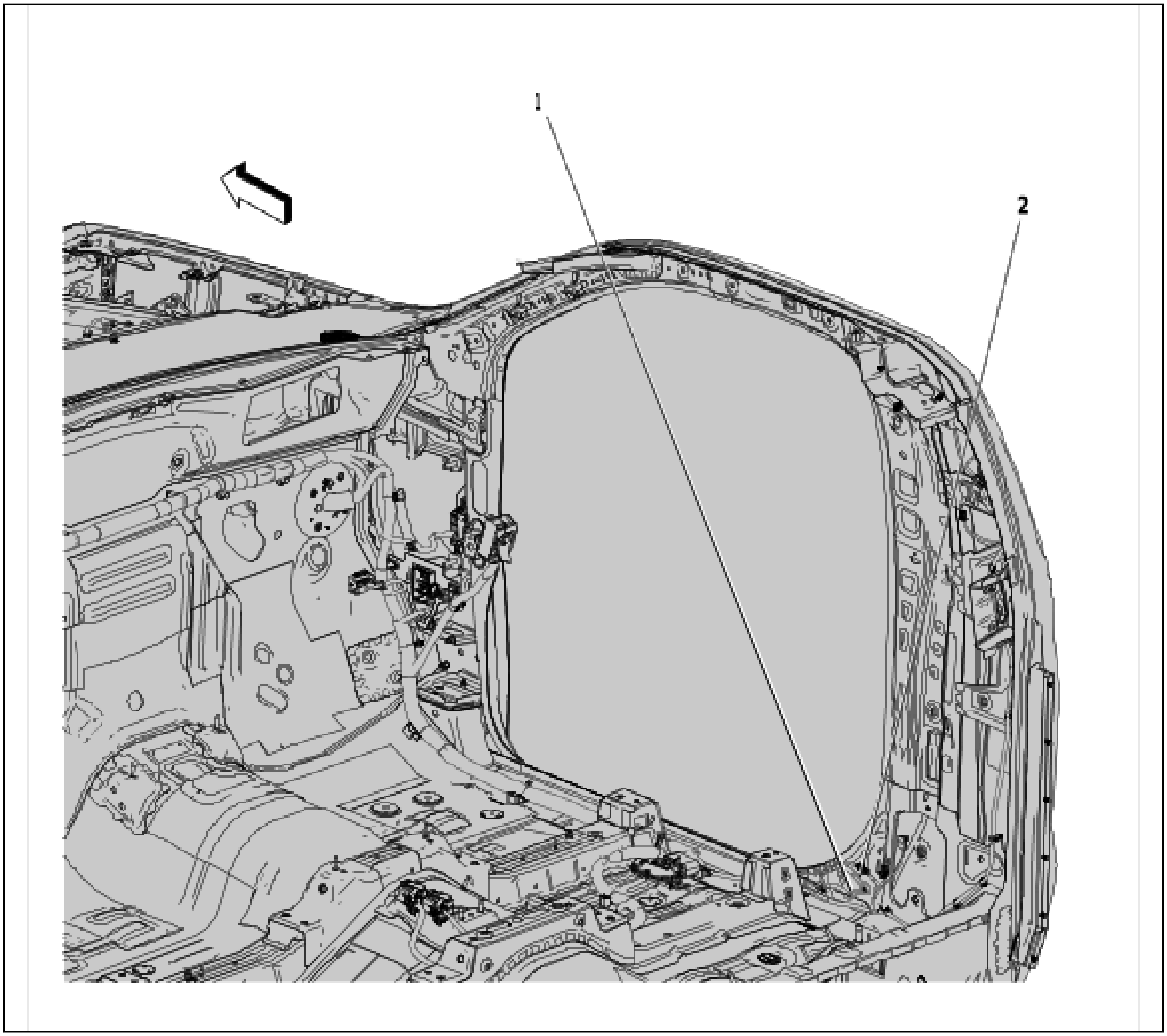
G201 and G203



5978934

Items
(1) G201 Instrument Panel Wiring Harness
(2) G203 Air Heater Ground Wiring Harness (C32)

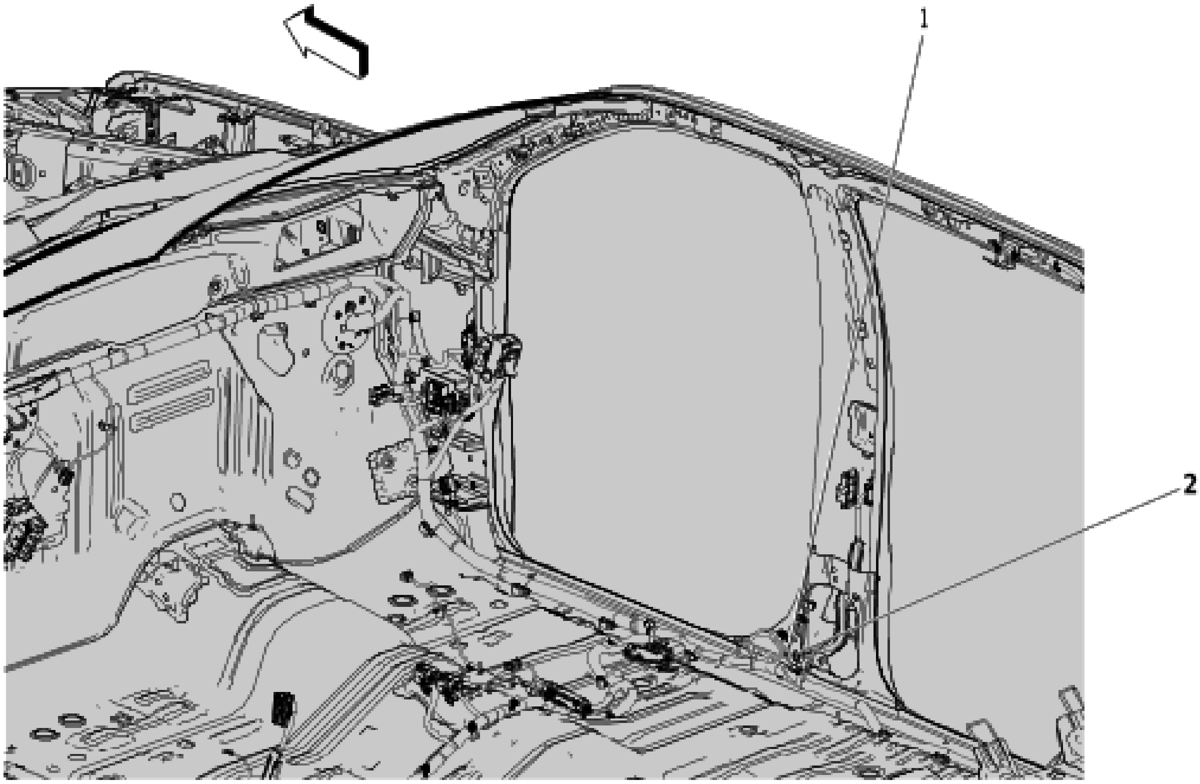
G300A and G300B - Regular Cab



5978935

Items
(1) G300B Body Wiring Harness
(2) G300A Body Wiring Harness

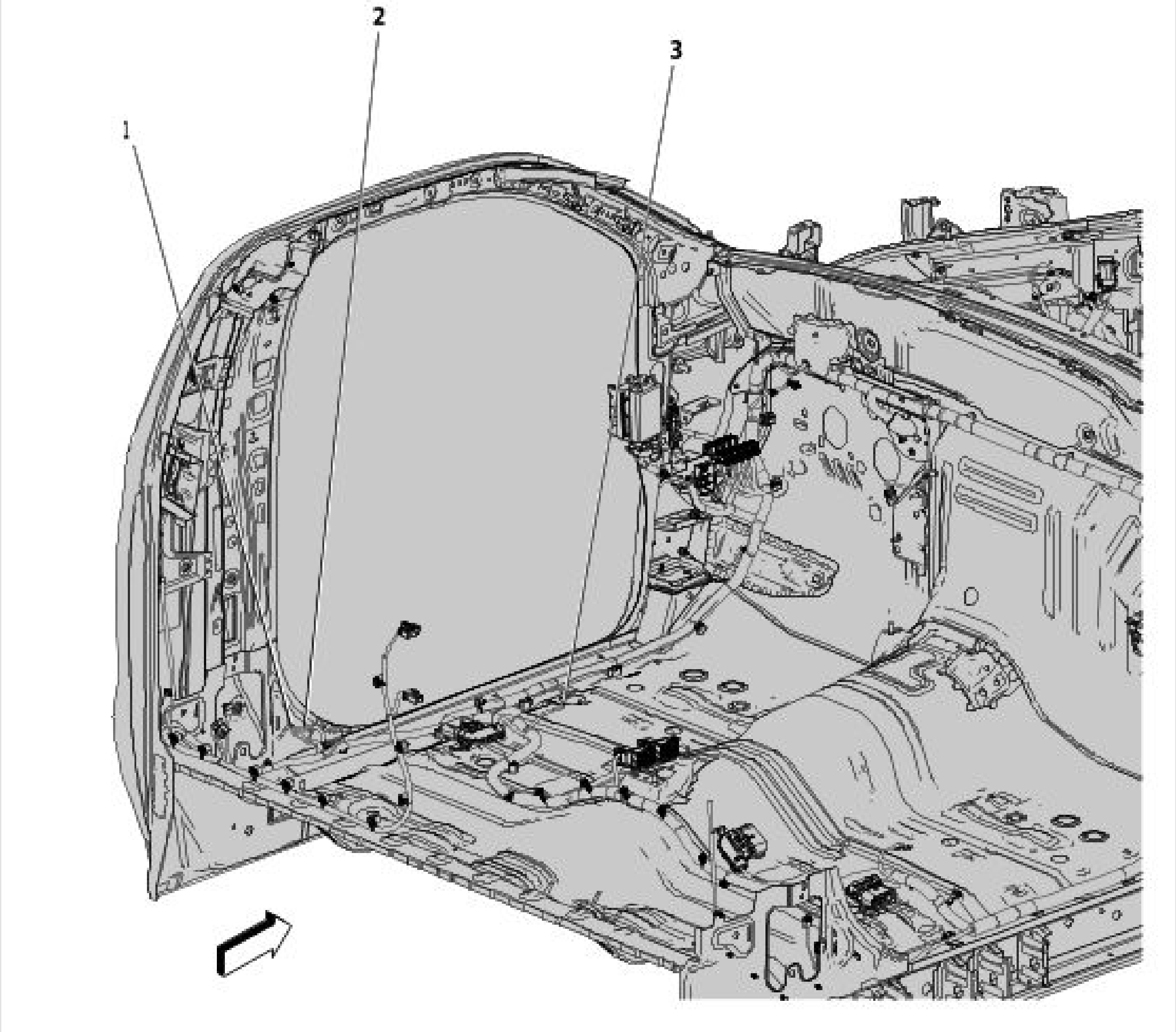
G300A and G300B - Double Cab/Crew Cab



5978936

Items
(1) G300B Body Wiring Harness
(2) G300A Body Wiring Harness

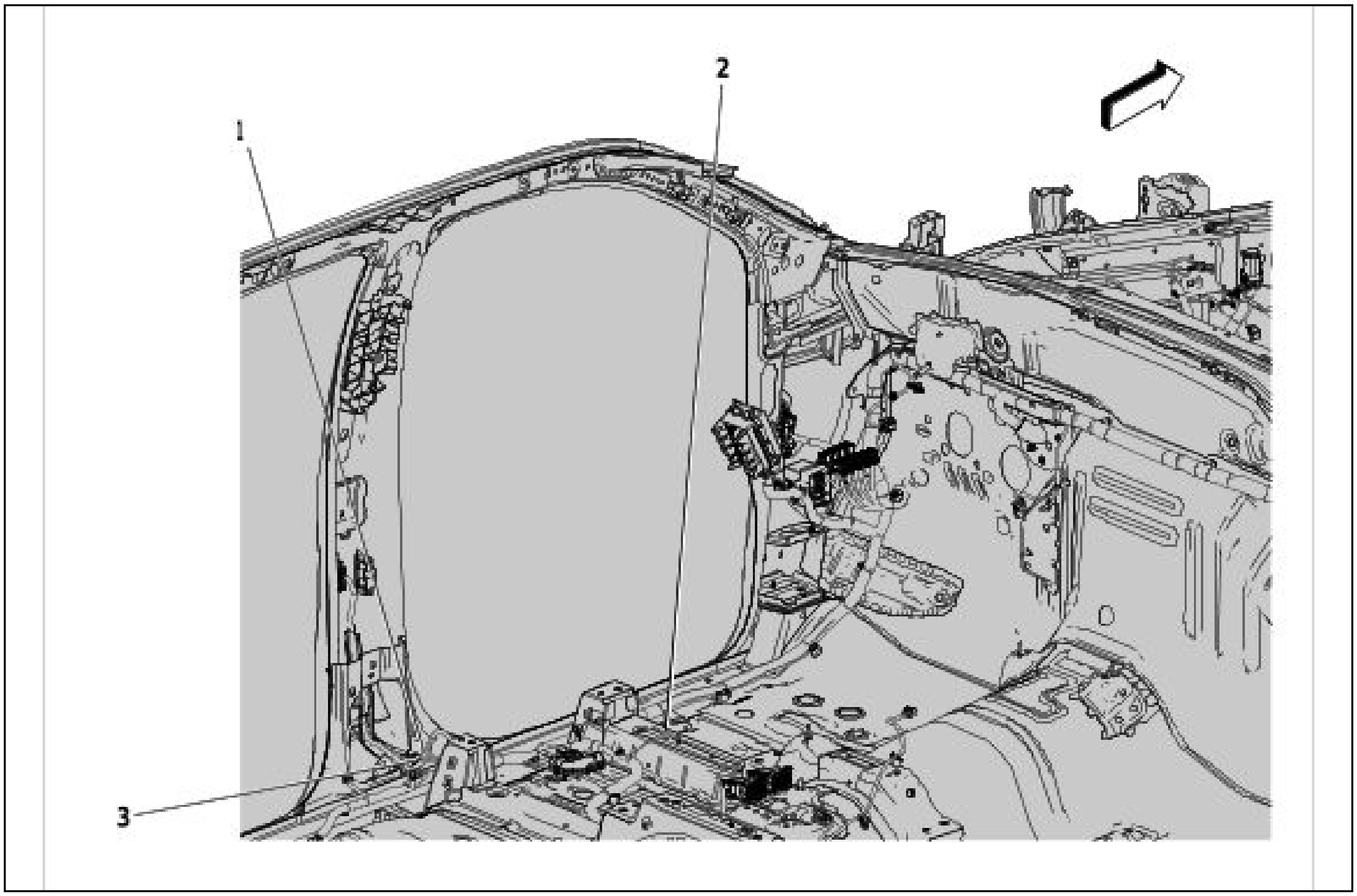
G301A, G301B and G303 - Regular Cab



5978937

Items
(1) G301A Instrument Panel Wiring Harness
(2) G301B Body Wiring Harness
(3) G303 Body Wiring Harness

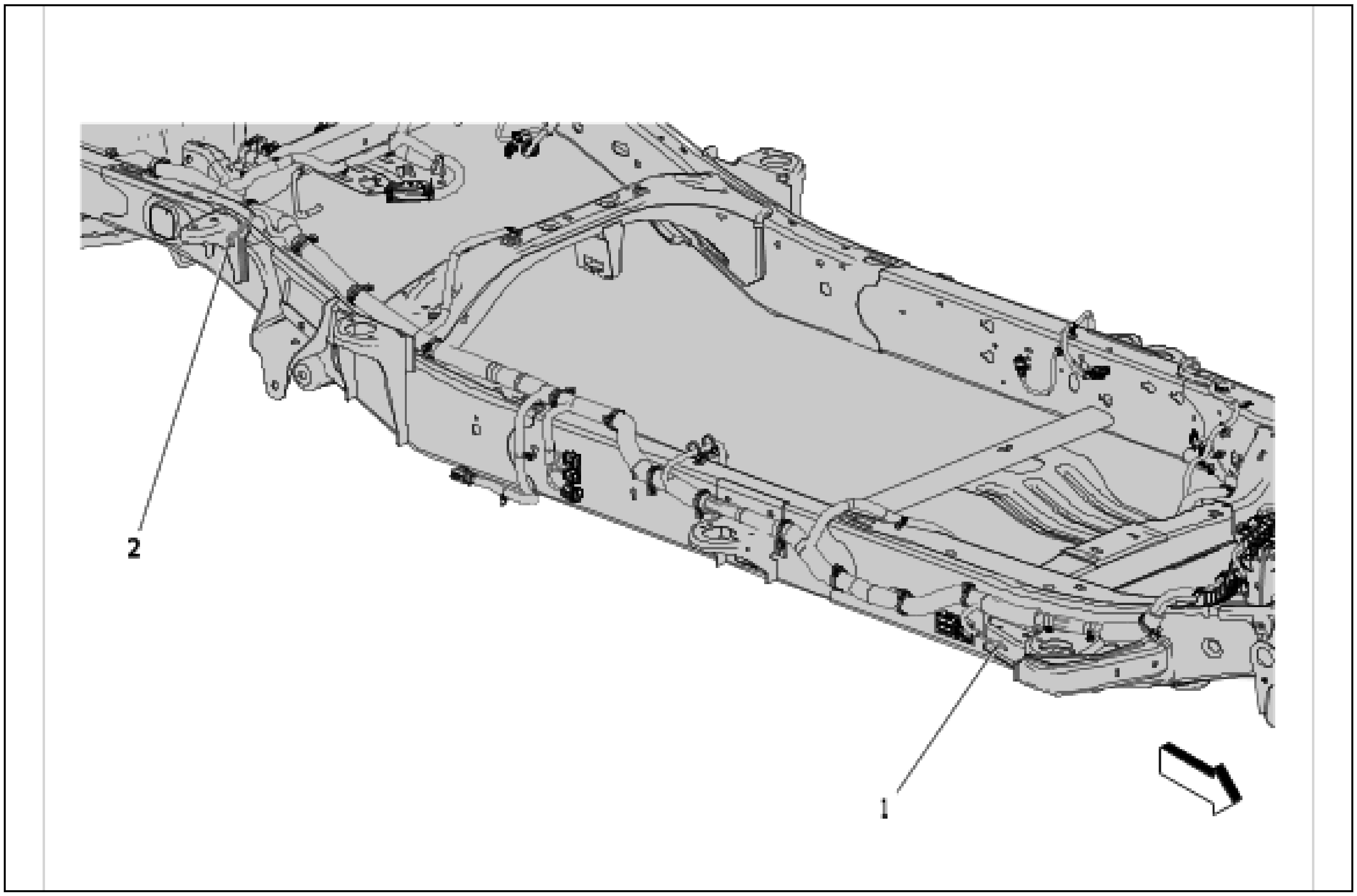
G301A, G301B and G303 - Double Cab/Crew Cab



5978938

Items
(1) G301A Instrument Panel Wiring Harness
(2) G303 Body Wiring Harness
(3) G301B Body Wiring Harness

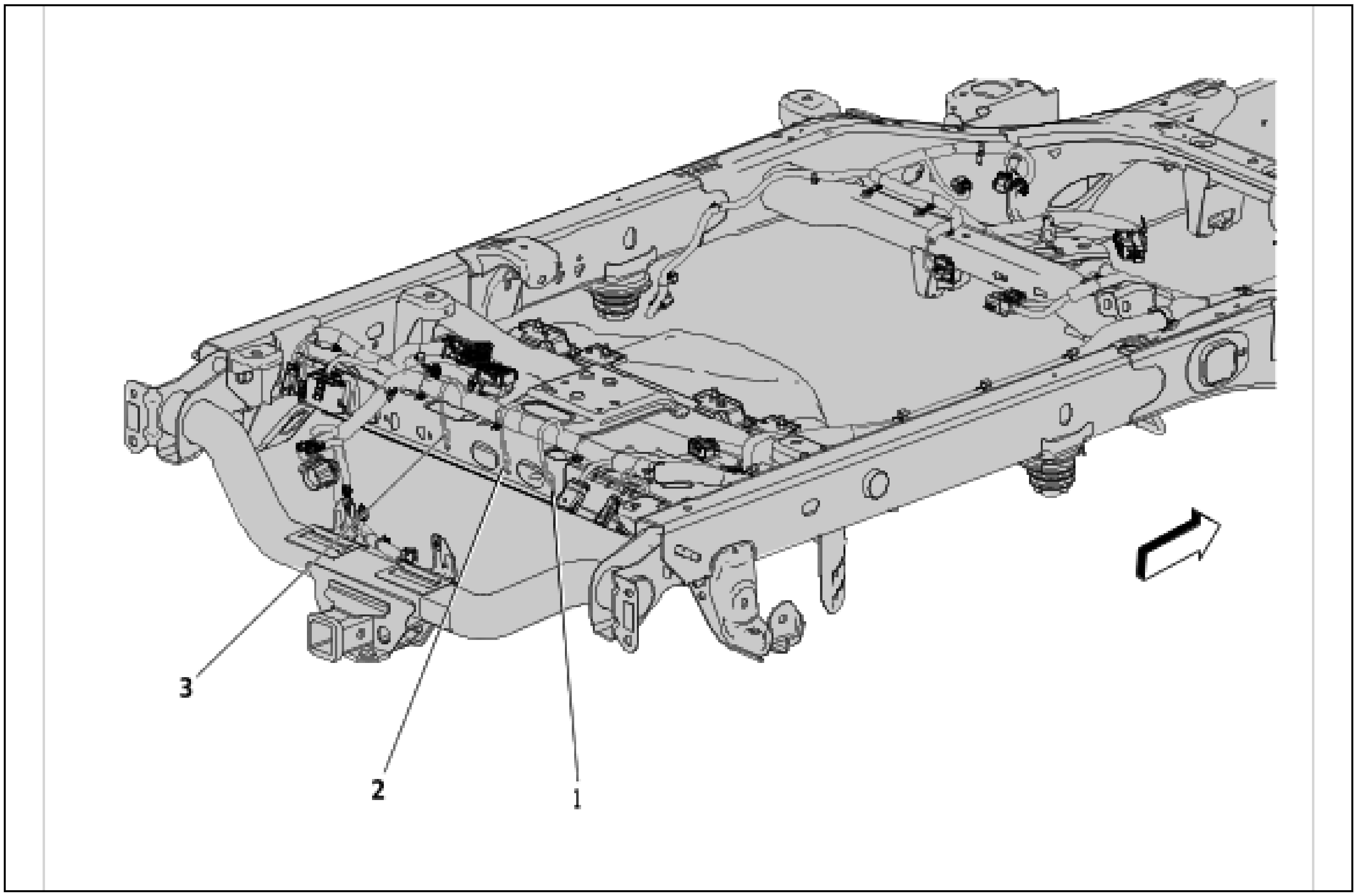
G402 and G403



5978939

Items
(1) G402 Chassis Wiring Harness
(2) G403 Chassis Wiring Harness

G404, G406 and G407



5978940

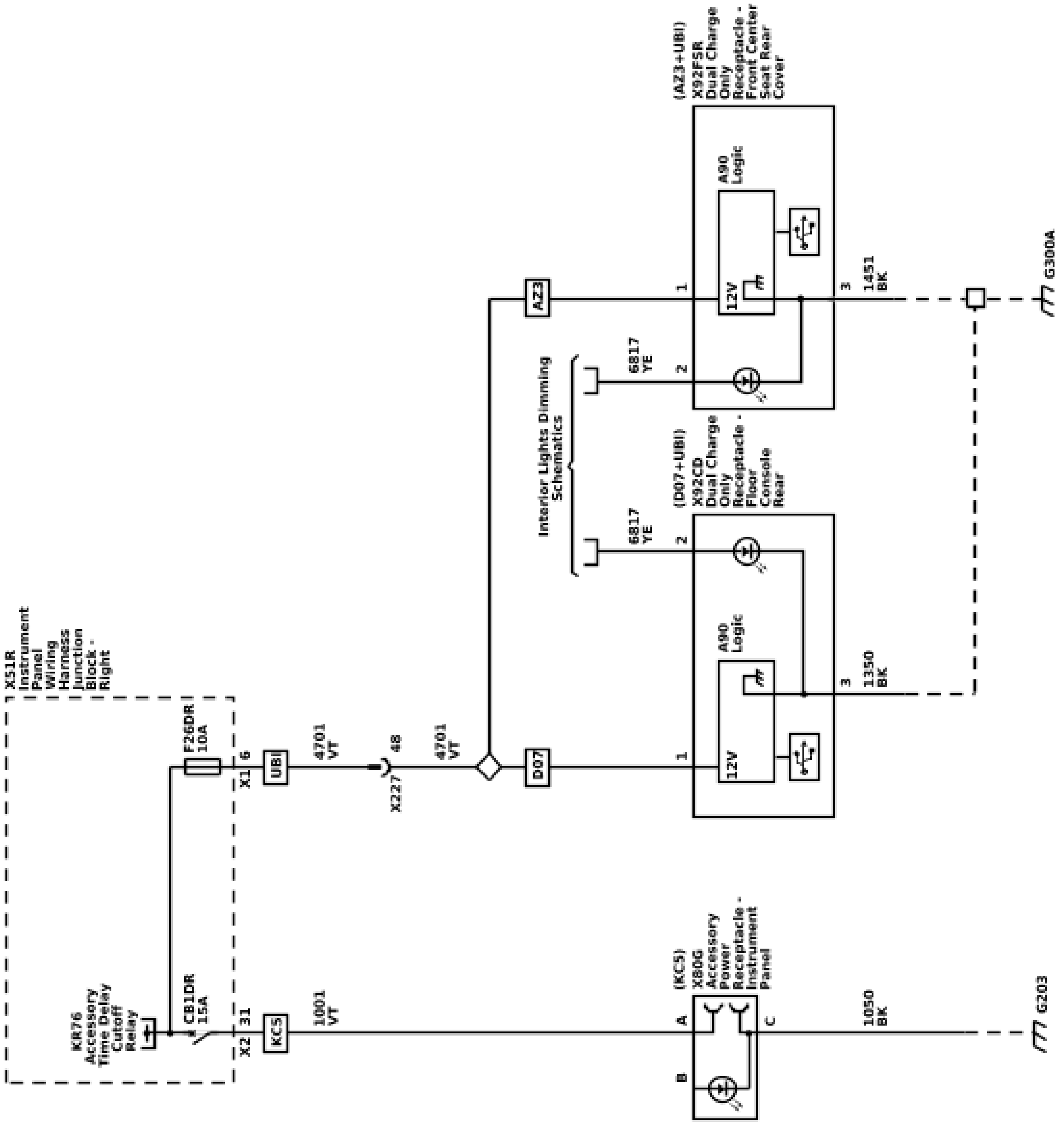
Items
(1) G404 Chassis Wiring Harness
(2) G406 Chassis Wiring Harness
(3) G407 Chassis Wiring Harness

Power Outlets

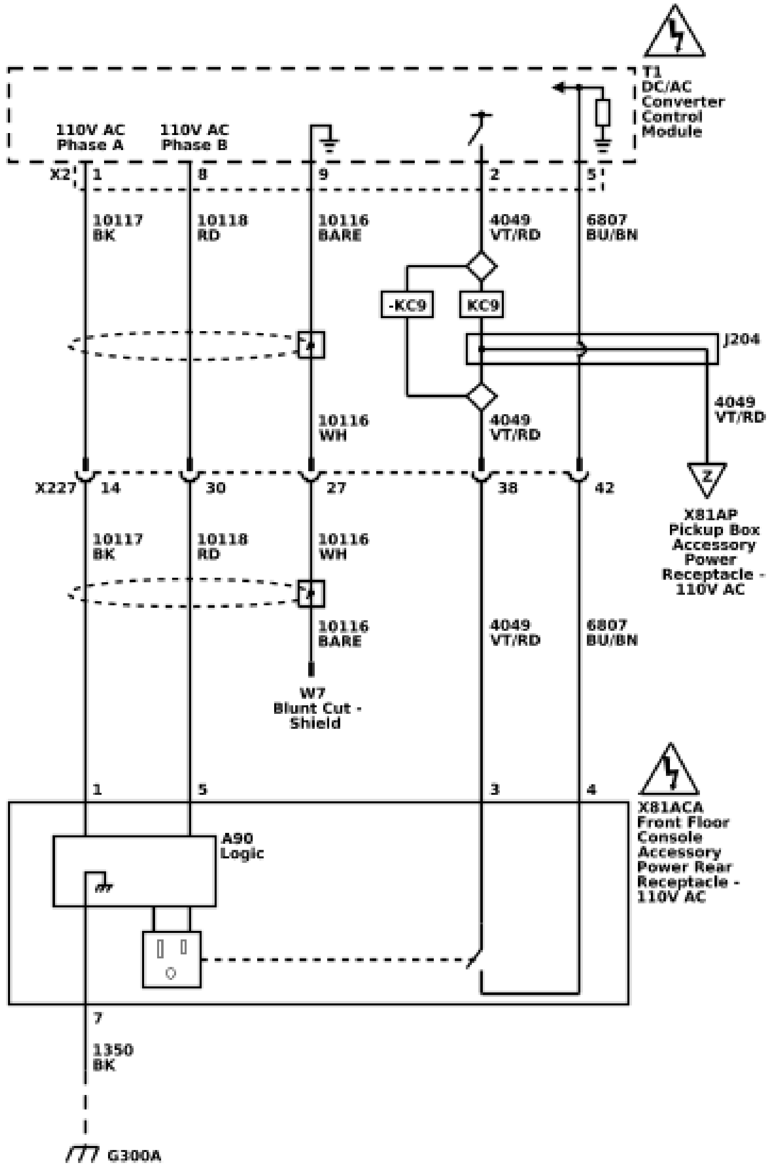
Schematic and Routing Diagrams

Cigar Lighter/Power Outlet Schematics (Power and Charge Receptacles (KC5 / UBI))

6847050

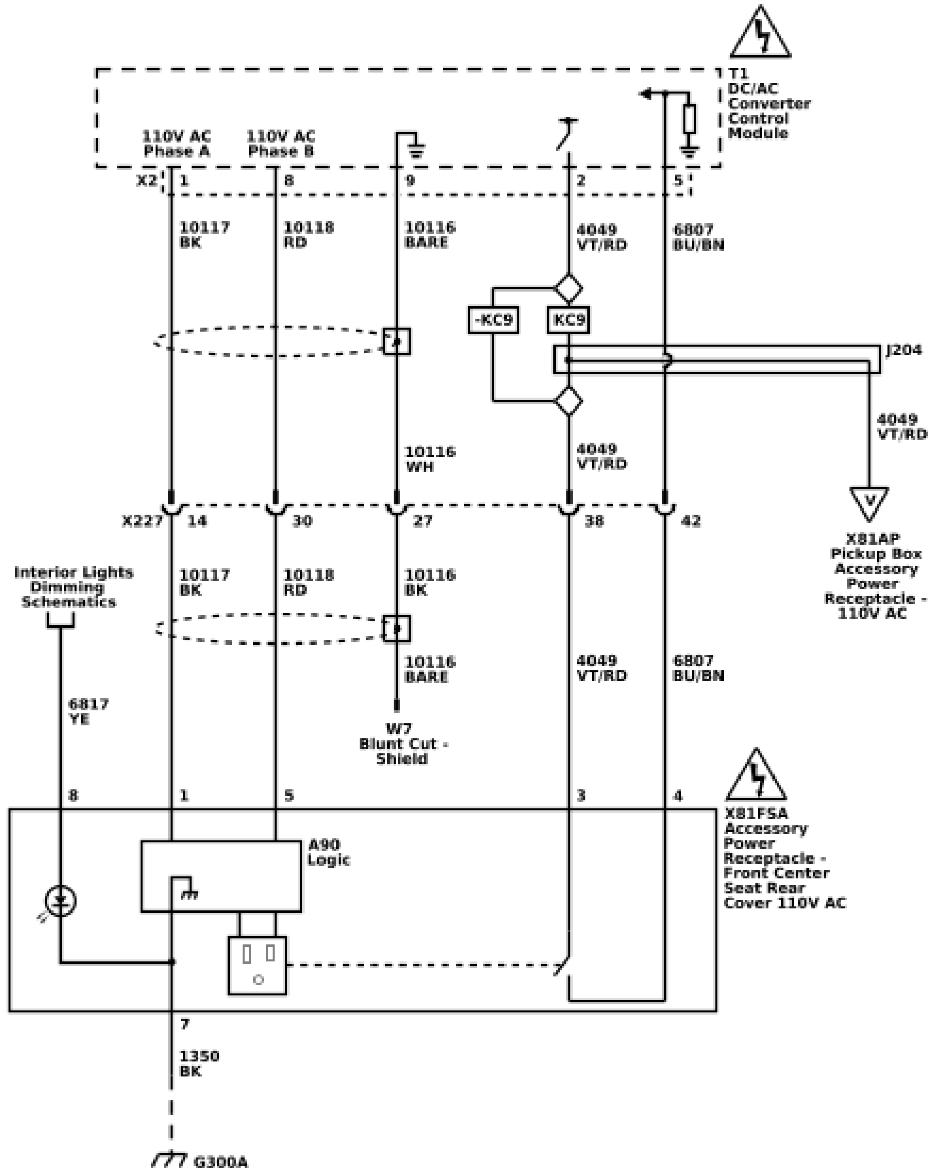

X51R Instrument Panel Wiring Harness Junction Block - Right
KR76 Accessory Time Delay Cutoff Relay
CB1DR 15A
F26DR 10A
X2 31
X1 6
KC5
UBI
1001 VT
4701 VT
X227 48
4701 VT
D07
AZ3
Interior Lights Dimming Schematics
6817 YE
6817 YE
(KC5) X80G Accessory Power Receptacle - Instrument Panel
A
B
C
1050 BK
G203
(D07+UBI) X92CD Dual Charge Only Receptacle - Floor Console Rear
A90 Logic
12V
1
2
3
1350 BK
(AZ3+UBI) X92FSR Dual Charge Only Receptacle - Front Center Seat Rear Cover
A90 Logic
12V
1
2
3
1451 BK
G300A

Cigar Lighter/Power Outlet Schematics (110V AC Accessory Power Rear Receptacle - Front Floor Console (KI4 & D07))


T1
DC/AC Converter Control Module
110V AC Phase A
110V AC Phase B
X2
1
8
9
2
5
10117 BK
10118 RD
10116 BARE
4049 VT/RD
6807 BU/BN
-KC9
KC9
J204
4049 VT/RD
10116 WH
4049 VT/RD
Z
X81AP Pickup Box Accessory Power Receptacle - 110V AC
X227
14
30
27
38
42
10117 BK
10118 RD
10116 WH
10116 BARE
4049 VT/RD
6807 BU/BN
W7 Blunt Cut - Shield
1
5
3
4
X81ACA Front Floor Console Accessory Power Rear Receptacle - 110V AC
A90 Logic
7
1350 BK
G300A

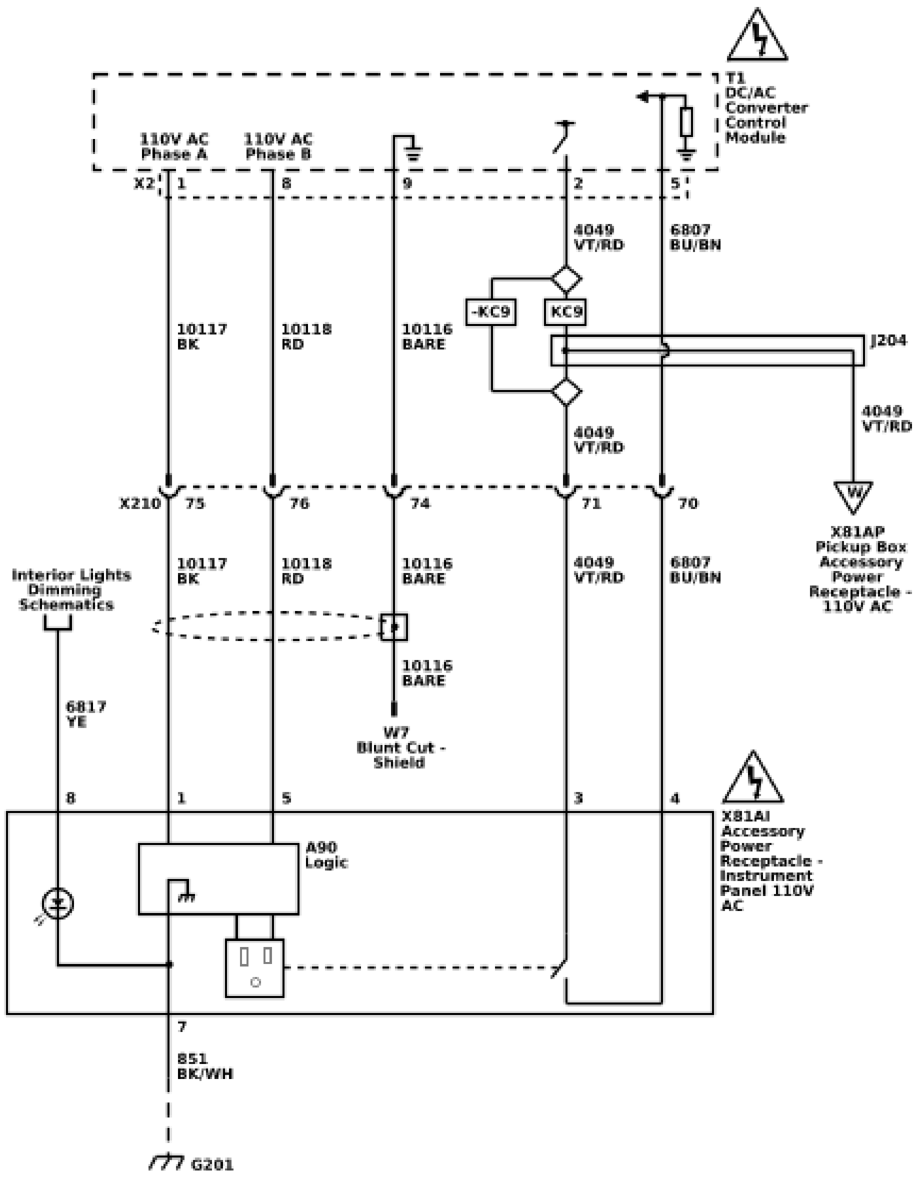
6847051

Cigar Lighter/Power Outlet Schematics (110V AC Accessory Power Receptacle - Front Center Seat Rear (KI4 & AZ3))


T1
DC/AC Converter Control Module
110V AC Phase A
110V AC Phase B
X2
1
8
9
2
5
10117 BK
10118 RD
10116 BARE
4049 VT/RD
6807 BU/BN
-KC9
KC9
J204
4049 VT/RD
10116 WH
4049 VT/RD
X227
14
30
27
38
42
X81AP Pickup Box Accessory Power Receptacle - 110V AC
Interior Lights Dimming Schematics
10117 BK
10118 RD
10116 BK
10116 BARE
4049 VT/RD
6807 BU/BN
6817 YE
W7 Blunt Cut - Shield
8
1
5
3
4
A90 Logic
X81FSA Accessory Power Receptacle - Front Center Seat Rear Cover 110V AC
7
1350 BK
G300A

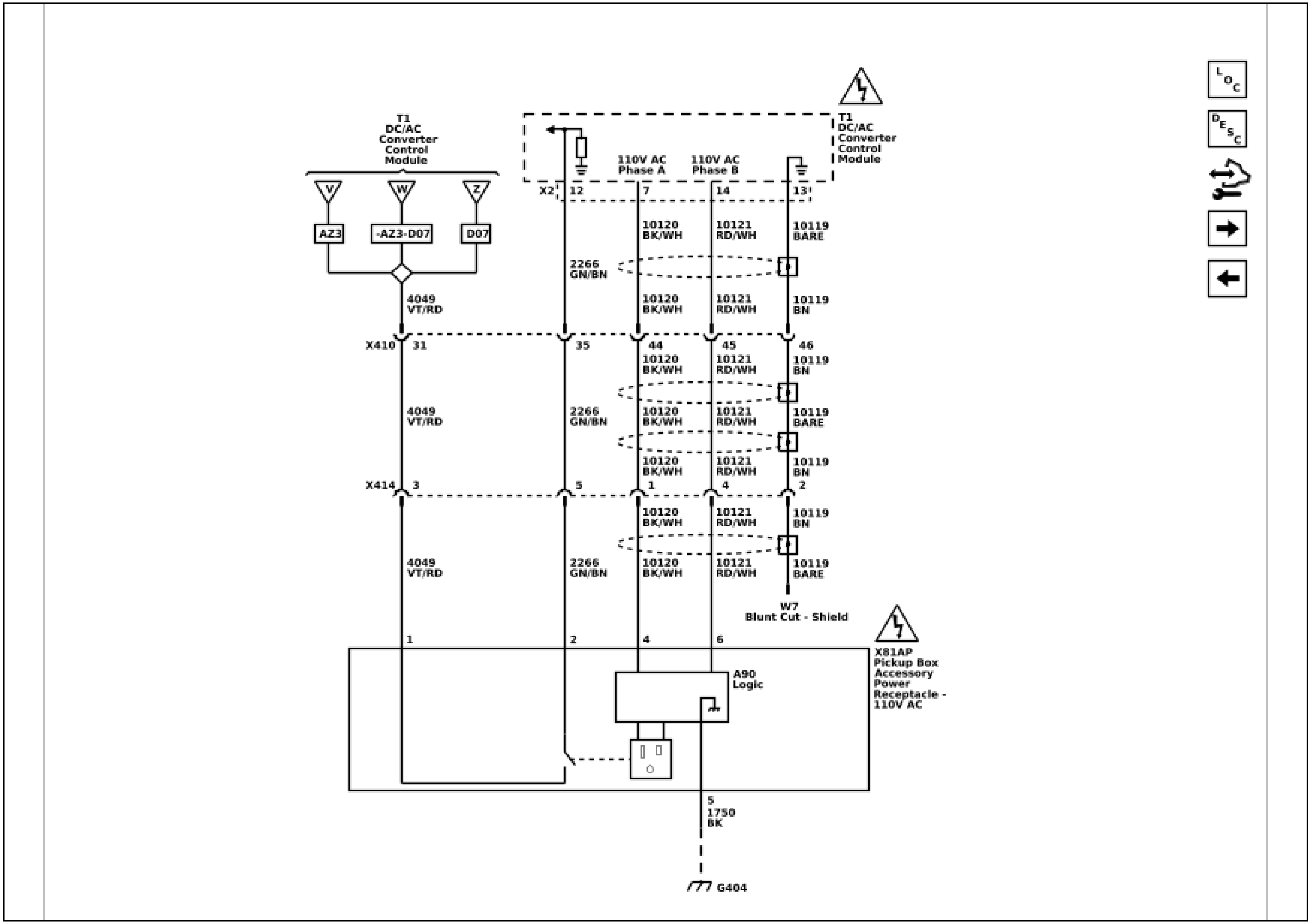
6847052

Cigar Lighter/Power Outlet Schematics (110V AC Accessory Power Receptacle - Instrument Panel (KI4 - AZ3 - D07))

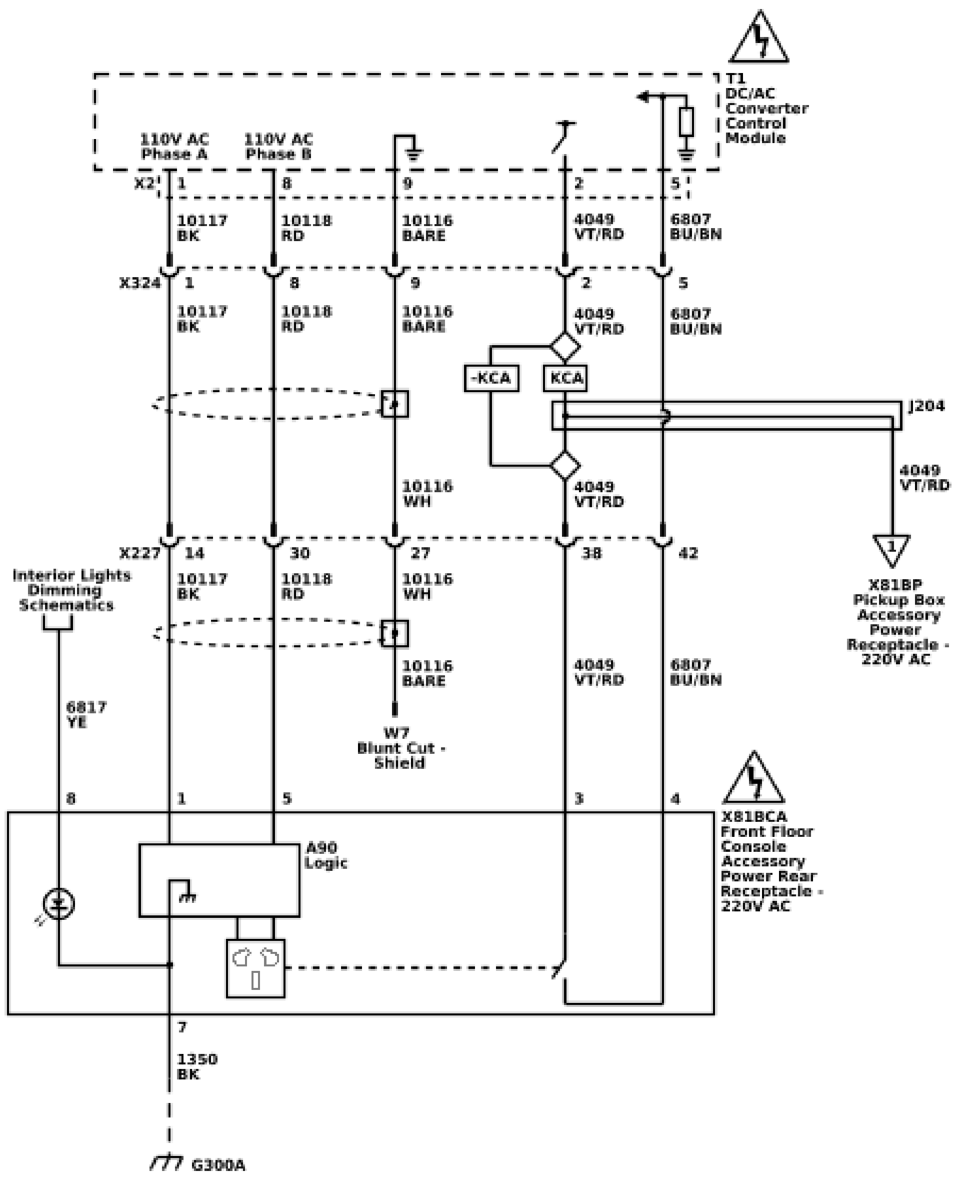

T1
DC/AC Converter Control Module
110V AC Phase A
110V AC Phase B
X2
1
8
9
2
5
4049 VT/RD
6807 BU/BN
-KC9
KC9
J204
10117 BK
10118 RD
10116 BARE
4049 VT/RD
4049 VT/RD
X210
75
76
74
71
70
X81AP Pickup Box Accessory Power Receptacle - 110V AC
Interior Lights Dimming Schematics
10117 BK
10118 RD
10116 BARE
4049 VT/RD
6807 BU/BN
10116 BARE
6817 YE
W7 Blunt Cut - Shield
8
1
5
3
4
A90 Logic
X81AI Accessory Power Receptacle - Instrument Panel 110V AC
7
851 BK/WH
G201

6847053

Cigar Lighter/Power Outlet Schematics (110V AC Pickup Box Accessory Power Receptacle (KC9))

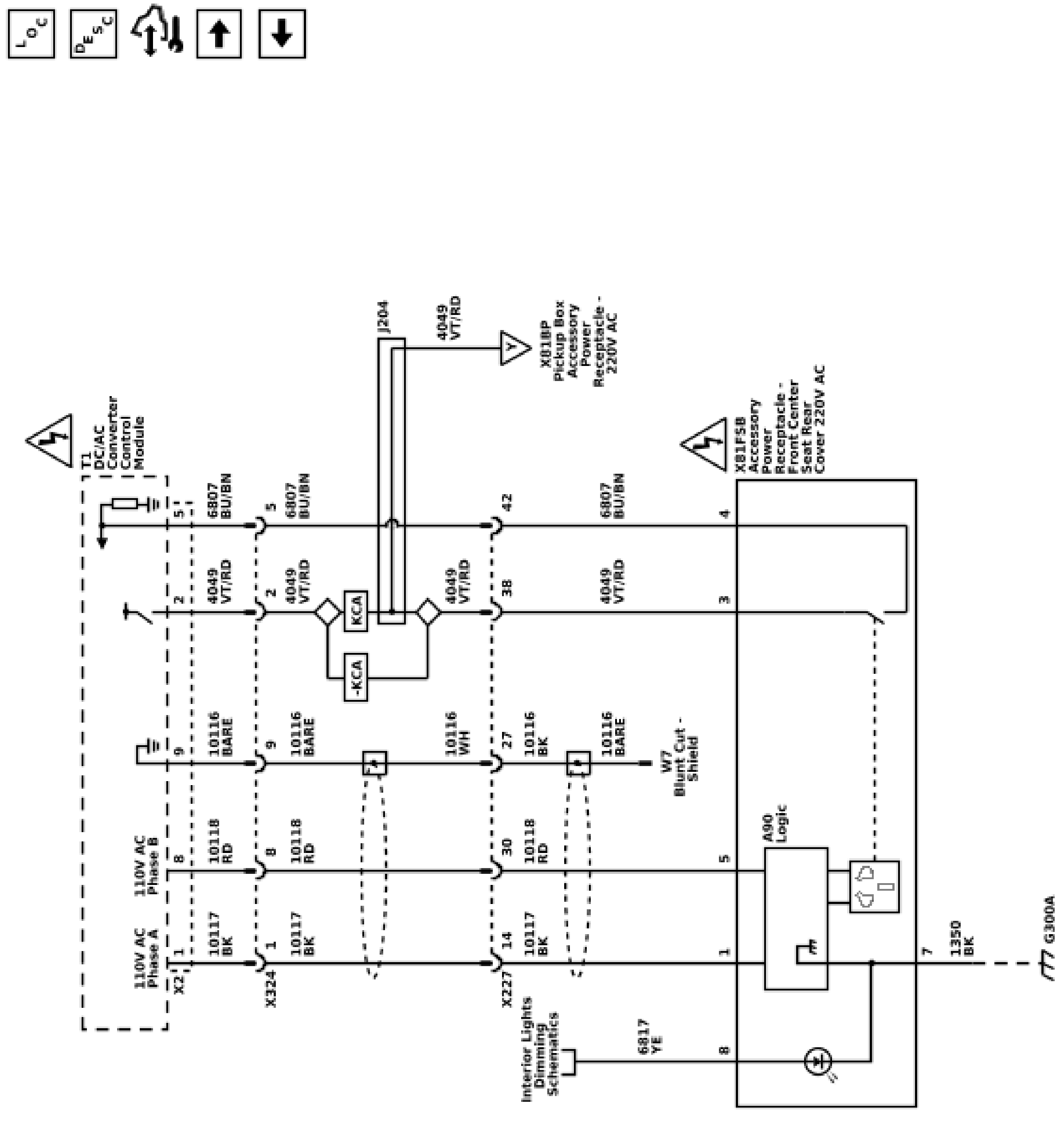

T1
DC/AC
Converter
Control
Module
V
W
Z
AZ3
-AZ3-D07
D07
4049
VT/RD
X410
31
4049
VT/RD
X414
3
4049
VT/RD
T1
DC/AC
Converter
Control
Module
110V AC
Phase A
110V AC
Phase B
X2
12
7
14
13
10120
BK/WH
10121
RD/WH
10119
BARE
2266
GN/BN
10119
BN
35
44
45
46
2266
GN/BN
10119
BARE
5
1
4
2
2266
GN/BN
W7
Blunt Cut - Shield
1
2
4
6
A90
Logic
X81AP
Pickup Box
Accessory
Power
Receptacle -
110V AC
5
1750
BK
G404
6847054

Cigar Lighter/Power Outlet Schematics (220V AC Accessory Power Rear Receptacle - Front Floor Console (KI5 & D07))

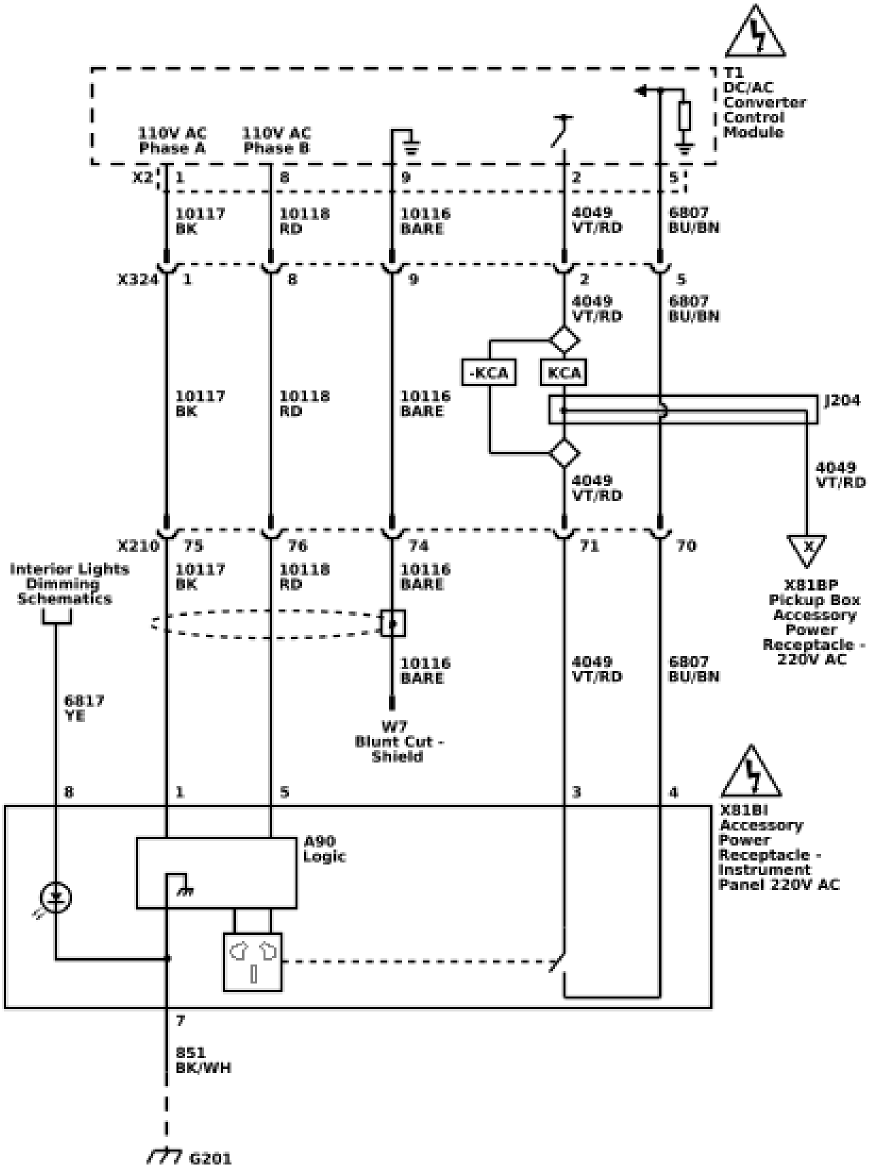

T1
DC/AC Converter Control Module
110V AC Phase A
110V AC Phase B
X2
1
8
9
2
5
10117 BK
10118 RD
10116 BARE
4049 VT/RD
6807 BU/BN
X324
-KCA
KCA
J204
4049 VT/RD
10116 WH
X227
14
30
27
38
42
Interior Lights Dimming Schematics
10117 BK
10118 RD
10116 WH
1
X81BP Pickup Box Accessory Power Receptacle - 220V AC
10116 BARE
4049 VT/RD
6807 BU/BN
6817 YE
W7 Blunt Cut - Shield
8
1
5
3
4
X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC
A90 Logic
7
1350 BK
G300A

6847055

Cigar Lighter/Power Outlet Schematics (220V AC Accessory Power Receptacle - Front Center Seat Rear (KI5 & AZ3))

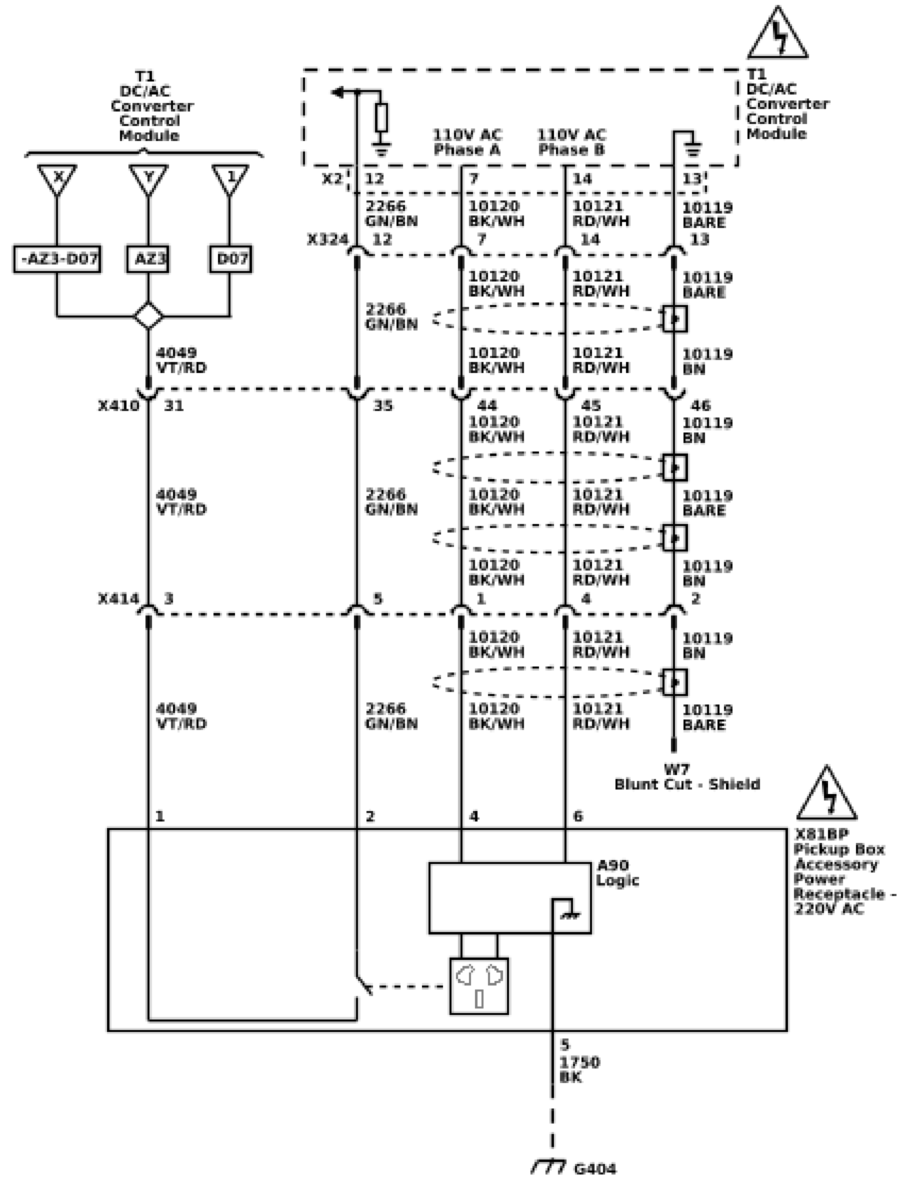

6847056
LOC
DESC
T1 DC/AC Converter Control Module
110V AC Phase A
110V AC Phase B
X2
1
8
9
2
5
10117 BK
10118 RD
10116 BARE
4049 VT/RD
6807 BU/BN
X324
1
8
9
2
5
KCA
-KCA
J204
4049 VT/RD
X81BP Pickup Box Accessory Power Receptacle - 220V AC
10116 WH
X227
14
30
27
38
42
10117 BK
10118 RD
10116 BK
4049 VT/RD
6807 BU/BN
10116 BARE
W7 Blunt Cut - Shield
Interior Lights Dimming Schematics
6817 YE
X81FSB Accessory Power Receptacle - Front Center Seat Rear Cover 220V AC
4
3
5
1
8
7
A90 Logic
1350 BK
G300A

Cigar Lighter/Power Outlet Schematics (220V AC Accessory Power Receptacle - Instrument Panel (KI5 - AZ3 - D07))


T1
DC/AC Converter Control Module
110V AC Phase A
110V AC Phase B
X2
1
8
9
2
5
10117 BK
10118 RD
10116 BARE
4049 VT/RD
6807 BU/BN
X324
1
8
9
2
5
-KCA
KCA
J204
4049 VT/RD
X210
75
76
74
71
70
X81BP Pickup Box Accessory Power Receptacle - 220V AC
Interior Lights Dimming Schematics
6817 YE
W7 Blunt Cut - Shield
8
1
5
3
4
A90 Logic
X81BI Accessory Power Receptacle - Instrument Panel 220V AC
7
851 BK/WH
G201

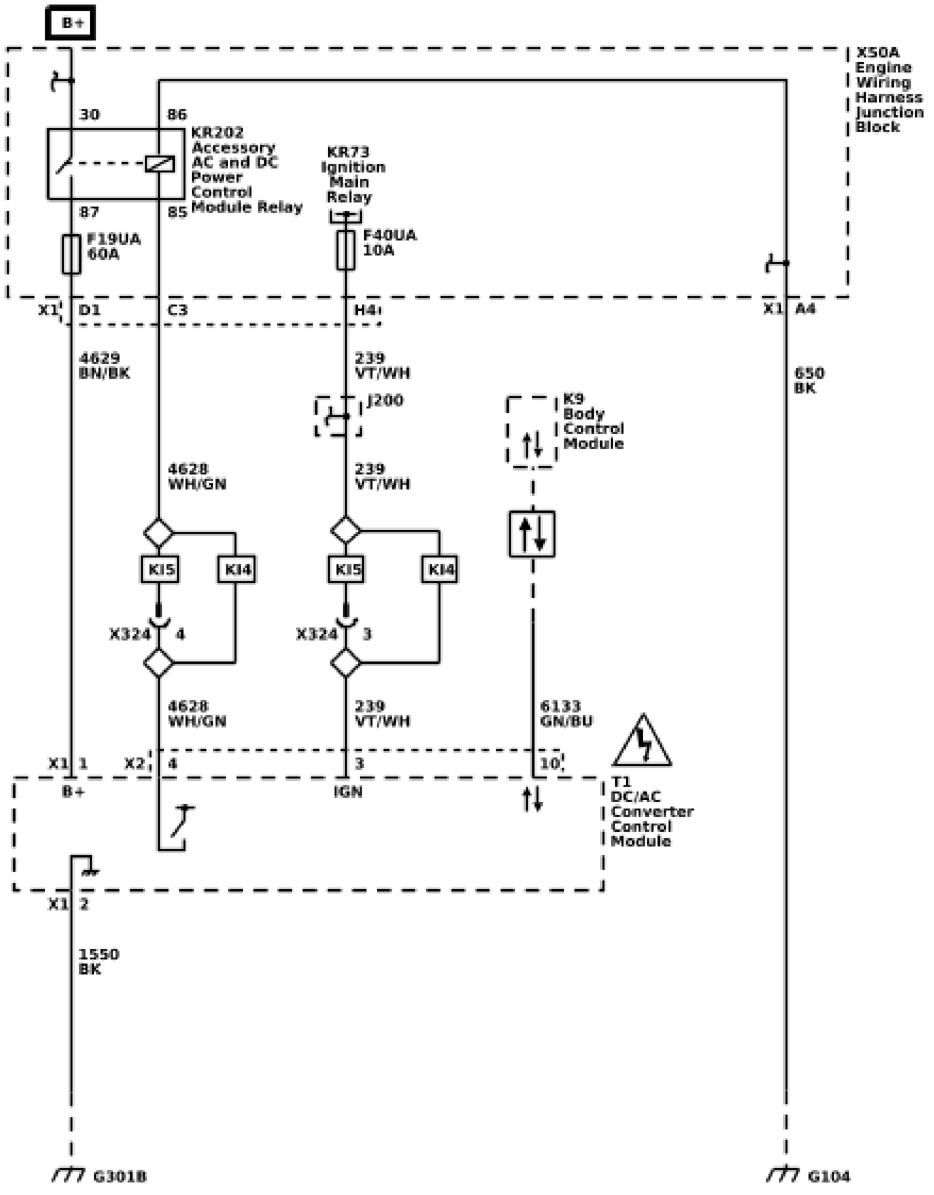
6847057

Cigar Lighter/Power Outlet Schematics (220V AC Pickup Box Accessory Power Receptacle (KCA))


T1
DC/AC
Converter
Control
Module
X
Y
1
-AZ3-D07
AZ3
D07
4049
VT/RD
X410 31
X414 3
T1
DC/AC
Converter
Control
Module
110V AC
Phase A
110V AC
Phase B
X2 12
7
14
13
2266
GN/BN
10120
BK/WH
10121
RD/WH
10119
BARE
X324 12
7
14
13
10119
BN
35
44
45
46
5
1
4
2
W7
Blunt Cut - Shield
1
2
4
6
A90
Logic
X81BP
Pickup Box
Accessory
Power
Receptacle -
220V AC
5
1750
BK
G404

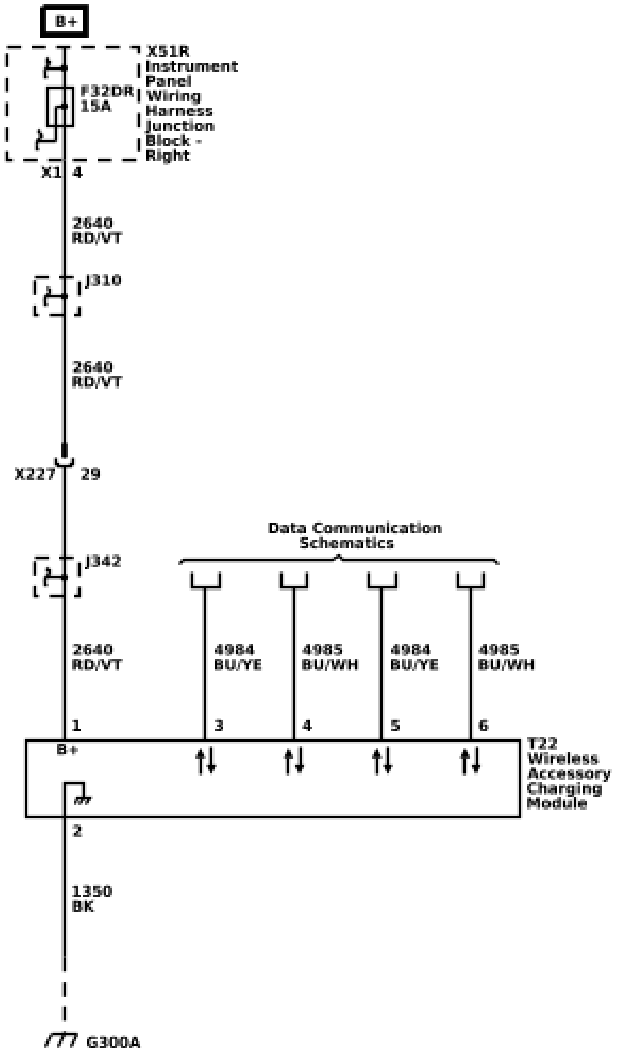
6847058

Cigar Lighter/Power Outlet Schematics (Inverter Module Power, Ground, and Serial Data (KI4 / KI5 / KCA / KC9))


B+
X50A Engine Wiring Harness Junction Block
30
86
KR202 Accessory AC and DC Power Control Module Relay
87
85
KR73 Ignition Main Relay
F19UA 60A
F40UA 10A
X1 D1
C3
H4
X1 A4
4629 BN/BK
239 VT/WH
J200
650 BK
K9 Body Control Module
4628 WH/GN
239 VT/WH
KI5
KI4
KI5
KI4
X324 4
X324 3
4628 WH/GN
239 VT/WH
6133 GN/BU
X1 1
X2 4
3
10
B+
IGN
T1 DC/AC Converter Control Module
X1 2
1550 BK
G301B
G104

6847059

Cigar Lighter/Power Outlet Schematics (Wireless Charging (K4C))


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F32DR 15A
X1 4
2640 RD/VT
J310
2640 RD/VT
X227 29
J342
2640 RD/VT
Data Communication Schematics
4984 BU/YE
4985 BU/WH
4984 BU/YE
4985 BU/WH
1
3
4
5
6
B+
T22 Wireless Accessory Charging Module
2
1350 BK
G300A

6847060

Description and Operation

Mobile Device Wireless Charger Description and Operation

Mobile Device Wireless Charging System

The Mobile Device Wireless Charging System (WCS) is an system for wirelessly charging mobile devices. It is capable of charging the batteries of compatible mobile devices. A compatible device is one that is compliant with Power Matters Alliance (PMA), Wireless Power Consortium (WPC) Standard, or Alliance for Wireless Power (A4WP), meaning that it is equipped with a PMA, WPC, or A4WP wireless charge “receiver” that will work with the charge “transmitter” installed in the vehicle. The devices may utilize built-in charging circuitry or an adapter (external plug-in device which contains the charging circuitry). To check for phone or other device compatibility, refer to GM Total Connect.

Warning: Remove all objects from the charging pad before charging your mobile device. Objects, such as coins, keys, rings, paper clips, or cards, between the phone and charging pad will become very hot. On the rare occasion that the charging system does not detect an object, and the object gets wedged between the phone and charger, remove the phone and allow the object to cool before removing it from the charging pad, to prevent burns.

Charging

To charge a device, place it on the charging surface in the vehicle. There is a charging coil located in the center of the charging surface. The device has a charging coil typically near the center of the device. These coils must be lined up in order for charging to proceed. When the interruptible retained accessory power (IRAP) relay is closed (this is true typically when vehicle ignition is in Run or Accessory position), the WCS will detect the device, establish communications with the device to confirm it is a compatible device, and then deliver charging power to the device via wireless interface. The WCS will be able to deliver 5W to 15W of power as requested by the compatible device. It shall only enter a charging state if communication is established and a compatible device is identified.

The WCS shall not enter a charging state if there is no communication established with a compatible device. Due to differences in objects, a foreign object detection protocol is employed to detect a non-compliant device and hold power transfer initiation until the non-compliant object has been removed and a compliant object has been detected. The charger monitors its internal temperature and will shut down if the charger temperature exceeds 185F (85C).

Indicator

The K9 Body Control Module will detect the device battery is charging and send a serial data message on the GMLAN bus to the radio display. The radio display will indicate a device is currently charging by displaying a lightning bolt over the phone icon. When the indicator is toggling on and off this indicates a thermal limit has been reached and the device will not charge. For more information refer to the owners manual.

Cooling

The Wireless Charge modules (WCM) have a fan on the bottom of the module. When the WCM charges, it simply pulls or pushes air from the phone, through the vents in the rubber liner, over the module, and down into the center console.

Power Outlets Description and Operation

12 Volt Power Outlet Receptacle Description and Operation

The 12 V accessory power receptacles are supplied with power by the accessory relay.

The vehicle is fitted with a cigarette lighter and/or with a 12 V accessory power receptacle. The cigarette lighter and accessory power outlets are controlled by an ignition operated relay. The accessory power receptacle and cigarette lighter are operational when the ignition is turned to either the On or the Accessories positions. To operate the cigarette lighter, press in the lighter knob. When the element is hot, the lighter automatically pops out and is ready for use.

110 Volt Power Outlet Receptacle System Description

The alternating current (AC) accessory power outlet system consists of the accessory DC/AC power inverter module and the accessory power receptacle – 110 V AC. The accessory DC/AC power inverter module converts 12 V direct current (DC) battery power to 110 V at 60 Hertz (Hz) AC power to operate AC powered devices. The accessory DC/AC power inverter module provides up to 400 watts of power. The accessory power receptacle – 110 V AC provides the usual connection for AC powered devices.

110 Volt Power Outlet Receptacle System Operation

The accessory DC/AC power inverter module receives fuse protected battery voltage and is connected to the 12 V electrical system ground. The accessory power receptacle – 110 V AC has an internal switch, that detects when an AC powered device is plugged into the outlet. When the ignition is ON, and an AC powered device is plugged into the accessory power receptacle – 110 V AC, the normally open switch in the accessory power receptacle – 110 V AC, closes. When the accessory DC/AC power inverter module detects the voltage from the accessory power receptacle – 110 V AC switch, the inverter module begins to supply 110 V AC to the accessory power receptacle – 110 V AC after a 1.5 s delay. The accessory AC power system is protected against circuit overload and circuit shorts to ground.

110 Volt Power Outlet Receptacle Isolation Fault Protection

The accessory DC/AC power inverter module contains a ground fault circuit interrupter (GFCI). GFCI monitors the 110 V circuit for a short to vehicle chassis ground. If a 110 V AC short to ground is detected, the accessory DC/AC power inverter module will turn OFF. The module remains OFF, until the AC powered device is unplugged from the outlet, and then plugged into the outlet after a 3 s delay.

110 Volt Power Outlet Receptacle Overload Shutdown

The accessory DC/AC power inverter module will turn OFF if the current in the 110 V circuit is greater than 3.8 A for 1 s , or 2.5 A for 10 s . The module will turn ON again, when the AC powered device is unplugged from the outlet, and then plugged into the outlet after a 3 s delay.

110 Volt Power Outlet Receptacle Internal Shutdown

The accessory DC/AC power inverter module will turn OFF if the B+ supply voltage is greater than 16.5 V or less than 11 V. The module will also turn OFF if the device temperature is greater than 85°C (185°F). The module will turn ON again, after the shutdown condition is corrected, and the AC powered device is unplugged from the outlet, and then plugged into the outlet.

230 Volt Power Outlet Receptacle System Description

The alternating current (AC) accessory power outlet system consists of the accessory DC/AC power inverter module and the accessory power receptacle – 220V AC. The accessory DC/AC power inverter module converts 12 V direct current (DC) battery power to 220–230 V at 50 Hertz (Hz) AC power to operate AC powered devices. The accessory DC/AC power inverter module provides up to 400 watts of power. The accessory power receptacle – 220V AC provides the usual connection for AC powered devices.

230 Volt Power Outlet Receptacle System Operation

The accessory DC/AC power inverter module receives fuse protected battery voltage and is connected to the 12 V electrical system ground. The accessory power receptacle – 220V AC has an internal switch, that detects when an AC powered device is plugged into the outlet. When the ignition is ON, and an AC powered device is plugged into the accessory power receptacle – 220V AC, the normally open switch in the accessory power receptacle – 220V AC, closes. When the accessory DC/AC power inverter module detects the voltage from the accessory power receptacle – 220V AC switch, the inverter module begins to supply 220–230 V AC to the accessory power receptacle – 220V AC after a 1.5 second delay. The accessory AC power system is protected against circuit overload and circuit shorts to ground.

230 Volt Power Outlet Receptacle Isolation Fault Protection

The accessory DC/AC power inverter module contains a ground fault circuit interrupter (GFCI). GFCI monitors the 230 V circuit for a short to vehicle chassis ground. If a 230 V AC short to ground is detected, the accessory DC/AC power inverter module will turn OFF. The module remains OFF, until the AC powered device is unplugged from the outlet, and then plugged into the outlet after a 3 s delay.

230 Volt Power Outlet Receptacle Overload Shutdown

The accessory AC/DC power control module will turn OFF if the current in the 230 V circuit is greater than 3.8 A for 1 second, or 2.5 A for 10 seconds. The module will turn ON again, when the AC powered device is unplugged from the outlet, and then plugged into the outlet after a 3 second delay.

230 Volt Power Outlet Receptacle Internal Shutdown

The accessory DC/AC power inverter module will turn OFF if the B+ supply voltage is greater than 16.5 V or less than 11 V. The module will also turn OFF if the device temperature is greater than 85°C (185°F). The module will turn ON again, after the shutdown condition is corrected, and the AC powered device is unplugged from the accessory power receptacle – 220V AC, and then plugged into the accessory power receptacle – 220V AC.

USB Receptacle Description and Operation (USS)

The vehicle is fitted with USB charge port receptacles. These USB receptacles are for charging devices only. The USB receptacles are controlled by an ignition operated relay and are operational when the ignition is turned to either the On or the Accessories positions.

Wiring Systems and Power Management

Schematic and Routing Diagrams

How to Use Electrical Schematics

Information Overview

The following explains some of the key parts of the GM wiring diagrams. Included are:

- Color Abbreviations
- Electronic Delivery Navigation Features

Color Abbreviations

The following sequence is used when depicting wire colors:

1. Color modifier of the wire, such as light or dark (if applicable)
2. Primary color of the wire
3. Secondary color of the wire (tracer/stripe)

Wire insulation and connector body colors in schematic information are abbreviated with a two character code as listed below.

Abbreviation	Color	Abbreviation	Color
AM	Amber	OG	Orange
BARE	Bare	PK	Pink
BG	Beige	PU	Purple
BK	Black	RD	Red
BN	Brown	RU	Rust
BU	Blue	SR	Silver
CL	Clear	TL	Teal
CR	Cream	TN	Tan
CU	Curry	TQ	Turquoise
GD	Gold	VT	Violet
GN	Green	WH	White
GY	Gray	YE	Yellow
NA	Natural	—	—
Color Modifiers			
L	Light	D	Dark

Additionally, industry standard cable types are not identified by color, but are listed by cable type as follows:

Abbreviation	Cable Type
COAX	Coax Cable
ENET	Ethernet
FW	Flat Wire
HDMI	High Definition Multimedia Interface
LVDS	Low-voltage Differential Signaling
TWINAX	Twinax Cable
USB	Universal Serial Bus

Electronic Delivery Navigation Features

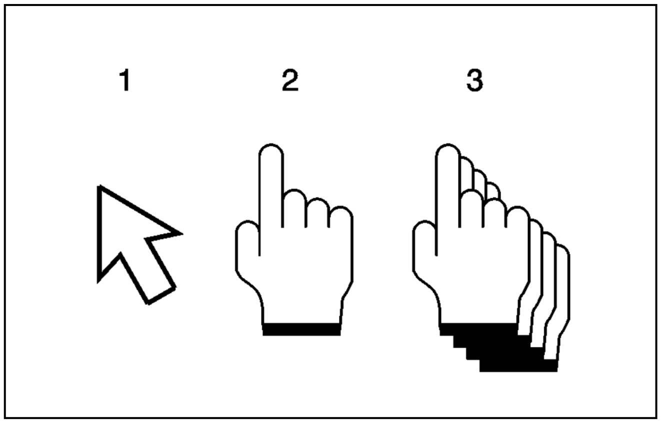
The schematics information has been enhanced for electronic delivery and the following explains the features that are now available.

The enhanced features are categorized into three types:

- Mouse-overs, which are active when the mouse pointer is placed over the activated area

- Hotspots (links to other information), which are active by placing the mouse pointer over the activated area and clicking the left mouse button
- Hotspot Target Highlighting, which is when linking from one graphic to another graphic, the point of interest will be highlighted in red. This feature is available only when linking from a schematic graphic to a component locator/harness routing view, or when linking from a schematic to an electrical center identification view

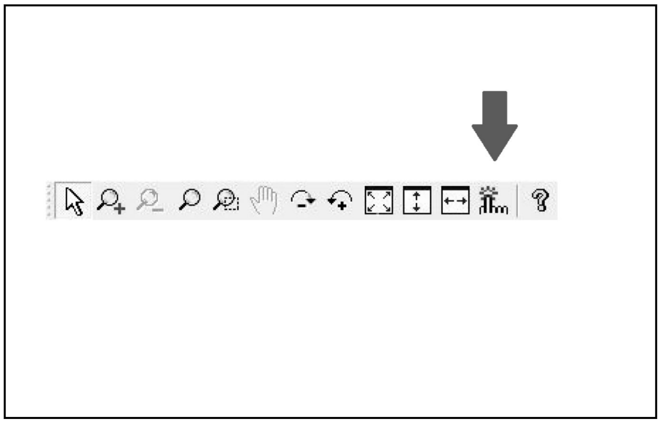
Depending on the amount of information that is linked to from a hotspot, the mouse pointer changes shape.



3819127

1. Basic mouse pointer – this means there are no hotspots available, but there may be a mouse-over available.
2. Single hand pointer – this means there is a mouse-over and hotspot link to a single document. Clicking on these areas will automatically take you to the target link.
3. Multiple hand pointer – this means there is a mouse-over and hotspot link to a multiple document. Clicking on these areas will bring up a pop-up menu that will display all available links. You may then select one of the available links clicking on one of the displayed links.

To see which areas of the schematic information have an available hotspot and/or a mouse-over, select and hold down the highlight hotspots button of the cgm viewer. This will highlight all areas of the graphic that have an available hotspot and/or a mouse-over in red. Once the button is released, the areas of the graphic will no longer be highlighted.



3819130

Each type of schematic related information has some level of these features. The schematic related information consists of the following information types:

- Schematics
- Connector End Views
- Component Locator Views
- Harness Routing Views
- Electrical Center Identification Views
- Master Electrical Component List
- Master Electrical Schematic Icons
- Schematics RPO Code List
- Circuit Number/Wire Colors
- Wire Lines
- Connector Cavities

Schematics

An electrical schematic hotspot is an activated icon or area in the schematic that can be cursor selected to link to additional information. Additionally, each of the hotspots in schematics has a mouse-over.

Hotspots in schematics are categorized into three types:

- Schematic Navigational Icon Hotspots
- Schematic Informational Icon Hotspots
- Schematic Navigational Hotspots

Schematic Navigational Icon Hotspots

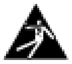
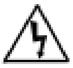
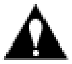
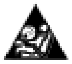
The following lists icons that may appear on the upper right corner of a schematic that have an available mouse-over and hotspot.

Icon	Mouse-Over	Hotspot Link to Information
LOC 1990537	Master Electrical Component List	Links to the vehicle Master Electrical Component List that shows all electrical components and harness items on the vehicle and has links to any available views
DESC 1990538	Title of the subsystem description and operation	Links to the System Description and Operation
⇄ 1988674	Control Module References	Links to the Control Module References table

Icon	Mouse-Over	Hotspot Link to Information
➡ 1990541	Title of the next schematic page	Links to the next schematic of the subsystem schematics
⬅ 1990542	Title of the previous schematic page	Links to the previous schematic of the subsystem schematics

Schematic Informational Icon Hotspots

The following lists the icons that may appear anywhere on a schematic that have an available mouse-over and hotspot.

Icon	Mouse-Over	Hotspot Link to Information
Danger  1988672	Master Electrical Schematic Icons	Links to the vehicle Master Electrical Schematic Icons list that describes the message for the icon.
High Voltage  1988673	Master Electrical Schematic Icons	Links to the vehicle Master Electrical Schematic Icons list that describes the message for the icon.
Caution  1990543	Master Electrical Schematic Icons	Links to the vehicle Master Electrical Schematic Icons list that describes the message for the icon.
Supplemental Restraint  1988667	Master Electrical Schematic Icons	Links to the vehicle Master Electrical Schematic Icons list that describes the message for the icon.

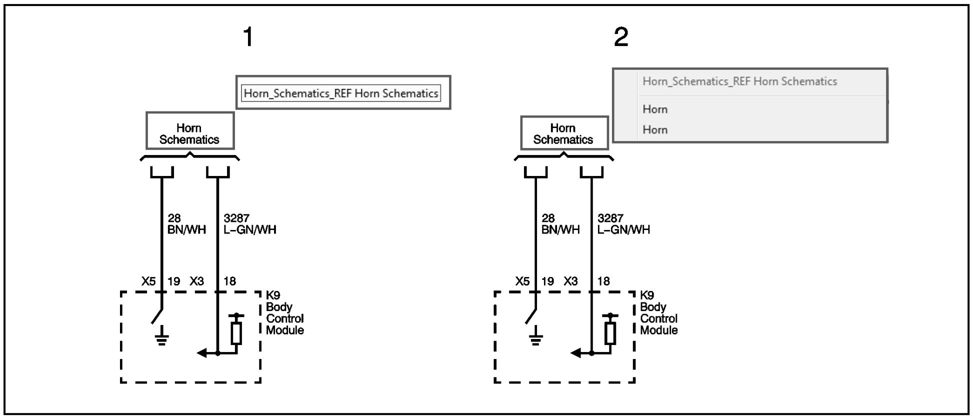
Icon	Mouse-Over	Hotspot Link to Information
Pedestrian Impact 3814889	Master Electrical Schematic Icons	Links to the vehicle Master Electrical Schematic Icons list that describes the message for the icon.
Additional Information 1988670	Master Electrical Schematic Icons	Links to the vehicle Master Electrical Schematic Icons list that describes the message for the icon.

Schematic Navigational Hotspots

In addition to the navigational icons, schematics have other active hotspots that link to supporting information such as related schematics, component locator views, harness routing views, and connector end views.

These hotspots can be either text based or symbol based. The following are the items that will have a mouse-over and hotspot.

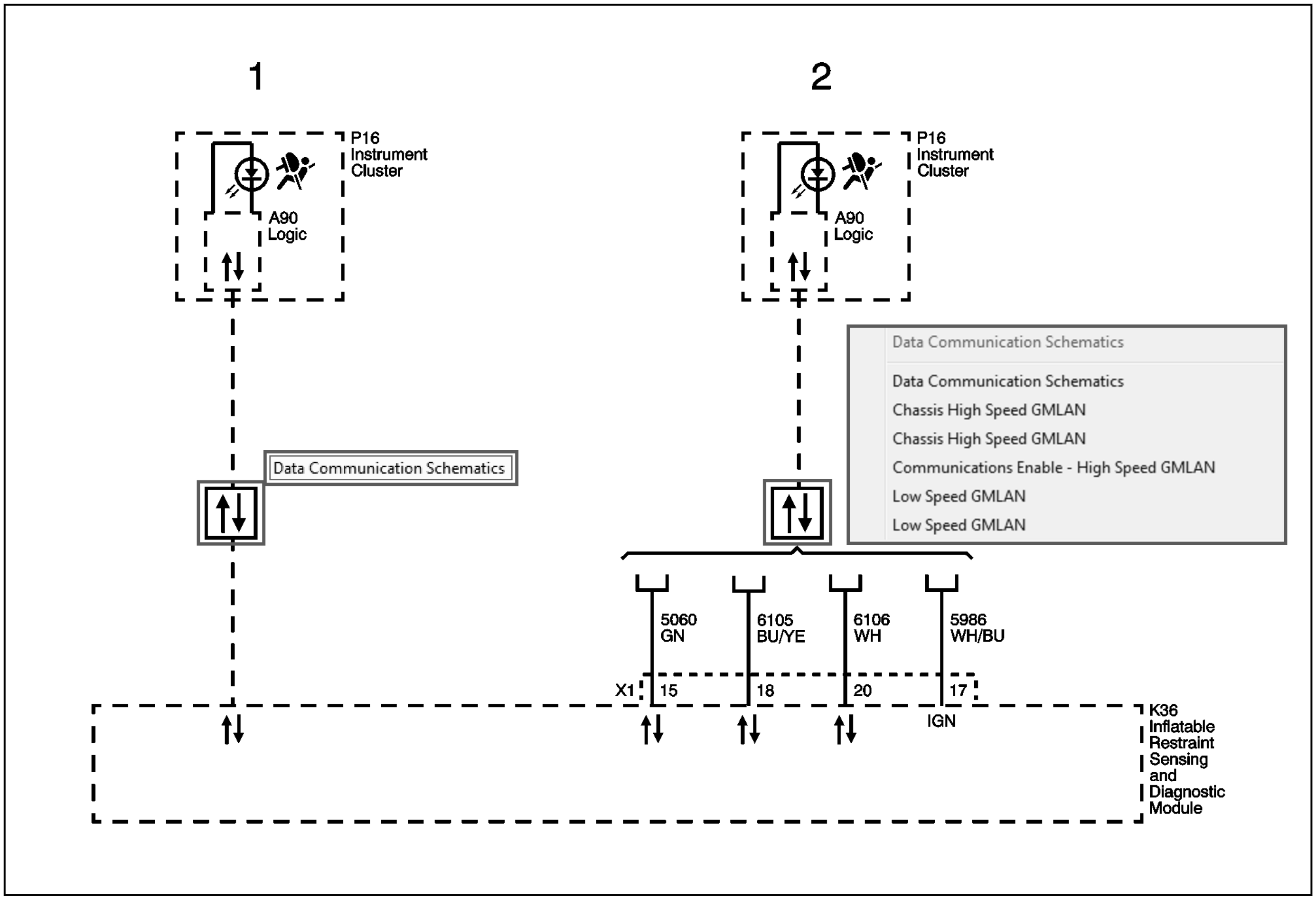
Schematic Title Circuit References


1
2
Horn_Schematics_REF Horn Schematics
Horn Schematics
28 BN/WH
3287 L–GN/WH
X5 19 X3 18
K9 Body Control Module
Horn_Schematics_REF Horn Schematics
Horn
Horn
Horn Schematics
28 BN/WH
3287 L–GN/WH
X5 19 X3 18
K9 Body Control Module

3814891

1. **Mouse-over:** Displays the title of the schematic page linked to.
2. **Hotspot Link to Information:** Links to the individual subsystem schematic page(s) that shows the circuit in detail. If multiple circuits are included, or if the circuit is shown in multiple schematics, a menu will appear when the link is selected. This menu includes links to all schematics that contain the same circuit number as the circuit being referenced. Additionally, when the target schematic is opened, the referenced circuit will be highlighted to draw visual attention. Note that when there are multiple target links, the links may appear to be duplicate in the menu, however, they are not. The exact same title is repeated for each circuit number that is pointing to the same target schematic. A future update will include the circuit number before the link description to further assist in link selection.

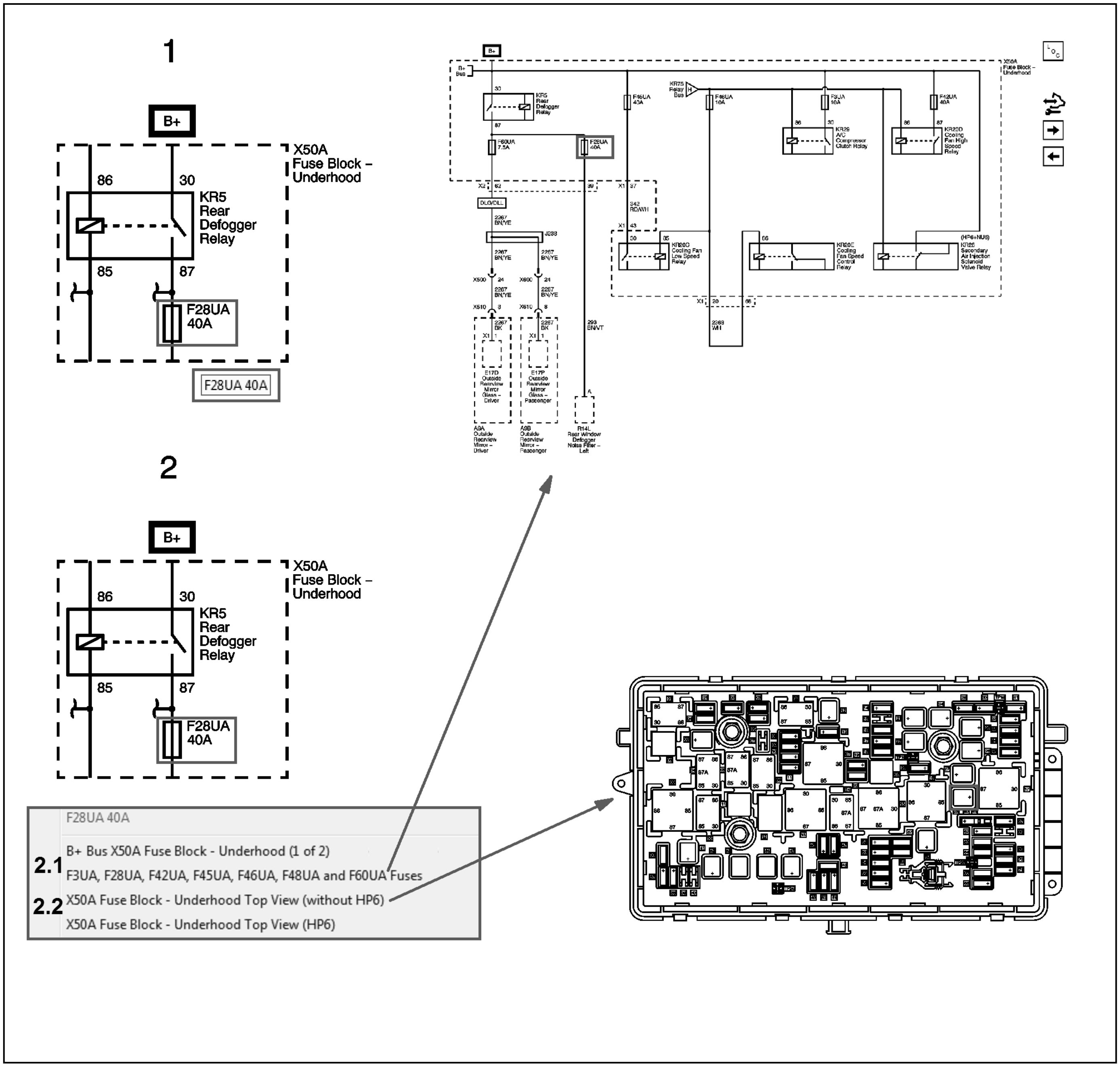
Serial Data Functional Circuit Icon


1
2
P16 Instrument Cluster
A90 Logic
P16 Instrument Cluster
A90 Logic
Data Communication Schematics
Data Communication Schematics
Data Communication Schematics
Chassis High Speed GMLAN
Chassis High Speed GMLAN
Communications Enable - High Speed GMLAN
Low Speed GMLAN
Low Speed GMLAN
5060 GN
6105 BU/YE
6106 WH
5986 WH/BU
X1
15
18
20
17
IGN
K36 Inflatable Restraint Sensing and Diagnostic Module

3818612

1. **Mouse-over:** Displays the schematic title Data Communication Schematics.
2. **Hotspot Link to Information:**
   - ⇒ When a dashed serial data wire and icon are shown without any circuit numbers, the serial data circuit icon will link to the complete list of Data Communication schematic pages, and not a specific schematic. This is due to no circuit numbers are shown.
   - ⇒ When a circuit wire(s) are shown with circuit numbers, a menu will appear when the link is selected. This menu includes links to the list of Data Communication schematic pages as well as links to the individual schematics that contain the same circuit number as the circuit being referenced. Additionally, when the target schematic is opened, the referenced circuit will be highlighted to draw visual attention. Note that when there are multiple target links, the links may appear to be duplicate in the menu, however, they are not. The exact same title is repeated for each circuit number that is pointing to the same target schematic. A future update will include the circuit number before the link description to further assist in link selection.

Fuse/Circuit Breaker Symbol and Name within Subsystem Schematics


1
B+
X50A Fuse Block – Underhood
86
30
KR5 Rear Defogger Relay
85
87
F28UA 40A
F28UA 40A
2
B+
X50A Fuse Block – Underhood
86
30
KR5 Rear Defogger Relay
85
87
F28UA 40A
F28UA 40A
2.1
B+ Bus X50A Fuse Block - Underhood (1 of 2)
F3UA, F28UA, F42UA, F45UA, F46UA, F48UA and F60UA Fuses
2.2
X50A Fuse Block - Underhood Top View (without HP6)
X50A Fuse Block - Underhood Top View (HP6)

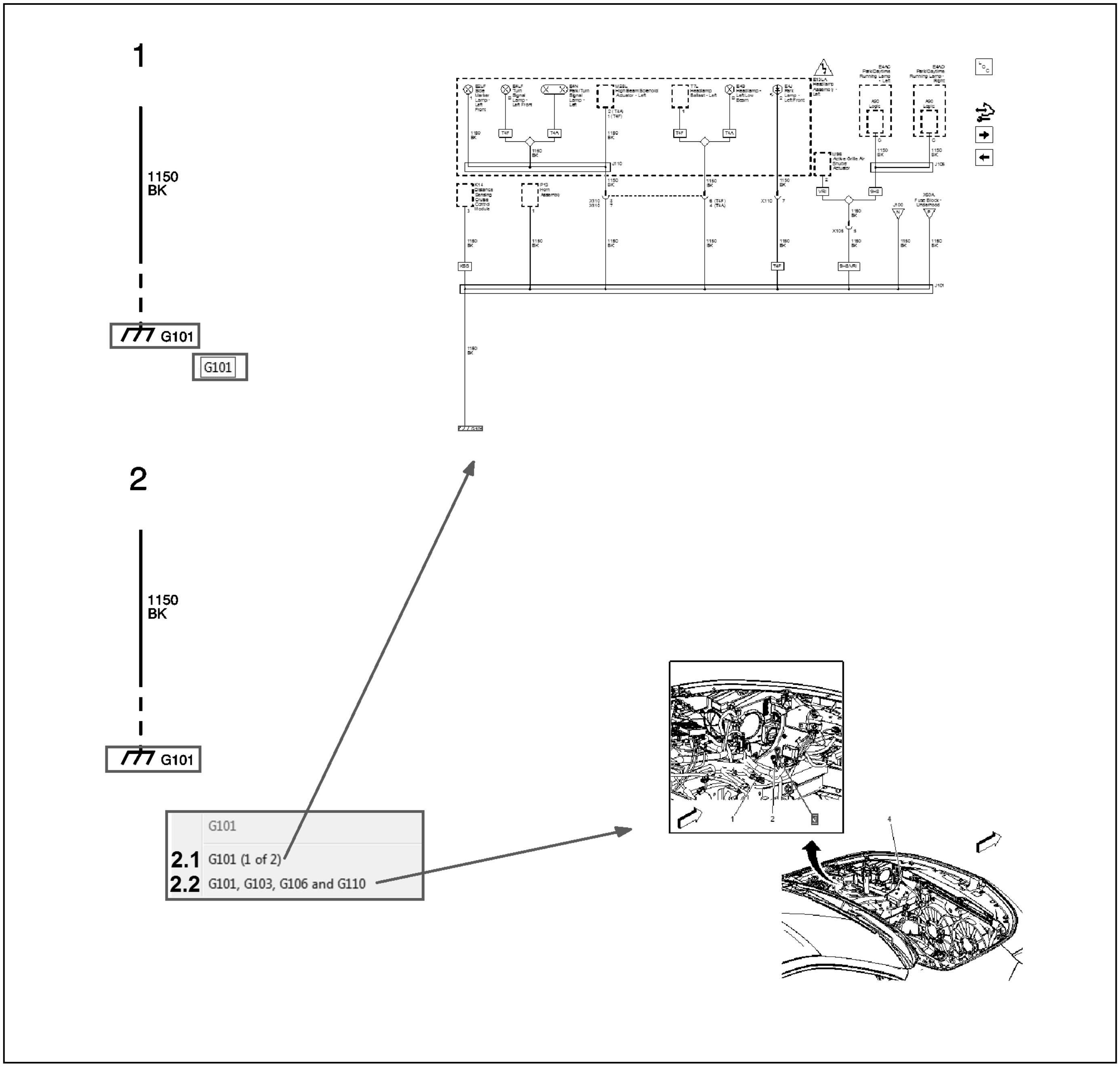
3818725

1. **Mouse-over:** Displays the code and the amperage of the protection device.
2. **Hotspot Link to Information:**
   ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.

   2.1. Links to the individual schematic page(s) within the Power Distribution Schematics where the circuits are shown in detail. Additionally, when the target schematic is opened, the circuit protection device will be highlighted to draw visual attention.

   2.2. Links to individual fuse block top or bottom view(s) within the Electrical Center Identification Views and will show where the device is located in the fuse block. Additionally, when the target view is opened, the device outline will be highlighted for visual attention.

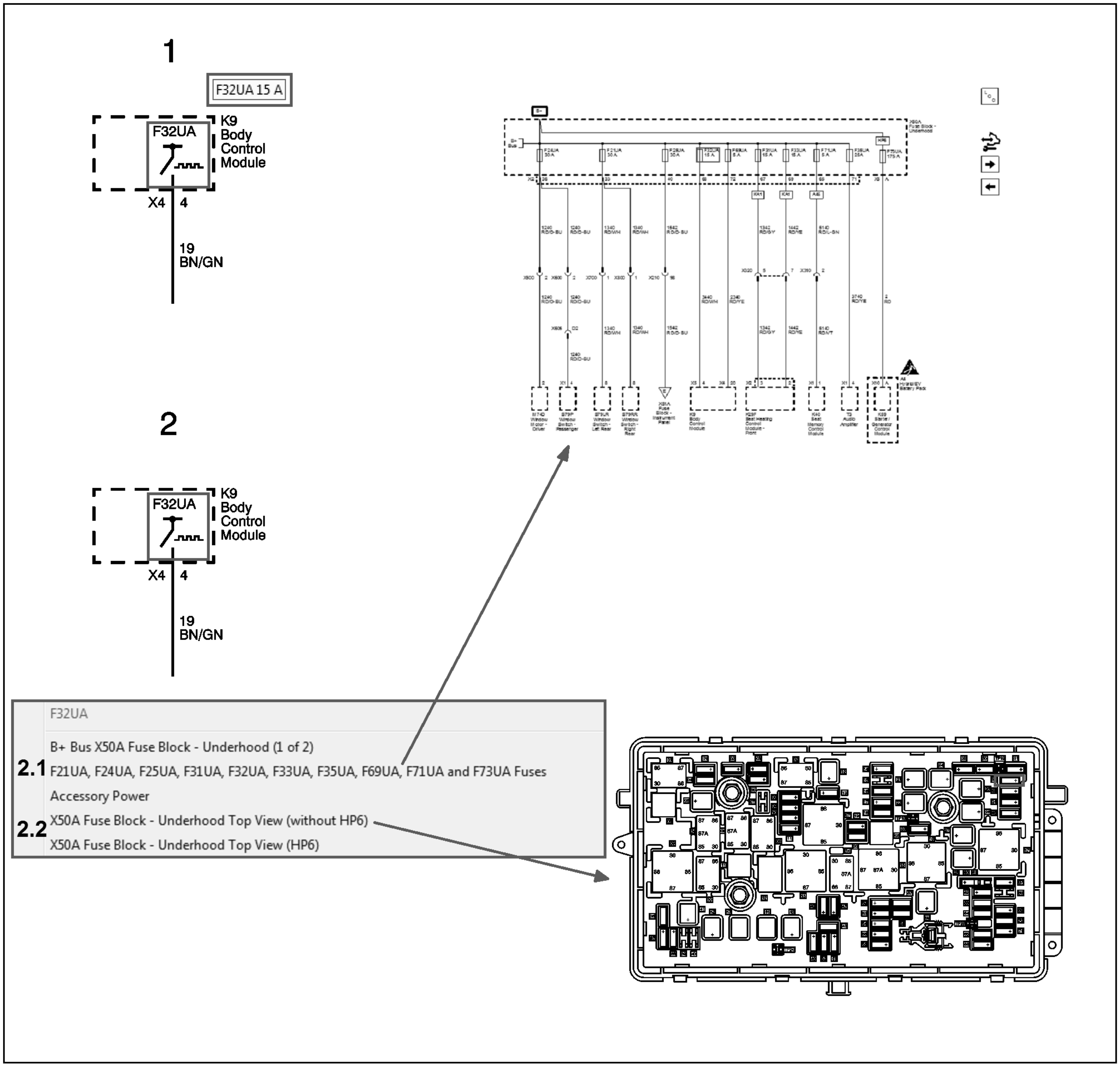
Ground Symbol/Name in Subsystem Schematics



3818918

1. **Mouse-over:** Displays the ground number.
2. **Hotspot Link to Information:**
   - ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.
   - 2.1. Links to the individual schematic page(s) within the Ground Distribution Schematics where the circuits are shown in detail. Additionally, when the target schematic is opened, the ground will be highlighted to draw visual attention.
   - 2.2. Links to the individual locator view(s) within the Ground Views and will show where the ground is located on the vehicle. Additionally, when the target view is opened, the ground and callout leader line/number will be highlighted to draw visual attention.

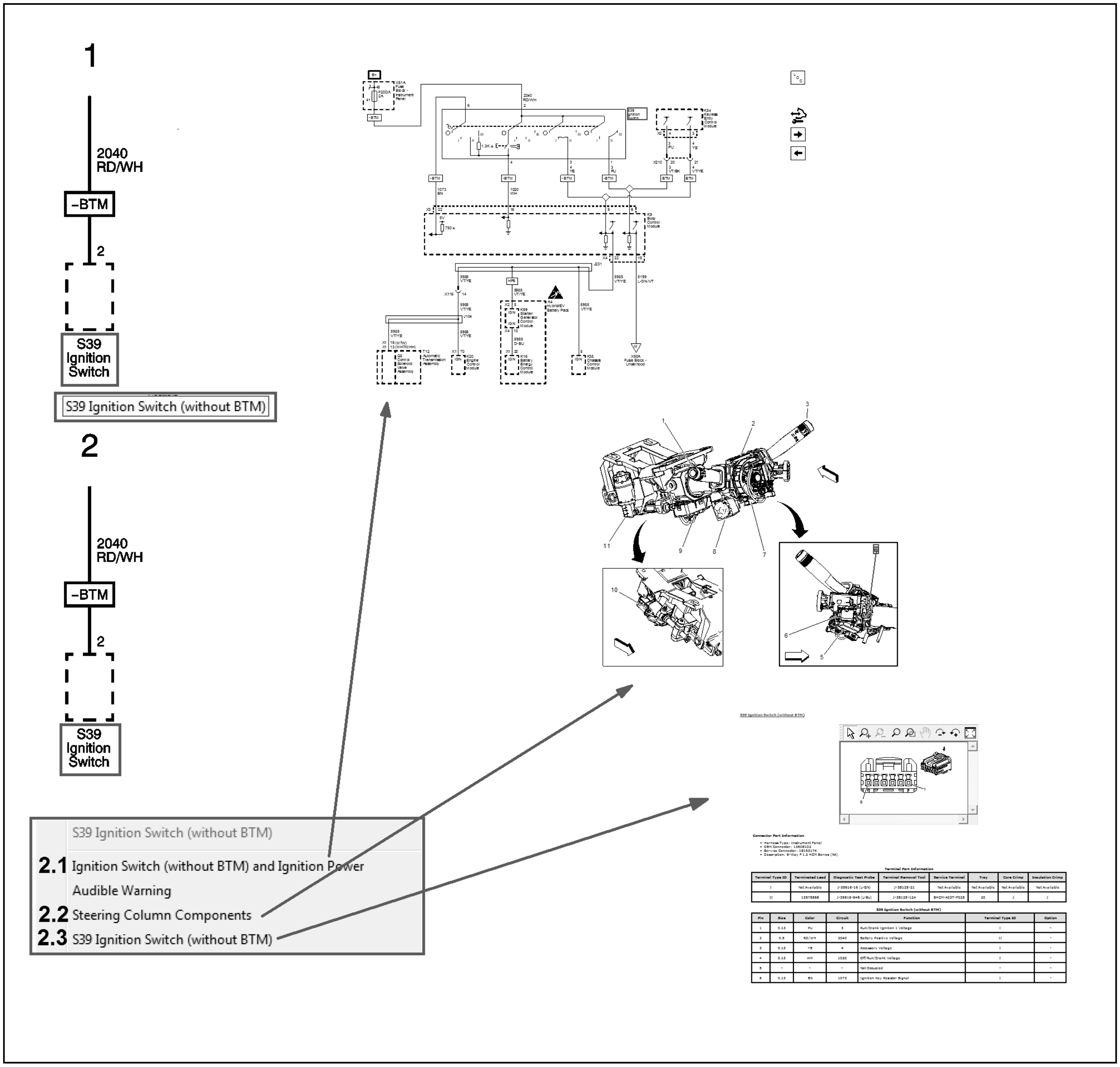
Body Control Module High-Side Driver Output Symbol/Driver Source Fuse Name in Subsystem Schematics


1
F32UA 15 A
F32UA
K9
Body
Control
Module
X4 4
19
BN/GN
2
F32UA
K9
Body
Control
Module
X4 4
19
BN/GN
F32UA
B+ Bus X50A Fuse Block - Underhood (1 of 2)
2.1
F21UA, F24UA, F25UA, F31UA, F32UA, F33UA, F35UA, F69UA, F71UA and F73UA Fuses
Accessory Power
2.2
X50A Fuse Block - Underhood Top View (without HP6)
X50A Fuse Block - Underhood Top View (HP6)

3819026

1. **Mouse-over:** Displays the code of the protection device that supplies the high-side driver output circuit.
2. **Hotspot Link to Information:**
   - ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.
   - 2.1. Links to the individual schematic page(s) within the Power Distribution Schematics where the circuits are shown in detail. Additionally, when the target schematic is opened, the circuit protection device will be highlighted to draw visual attention.
   - 2.2. Links to individual fuse block top or bottom view(s) within the Electrical Center Identification Views and will show where the device is located in the fuse block. Additionally, when the target view is opened, the device outline will be highlighted for visual attention.

Component Name in Power and Ground Distribution Schematics


1
2040
RD/WH
–BTM
2
S39
Ignition
Switch
S39 Ignition Switch (without BTM)
2
2040
RD/WH
–BTM
2
S39
Ignition
Switch
S39 Ignition Switch (without BTM)
2.1 Ignition Switch (without BTM) and Ignition Power
Audible Warning
2.2 Steering Column Components
2.3 S39 Ignition Switch (without BTM)

3819063

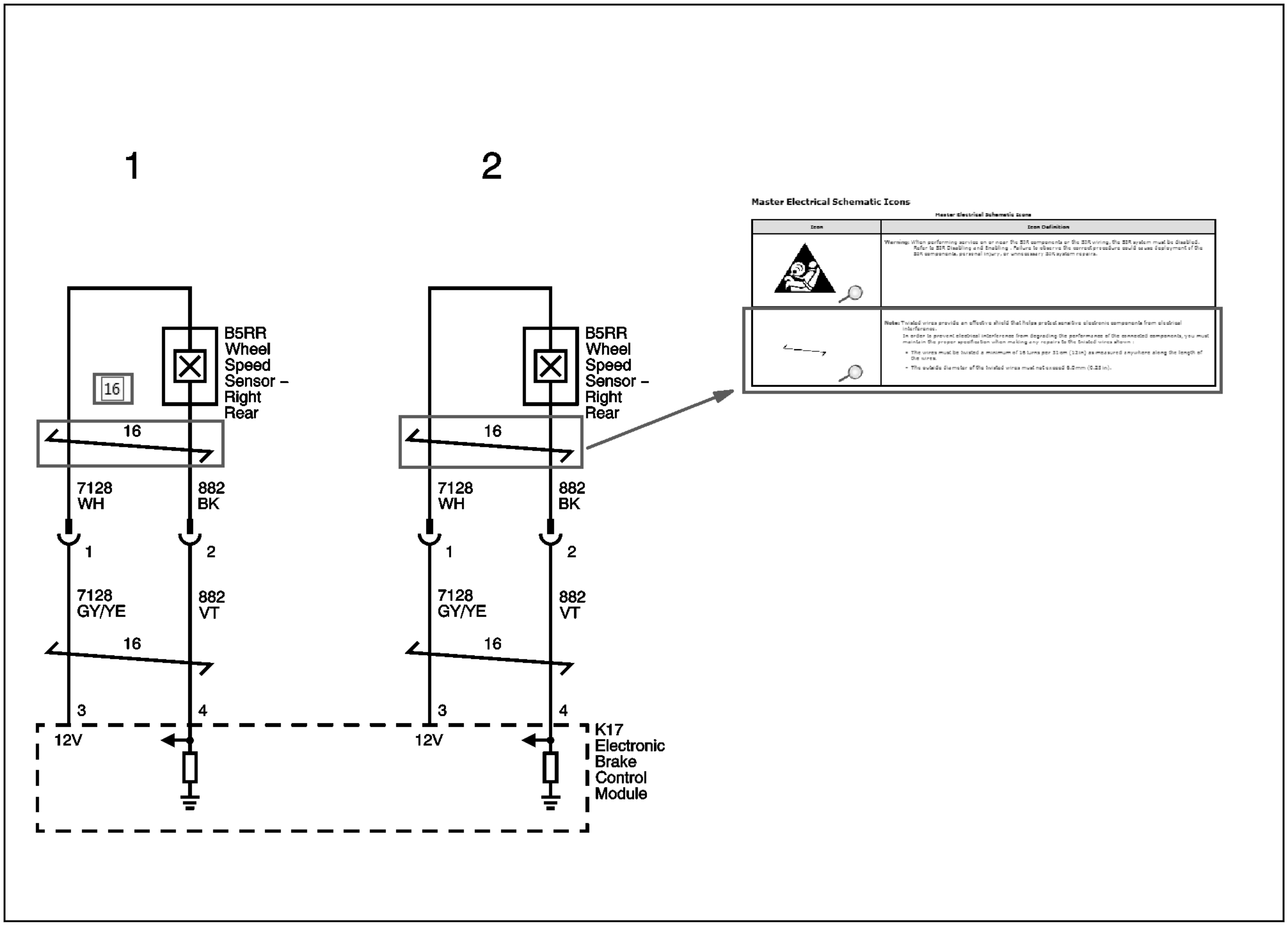
1. **Mouse-over:** Displays the code and name of the component.
2. **Hotspot Link to Information:**
   - ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.

2.1. Links to the individual schematic page(s) within the Subsystem Schematic(s) where the circuits are shown in detail. Additionally, when the target schematic is opened, the component code and name will be highlighted to draw visual attention.

2.2. Links to the individual locator view(s) within the applicable component view category and will show where the component is located on the vehicle. Additionally, when the target view is opened, the component and callout leader line/number will be highlighted to draw visual attention.

2.3. Links to individual connector end view(s) within the Component Connector End Views.

Twisted Pair Symbols



Master Electrical Schematic Icons

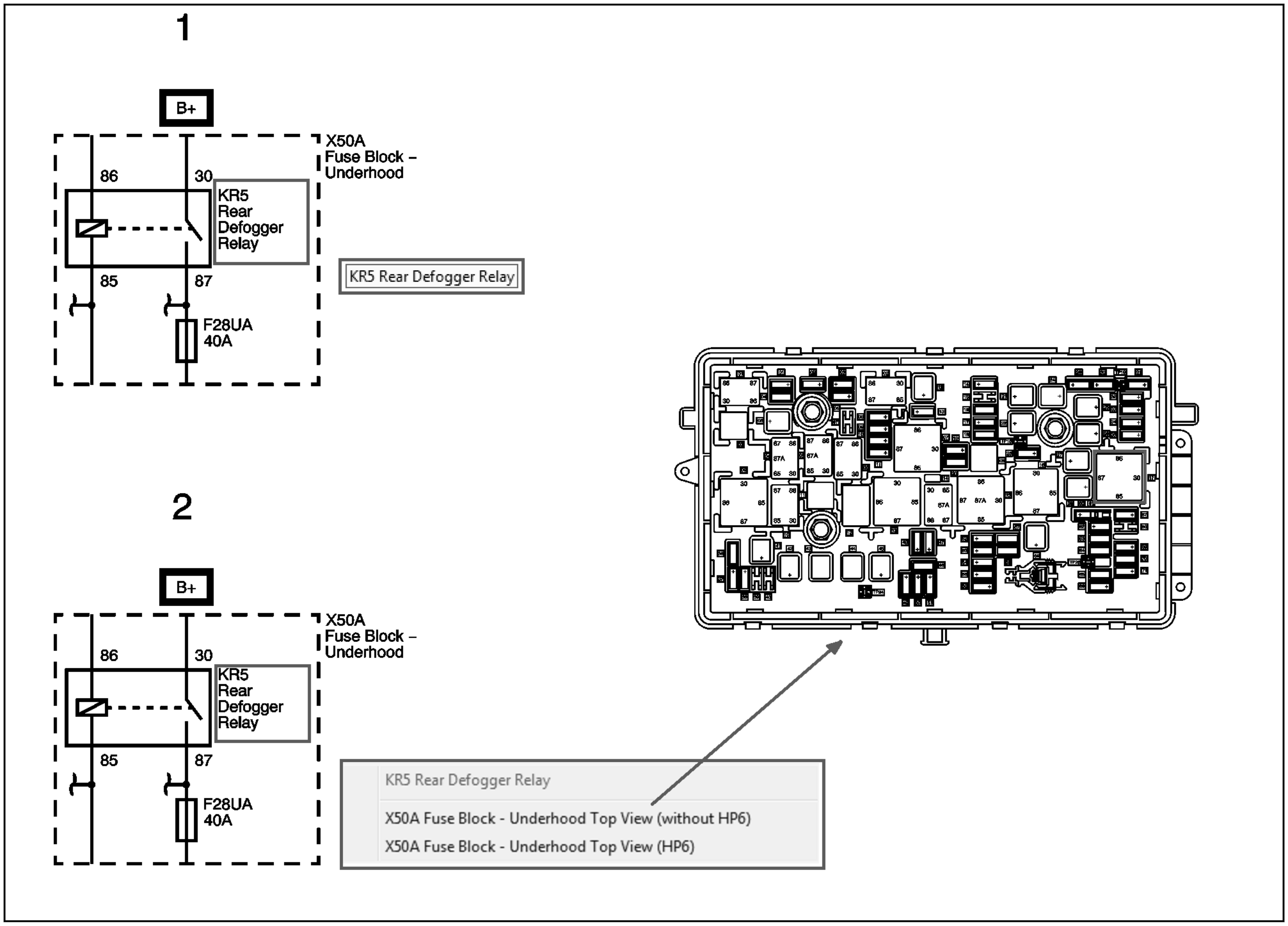
Master Electrical Schematic Icons

Icon	Icon Definition
	Warning: When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Refer to SIR Disabling and Enabling . Failure to observe the correct procedure could cause deployment of the SIR components, personal injury, or unnecessary SIR system repairs.
	Note: Twisted wires provide an effective shield that helps protect sensitive electronic components from electrical interference. In order to prevent electrical interference from degrading the performance of the connected components, you must maintain the proper specification when making any repairs to the twisted wires shown : • The wires must be twisted a minimum of 16 turns per 31cm (12in) as measured anywhere along the length of the wires. • The outside diameter of the twisted wires must not exceed 6.0mm (0.25 in).

3819064

1. **Mouse-over:** Displays the repair specification for the number of twists of the wire within the specified distance.
2. **Hotspot Link to Information:** Links to the Master Electrical Schematic Icons list that shows the icon along with the repair specification details for the wire.

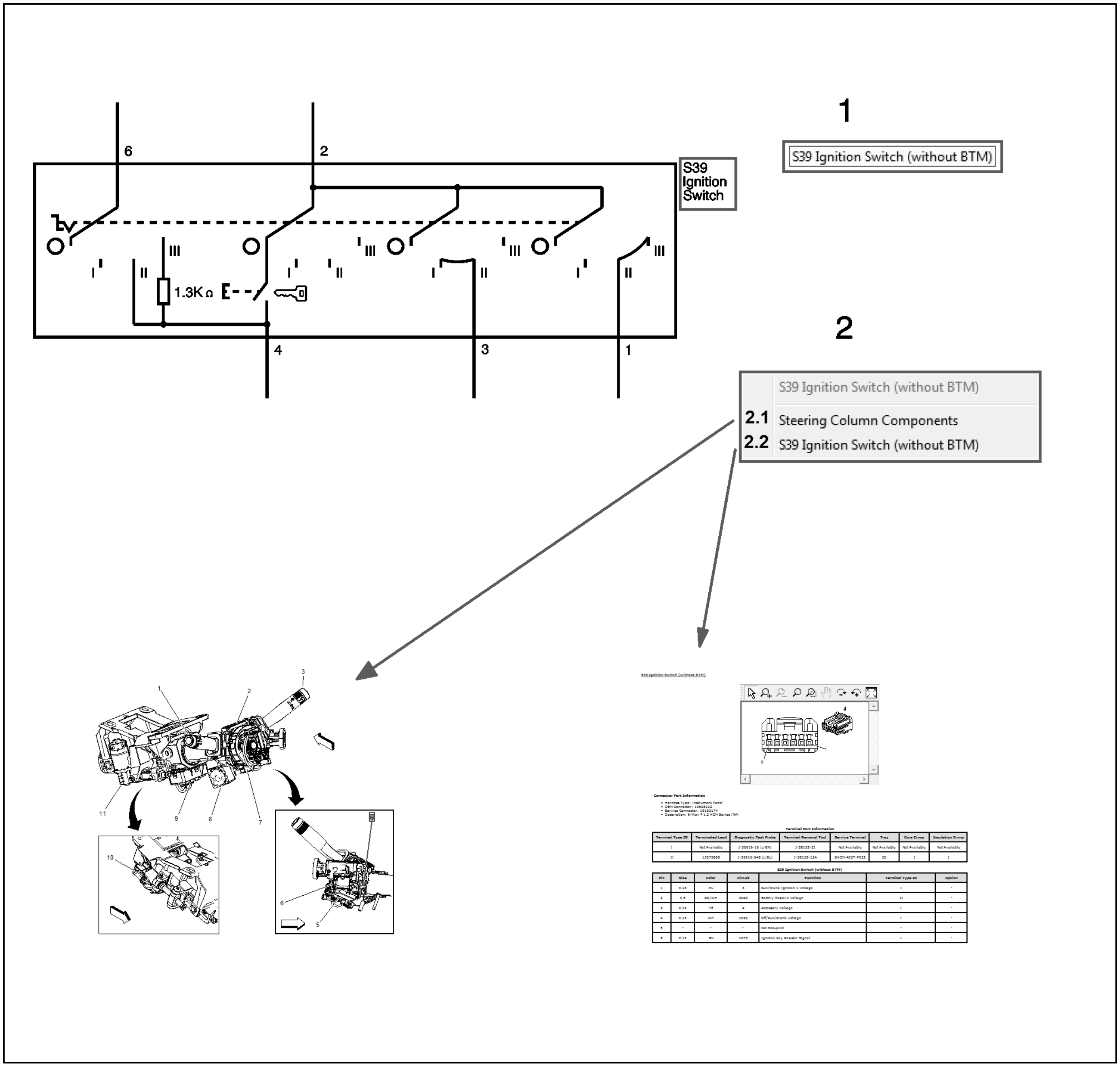
Relay Name (located within a block)


1
B+
X50A
Fuse Block –
Underhood
86
30
KR5
Rear
Defogger
Relay
85
87
F28UA
40A
KR5 Rear Defogger Relay
2
B+
X50A
Fuse Block –
Underhood
86
30
KR5
Rear
Defogger
Relay
85
87
F28UA
40A
KR5 Rear Defogger Relay
X50A Fuse Block - Underhood Top View (without HP6)
X50A Fuse Block - Underhood Top View (HP6)

3819124

1. **Mouse-over:** Displays the relay code and name.
2. **Hotspot Link to Information:** Links to individual fuse block top or bottom view(s) within the Electrical Center Identification Views and will show where the device is located in the fuse block. Additionally, when the target view is opened, the device outline will be highlighted for visual attention.

Component Name in Subsystem Schematics


6
2
S39 Ignition Switch
III
II
I
1.3KΩ
4
3
1
S39 Ignition Switch (without BTM)
2
S39 Ignition Switch (without BTM)
2.1 Steering Column Components
2.2 S39 Ignition Switch (without BTM)

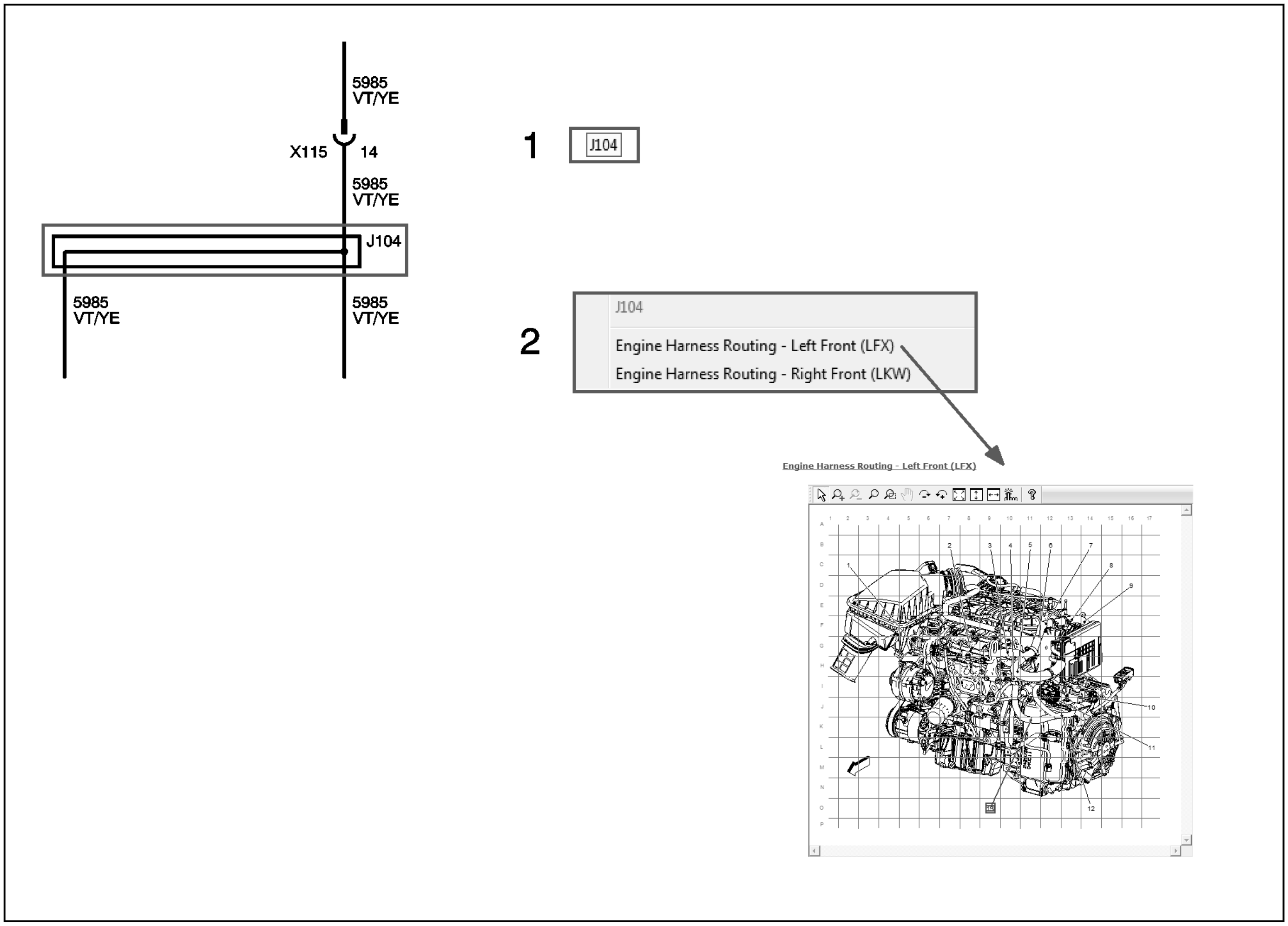
3819141

1. **Mouse-over:** Displays the code and name of the component.
2. **Hotspot Link to Information:**
   - ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.

2.1. Links to the individual locator view(s) within the applicable component view category and will show where the component is located on the vehicle. Additionally, when the target view is opened, the component and callout leader line/number will be highlighted to draw visual attention.

2.2. Links to individual connector end view(s) within the Component Connector End Views.

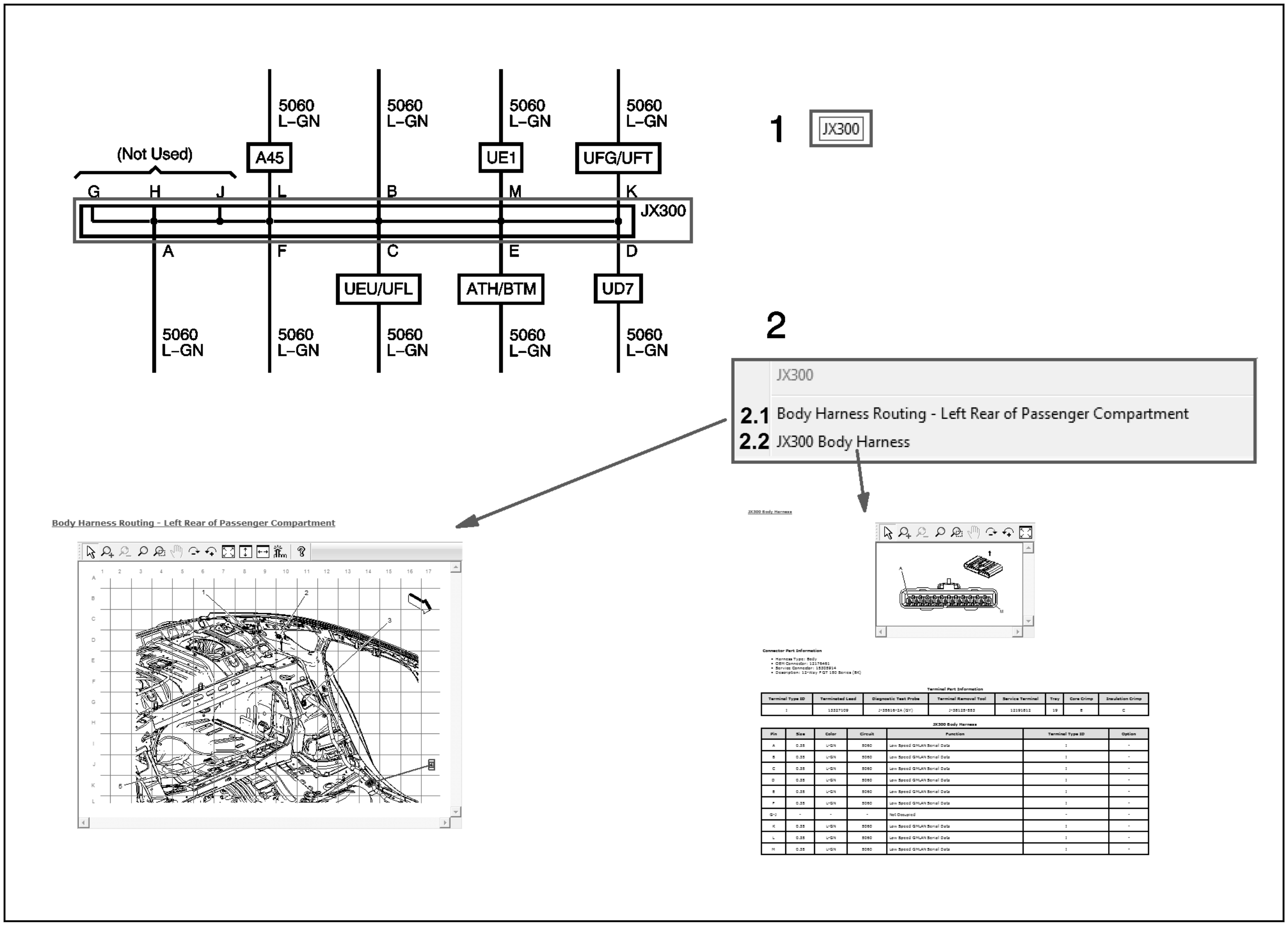
Splice Names


5985
VT/YE
X115
14
5985
VT/YE
J104
5985
VT/YE
5985
VT/YE
1
J104
2
J104
Engine Harness Routing - Left Front (LFX)
Engine Harness Routing - Right Front (LKW)
Engine Harness Routing - Left Front (LFX)

3819287

1. **Mouse-over:** Displays the code of the harness splice.
2. **Hotspot Link to Information:** Links to the individual harness routing view(s) within the Harness Routing Views and will show where the harness item is located on the vehicle harness. Additionally, when the target view is opened, the harness item and callout leader line/number will be highlighted to draw visual attention.

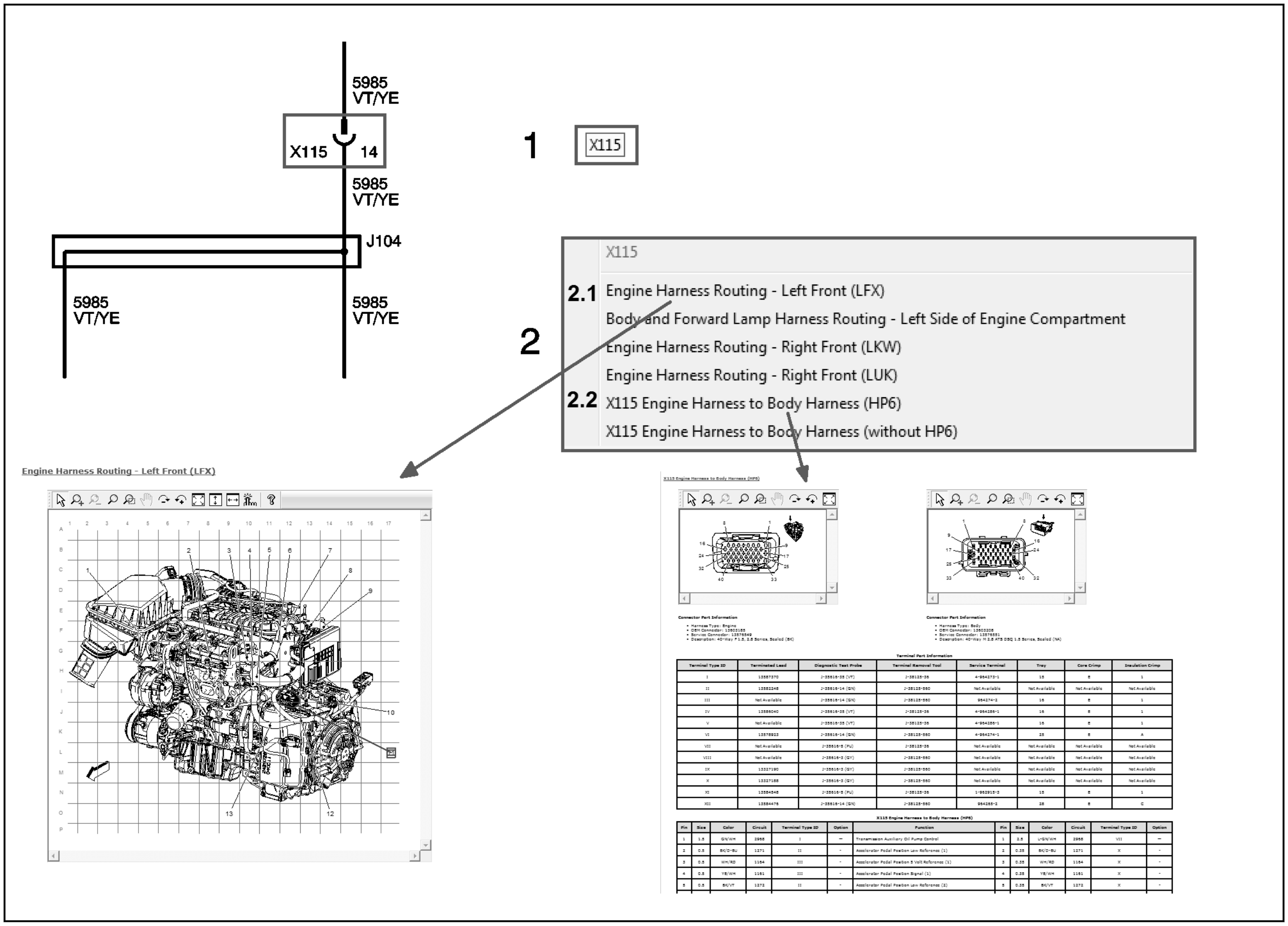
Splice Pack Names


5060
L–GN
(Not Used)
A45
UE1
UFG/UFT
G
H
J
L
B
M
K
JX300
A
F
C
E
D
UEU/UFL
ATH/BTM
UD7
1
JX300
2
JX300
2.1 Body Harness Routing - Left Rear of Passenger Compartment
2.2 JX300 Body Harness
Body Harness Routing - Left Rear of Passenger Compartment
JX300 Body Harness

3819454

1. **Mouse-over:** Displays the code of the harness splice pack.
2. **Hotspot Link to Information:**
   - ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.
   - 2.1. Links to the individual harness routing view(s) within the Harness Routing Views and will show where the harness item is located on the vehicle harness. Additionally, when the target view is opened, the harness item and callout leader line/number will be highlighted to draw visual attention.
   - 2.2. Links to individual connector end view(s) within the Splice Pack Connector End Views.

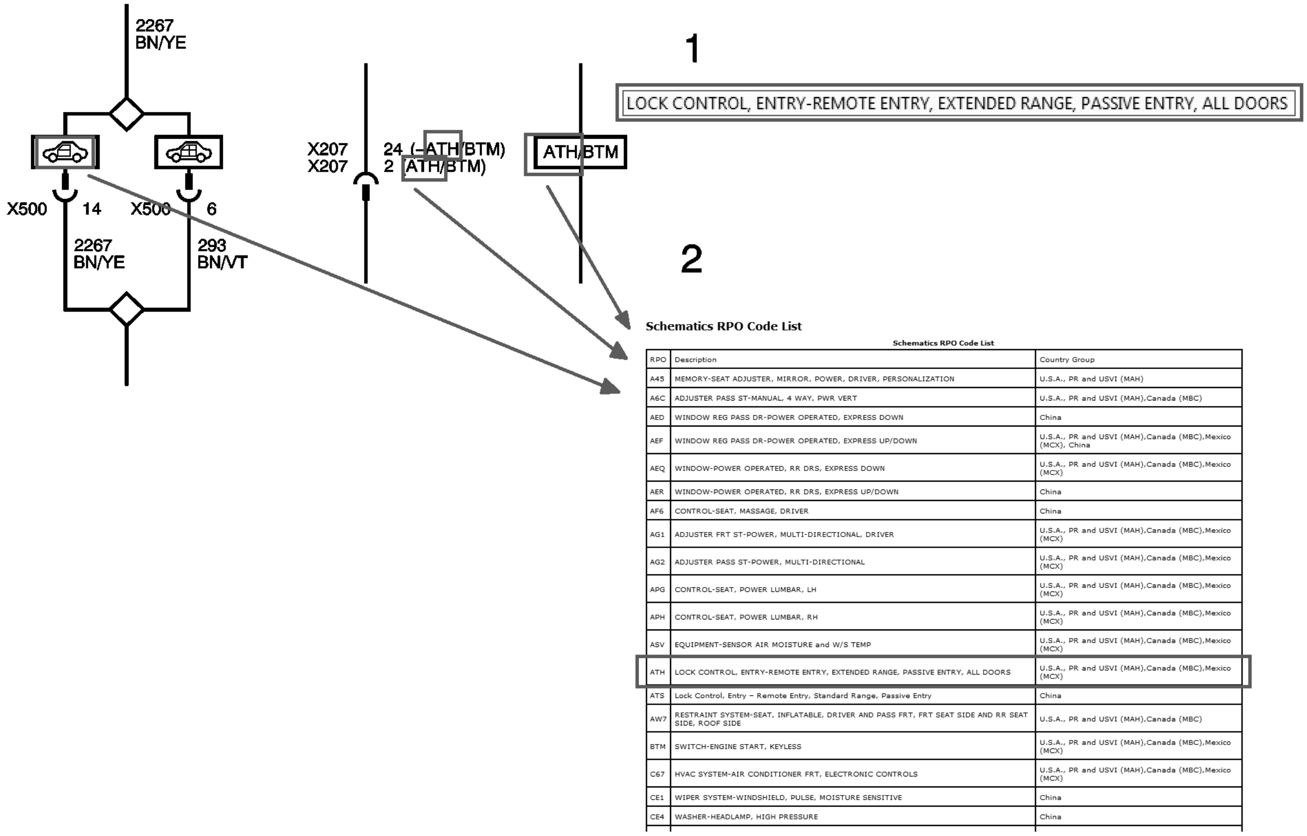
Inline Harness Connector Names


5985
VT/YE
X115
14
5985
VT/YE
J104
5985
VT/YE
5985
VT/YE
1
X115
2
X115
2.1
Engine Harness Routing - Left Front (LFX)
Body and Forward Lamp Harness Routing - Left Side of Engine Compartment
Engine Harness Routing - Right Front (LKW)
Engine Harness Routing - Right Front (LUK)
2.2
X115 Engine Harness to Body Harness (HP6)
X115 Engine Harness to Body Harness (without HP6)
Engine Harness Routing - Left Front (LFX)

3819345

1. **Mouse-over:** Displays the code of the inline harness connector.
2. **Hotspot Link to Information:**
   - ⇒ When multiple links are available, a menu will appear when the link is selected. This menu includes all available links in a structured sequence.
   - 2.1. Links to the individual harness routing view(s) within the Harness Routing Views and will show where the harness item is located on the vehicle harness. Additionally, when the target view is opened, the harness item and callout leader line/number will be highlighted to draw visual attention.
   - 2.2. Links to individual connector end view(s) within the Inline Harness Connector End Views.

Regular Production Option (RPO) Codes/Icons


2267
BN/YE
X500
14
X500
6
2267
BN/YE
293
BN/VT
X207
X207
24 (–ATH/BTM)
2 ATH/BTM)
ATH/BTM
1
LOCK CONTROL, ENTRY-REMOTE ENTRY, EXTENDED RANGE, PASSIVE ENTRY, ALL DOORS
2

Schematics RPO Code List

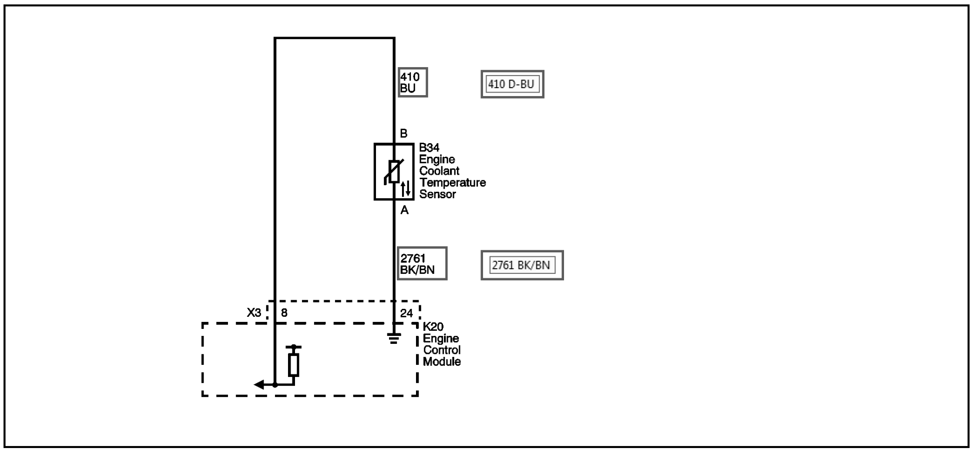
Schematics RPO Code List

RPO	Description	Country Group
A45	MEMORY-SEAT ADJUSTER, MIRROR, POWER, DRIVER, PERSONALIZATION	U.S.A., PR and USVI (MAH)
A6C	ADJUSTER PASS ST-MANUAL, 4 WAY, PWR VERT	U.S.A., PR and USVI (MAH),Canada (MBC)
AED	WINDOW REG PASS DR-POWER OPERATED, EXPRESS DOWN	China
AEF	WINDOW REG PASS DR-POWER OPERATED, EXPRESS UP/DOWN	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX), China
AEQ	WINDOW-POWER OPERATED, RR DRS, EXPRESS DOWN	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
AER	WINDOW-POWER OPERATED, RR DRS, EXPRESS UP/DOWN	China
AF6	CONTROL-SEAT, MASSAGE, DRIVER	China
AG1	ADJUSTER FRT ST-POWER, MULTI-DIRECTIONAL, DRIVER	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
AG2	ADJUSTER PASS ST-POWER, MULTI-DIRECTIONAL	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
APG	CONTROL-SEAT, POWER LUMBAR, LH	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
APH	CONTROL-SEAT, POWER LUMBAR, RH	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
ASV	EQUIPMENT-SENSOR AIR MOISTURE and W/S TEMP	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
ATH	LOCK CONTROL, ENTRY-REMOTE ENTRY, EXTENDED RANGE, PASSIVE ENTRY, ALL DOORS	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
ATS	Lock Control, Entry – Remote Entry, Standard Range, Passive Entry	China
AW7	RESTRAINT SYSTEM-SEAT, INFLATABLE, DRIVER AND PASS FRT, FRT SEAT SIDE AND RR SEAT SIDE, ROOF SIDE	U.S.A., PR and USVI (MAH),Canada (MBC)
BTM	SWITCH-ENGINE START, KEYLESS	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
C67	HVAC SYSTEM-AIR CONDITIONER FRT, ELECTRONIC CONTROLS	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
CE1	WIPER SYSTEM-WINDSHIELD, PULSE, MOISTURE SENSITIVE	China
CE4	WASHER-HEADLAMP, HIGH PRESSURE	China

3819777

1. **Mouse-over:** Displays the description of the RPO code as well as the country group names where the option is possible to order. Note that each RPO shown will have its own mouse-over and description. Also note that the mouse-over does not include any symbols indicating with (shown as a + sign if combined option) or without (shown as a – sign to mean without/except).
2. **Hotspot Link to Information:** Links to the Schematics RPO Code List that shows the RPO, the description of the option, and the country group names where the option is possible to order.

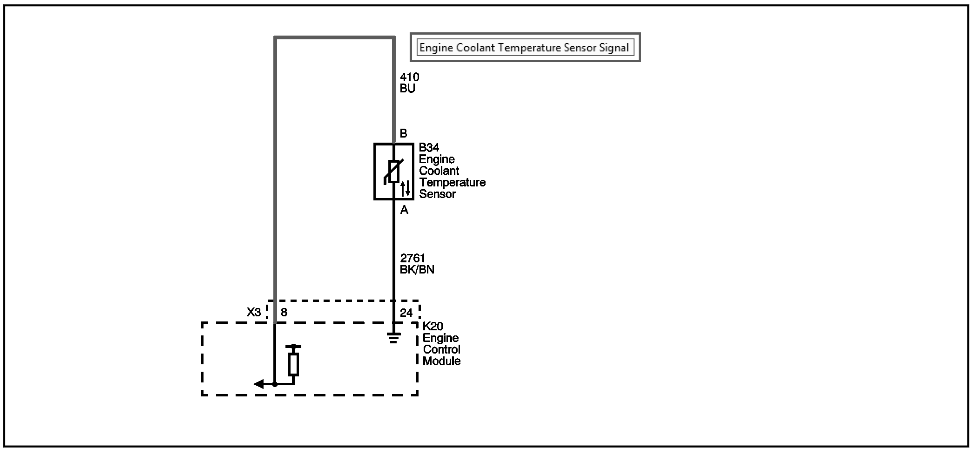
Circuit Number/Wire Colors


410
BU
410 D-BU
B
B34
Engine
Coolant
Temperature
Sensor
A
2761
BK/BN
2761 BK/BN
X3
8
24
K20
Engine
Control
Module

3819880

1. **Mouse-over:** Displays the circuit number (if shown) and the color abbreviation of the wire insulation. Refer to Color Abbreviations for an explanation of each wire color abbreviation. A future update may spell out the wire colors in all languages.
2. **Hotspot Link to Information:** None at this time.

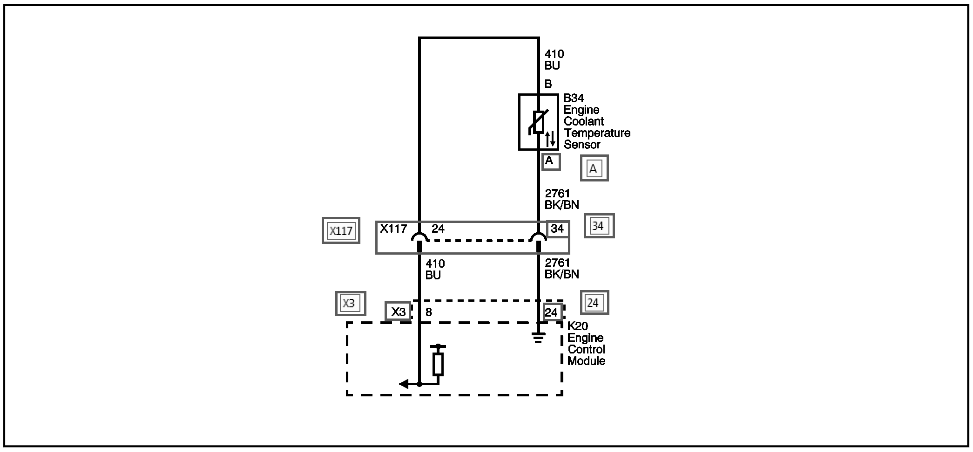
Wire Lines


Engine Coolant Temperature Sensor Signal
410
BU
B
B34
Engine
Coolant
Temperature
Sensor
A
2761
BK/BN
X3
8
24
K20
Engine
Control
Module

3819888

1. **Mouse-over:** Displays the circuit function of the wire as used on the vehicle. This same function is shown in the connector end view pinout table for the component the wire connects. Note if there is no circuit number shown, the circuit will not have an associated mouse-over.
2. **Hotspot Link to Information:** None at this time. A future update may include links to harness routing views to show the routing of the circuit within the vehicle harness.

Connector Identifiers and Cavities

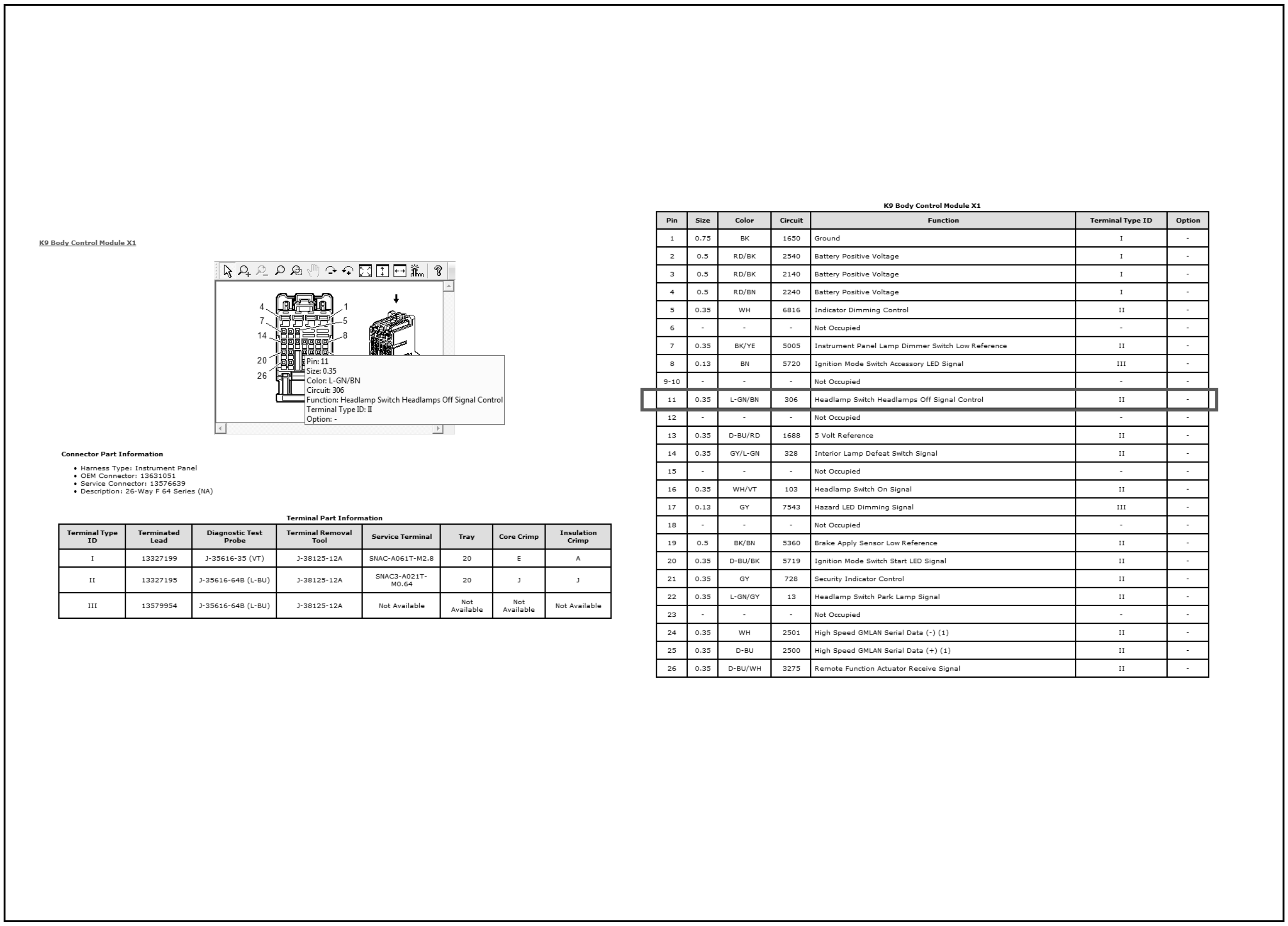

410
BU
B
B34
Engine
Coolant
Temperature
Sensor
A
A
2761
BK/BN
X117
X117
24
34
34
410
BU
2761
BK/BN
X3
X3
8
24
24
K20
Engine
Control
Module

3819889

1. **Mouse-over:** Displays the cavity (pin) identifier (letter/number) for the connection at the component or inline harness connection.
2. **Hotspot Link to Information:** None at this time.

Connector End Views

Connector end view graphics now have mouse-overs to show the wire details of each of the populated cavities. Additionally, the terminal part information has been restructured into an easier to read table.



K9 Body Control Module X1

Pin: 11
Size: 0.35
Color: L-GN/BN
Circuit: 306
Function: Headlamp Switch Headlamps Off Signal Control
Terminal Type ID: II
Option: -

Connector Part Information

- Harness Type: Instrument Panel
- OEM Connector: 13631051
- Service Connector: 13576639
- Description: 26-Way F 64 Series (NA)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool	Service Terminal	Tray	Core Crimp	Insulation Crimp
I	13327199	J-35616-35 (VT)	J-38125-12A	SNAC-A061T-M2.8	20	E	A
II	13327195	J-35616-64B (L-BU)	J-38125-12A	SNAC3-A021T-M0.64	20	J	J
III	13579954	J-35616-64B (L-BU)	J-38125-12A	Not Available	Not Available	Not Available	Not Available

K9 Body Control Module X1

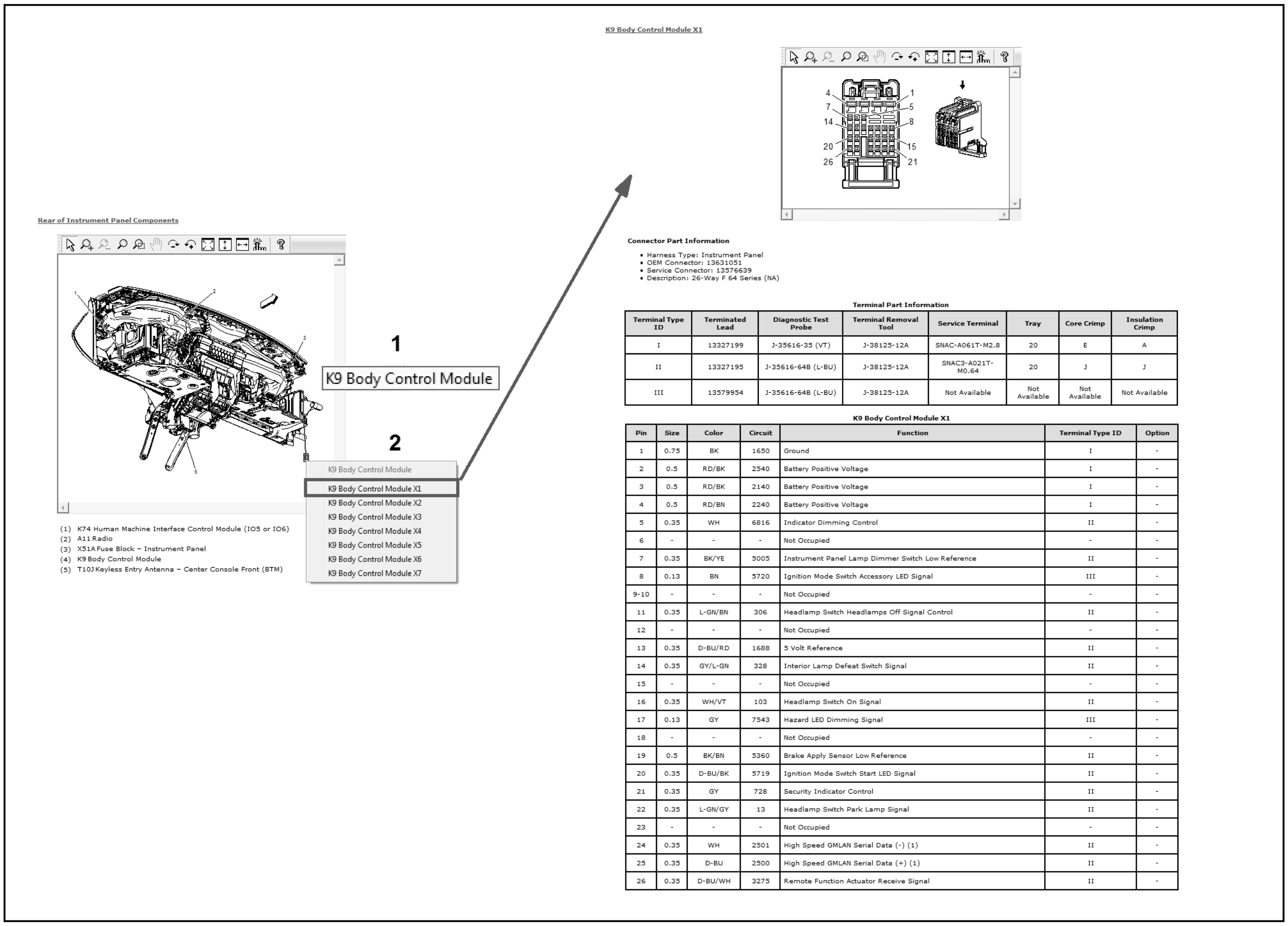
Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	0.75	BK	1650	Ground	I	-
2	0.5	RD/BK	2540	Battery Positive Voltage	I	-
3	0.5	RD/BK	2140	Battery Positive Voltage	I	-
4	0.5	RD/BN	2240	Battery Positive Voltage	I	-
5	0.35	WH	6816	Indicator Dimming Control	II	-
6	-	-	-	Not Occupied	-	-
7	0.35	BK/YE	5005	Instrument Panel Lamp Dimmer Switch Low Reference	II	-
8	0.13	BN	5720	Ignition Mode Switch Accessory LED Signal	III	-
9-10	-	-	-	Not Occupied	-	-
11	0.35	L-GN/BN	306	Headlamp Switch Headlamps Off Signal Control	II	-
12	-	-	-	Not Occupied	-	-
13	0.35	D-BU/RD	1688	5 Volt Reference	II	-
14	0.35	GY/L-GN	328	Interior Lamp Defeat Switch Signal	II	-
15	-	-	-	Not Occupied	-	-
16	0.35	WH/VT	103	Headlamp Switch On Signal	II	-
17	0.13	GY	7543	Hazard LED Dimming Signal	III	-
18	-	-	-	Not Occupied	-	-
19	0.5	BK/BN	5360	Brake Apply Sensor Low Reference	II	-
20	0.35	D-BU/BK	5719	Ignition Mode Switch Start LED Signal	II	-
21	0.35	GY	728	Security Indicator Control	II	-
22	0.35	L-GN/GY	13	Headlamp Switch Park Lamp Signal	II	-
23	-	-	-	Not Occupied	-	-
24	0.35	WH	2501	High Speed GMLAN Serial Data (-) (1)	II	-
25	0.35	D-BU	2500	High Speed GMLAN Serial Data (+) (1)	II	-
26	0.35	D-BU/WH	3275	Remote Function Actuator Receive Signal	II	-

3819951

1. **Mouse-over:** Displays all of the pinout table information for each column including Pin, Size, Color, Circuit, Function, Terminal Type ID, and Option. Note, that not used/not occupied cavities will not have a mouse-over at all. For not used/not occupied cavities, the connector graphic will appear to have a mouse-over, but no information will be displayed in a pop-up menu.
2. **Hotspot Link to Information:** None at this time. A future update may include links to individual subsystem schematic(s) for each circuit.

Component Locator Views

Component locator views now have links to component connector end views.


K9 Body Control Module X1
4
7
14
20
26
1
5
8
15
21
Rear of Instrument Panel Components
1
K9 Body Control Module
2
K9 Body Control Module
K9 Body Control Module X1
K9 Body Control Module X2
K9 Body Control Module X3
K9 Body Control Module X4
K9 Body Control Module X5
K9 Body Control Module X6
K9 Body Control Module X7

(1) K74 Human Machine Interface Control Module (IO5 or IO6)
(2) A11 Radio
(3) X51A Fuse Block – Instrument Panel
(4) K9 Body Control Module
(5) T10J Keyless Entry Antenna – Center Console Front (BTM)

Connector Part Information

- Harness Type: Instrument Panel
- OEM Connector: 13631051
- Service Connector: 13576639
- Description: 26-Way F 64 Series (NA)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool	Service Terminal	Tray	Core Crimp	Insulation Crimp
I	13327199	J-35616-35 (VT)	J-38125-12A	SNAC-A061T-M2.8	20	E	A
II	13327195	J-35616-64B (L-BU)	J-38125-12A	SNAC3-A021T-M0.64	20	J	J
III	13579954	J-35616-64B (L-BU)	J-38125-12A	Not Available	Not Available	Not Available	Not Available

K9 Body Control Module X1

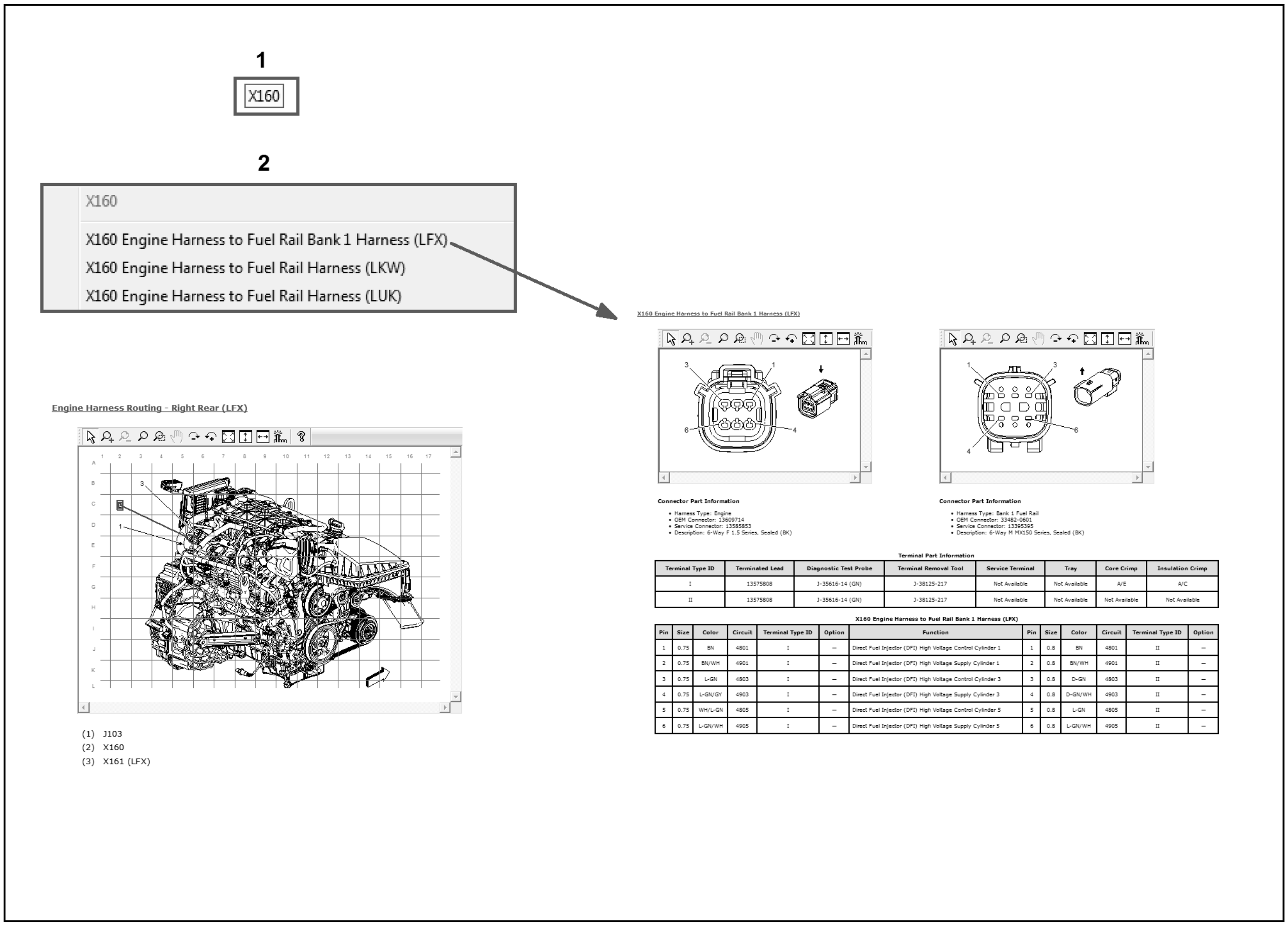
Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	0.75	BK	1650	Ground	I	-
2	0.5	RD/BK	2540	Battery Positive Voltage	I	-
3	0.5	RD/BK	2140	Battery Positive Voltage	I	-
4	0.5	RD/BN	2240	Battery Positive Voltage	I	-
5	0.35	WH	6816	Indicator Dimming Control	II	-
6	-	-	-	Not Occupied	-	-
7	0.35	BK/YE	5005	Instrument Panel Lamp Dimmer Switch Low Reference	II	-
8	0.13	BN	5720	Ignition Mode Switch Accessory LED Signal	III	-
9-10	-	-	-	Not Occupied	-	-
11	0.35	L-GN/BN	306	Headlamp Switch Headlamps Off Signal Control	II	-
12	-	-	-	Not Occupied	-	-
13	0.35	D-BU/RD	1688	5 Volt Reference	II	-
14	0.35	GY/L-GN	328	Interior Lamp Defeat Switch Signal	II	-
15	-	-	-	Not Occupied	-	-
16	0.35	WH/VT	103	Headlamp Switch On Signal	II	-
17	0.13	GY	7543	Hazard LED Dimming Signal	III	-
18	-	-	-	Not Occupied	-	-
19	0.5	BK/BN	5360	Brake Apply Sensor Low Reference	II	-
20	0.35	D-BU/BK	5719	Ignition Mode Switch Start LED Signal	II	-
21	0.35	GY	728	Security Indicator Control	II	-
22	0.35	L-GN/GY	13	Headlamp Switch Park Lamp Signal	II	-
23	-	-	-	Not Occupied	-	-
24	0.35	WH	2501	High Speed GMLAN Serial Data (-) (1)	II	-
25	0.35	D-BU	2500	High Speed GMLAN Serial Data (+) (1)	II	-
26	0.35	D-BU/WH	3275	Remote Function Actuator Receive Signal	II	-

3819952

1. **Mouse-over:** Displays the code and name of the component.
2. **Hotspot Link to Information:** Links to individual connector end view(s) within Component Connector End Views.

Harness Routing Views

Harness routing views now have links to splice pack and inline harness connector end views.


1
X160
2
X160
X160 Engine Harness to Fuel Rail Bank 1 Harness (LFX)
X160 Engine Harness to Fuel Rail Harness (LKW)
X160 Engine Harness to Fuel Rail Harness (LUK)
3
1
6
4
1
3
4
6

Engine Harness Routing - Right Rear (LFX)

(1) J103
(2) X160
(3) X161 (LFX)

X160 Engine Harness to Fuel Rail Bank 1 Harness (LFX)

Connector Part Information

- Harness Type: Engine
- OEM Connector: 13609714
- Service Connector: 13585853
- Description: 6-Way F 1.5 Series, Sealed (BK)

Connector Part Information

- Harness Type: Bank 1 Fuel Rail
- OEM Connector: 33482-0601
- Service Connector: 13395395
- Description: 6-Way M MX150 Series, Sealed (BK)

Terminal Part Information

Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool	Service Terminal	Tray	Core Crimp	Insulation Crimp
I	13575808	J-35616-14 (GN)	J-38125-217	Not Available	Not Available	A/E	A/C
II	13575808	J-35616-14 (GN)	J-38125-217	Not Available	Not Available	Not Available	Not Available

X160 Engine Harness to Fuel Rail Bank 1 Harness (LFX)

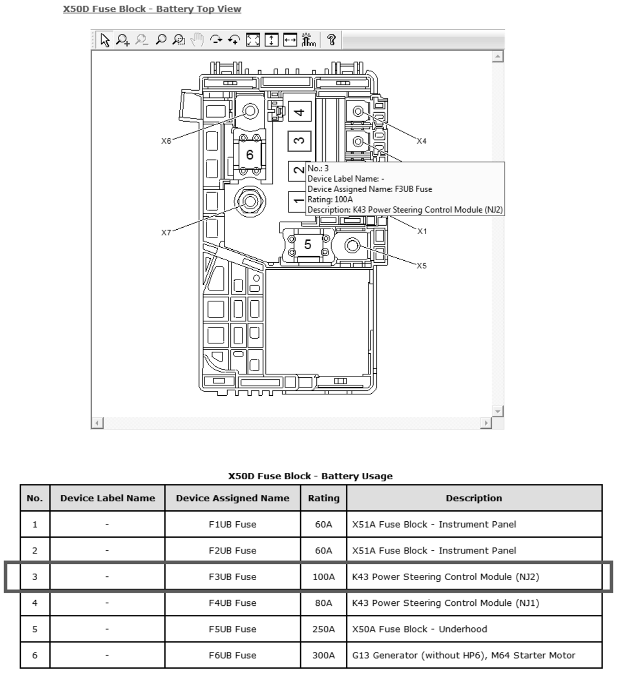
Pin	Size	Color	Circuit	Terminal Type ID	Option	Function	Pin	Size	Color	Circuit	Terminal Type ID	Option
1	0.75	BN	4801	I	–	Direct Fuel Injector (DFI) High Voltage Control Cylinder 1	1	0.8	BN	4801	II	–
2	0.75	BN/WH	4901	I	–	Direct Fuel Injector (DFI) High Voltage Supply Cylinder 1	2	0.8	BN/WH	4901	II	–
3	0.75	L-GN	4803	I	–	Direct Fuel Injector (DFI) High Voltage Control Cylinder 3	3	0.8	D-GN	4803	II	–
4	0.75	L-GN/GY	4903	I	–	Direct Fuel Injector (DFI) High Voltage Supply Cylinder 3	4	0.8	D-GN/WH	4903	II	–
5	0.75	WH/L-GN	4805	I	–	Direct Fuel Injector (DFI) High Voltage Control Cylinder 5	5	0.8	L-GN	4805	II	–
6	0.75	L-GN/WH	4905	I	–	Direct Fuel Injector (DFI) High Voltage Supply Cylinder 5	6	0.8	L-GN/WH	4905	II	–

3819958

1. **Mouse-over:** Displays the code of the harness item.
2. **Hotspot Link to Information:** Links to individual splice pack connector end view(s) within Splice Pack Connector End Views for splice packs and to the individual inline harness connector end view(s) within Inline Harness Connector End Views for inline harness connectors.

Electrical Center Identification Views

Electrical center identification views (top and bottom/ front and back) graphics now have mouse-overs to show the function details of each of utilized devices. Note that the label view will not have any mouse-overs or links at all.



X50D Fuse Block - Battery Top View

No.: 3
Device Label Name: -
Device Assigned Name: F3UB Fuse
Rating: 100A
Description: K43 Power Steering Control Module (NJ2)

X50D Fuse Block - Battery Usage

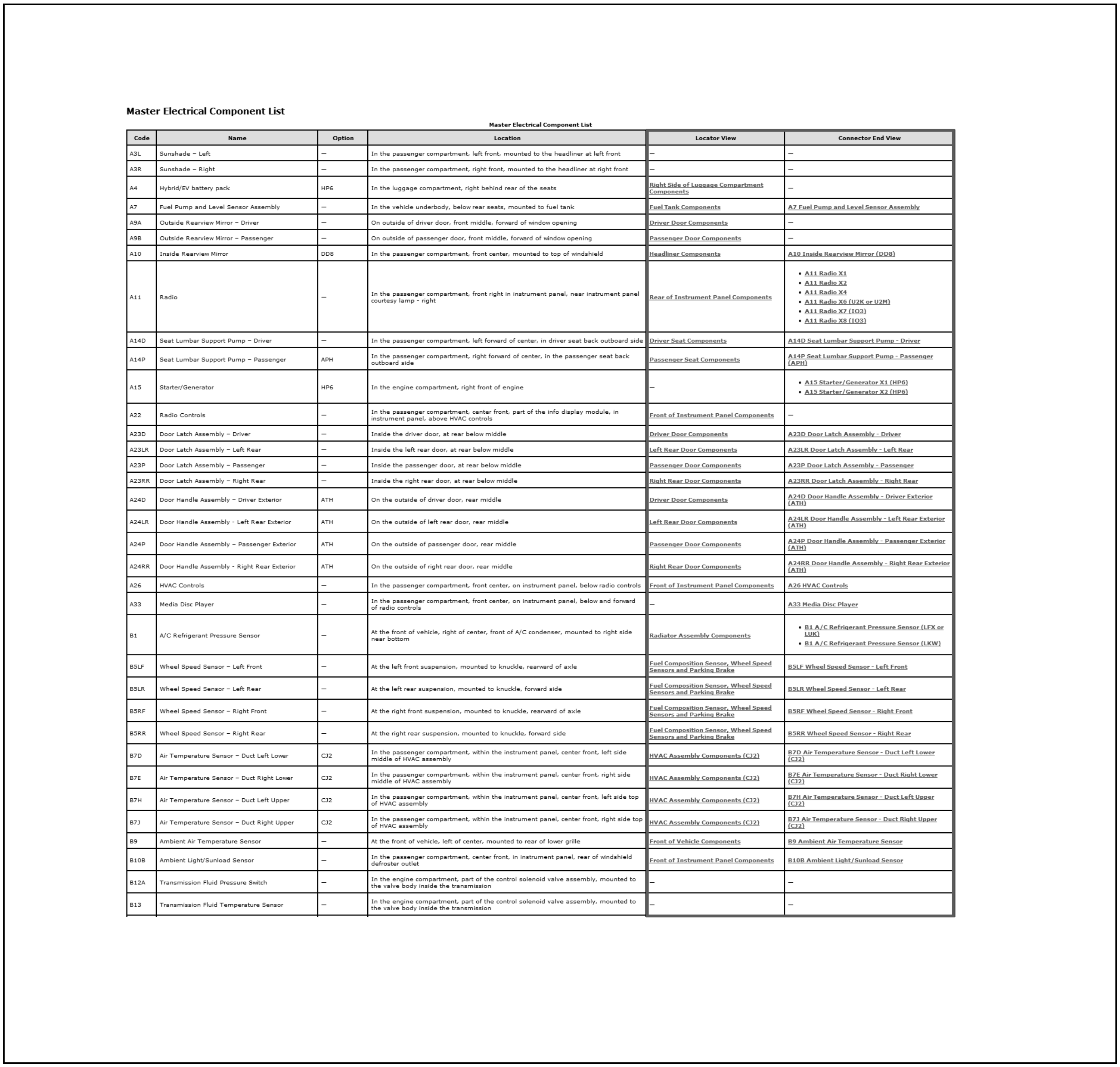
No.	Device Label Name	Device Assigned Name	Rating	Description
1	-	F1UB Fuse	60A	X51A Fuse Block - Instrument Panel
2	-	F2UB Fuse	60A	X51A Fuse Block - Instrument Panel
3	-	F3UB Fuse	100A	K43 Power Steering Control Module (NJ2)
4	-	F4UB Fuse	80A	K43 Power Steering Control Module (NJ1)
5	-	F5UB Fuse	250A	X50A Fuse Block - Underhood
6	-	F6UB Fuse	300A	G13 Generator (without HP6), M64 Starter Motor

3820005

1. **Mouse-over:** Displays all of the usage table information for each column including No., Device Label Name, Device Assigned Name, Rating, and Description. Note, that not used/not occupied devices will not have a mouse-over at all. For not used/not occupied devices, the device graphic may appear to have a mouse-over, but no information will be displayed in a pop-up screen.
2. **Hotspot Link to Information:** None at this time.

Master Electrical Component List

While the master electrical component list format has not changed, it will continue to have links to component locator, harness routing, and connector end views for each of the available electrical devices within the vehicle.



Master Electrical Component List

Master Electrical Component List

Code	Name	Option	Location	Locator View	Connector End View
A3L	Sunshade – Left	—	In the passenger compartment, left front, mounted to the headliner at left front	—	—
A3R	Sunshade – Right	—	In the passenger compartment, right front, mounted to the headliner at right front	—	—
A4	Hybrid/EV battery pack	HP6	In the luggage compartment, right behind rear of the seats	Right Side of Luggage Compartment Components	—
A7	Fuel Pump and Level Sensor Assembly	—	In the vehicle underbody, below rear seats, mounted to fuel tank	Fuel Tank Components	A7 Fuel Pump and Level Sensor Assembly
A9A	Outside Rearview Mirror – Driver	—	On outside of driver door, front middle, forward of window opening	Driver Door Components	—
A9B	Outside Rearview Mirror – Passenger	—	On outside of passenger door, front middle, forward of window opening	Passenger Door Components	—
A10	Inside Rearview Mirror	DD8	In the passenger compartment, front center, mounted to top of windshield	Headliner Components	A10 Inside Rearview Mirror (DD8)
A11	Radio	—	In the passenger compartment, front right in instrument panel, near instrument panel courtesy lamp - right	Rear of Instrument Panel Components	• A11 Radio X1 • A11 Radio X2 • A11 Radio X4 • A11 Radio X6 (U2K or U2M) • A11 Radio X7 (IO3) • A11 Radio X8 (IO3)
A14D	Seat Lumbar Support Pump – Driver	—	In the passenger compartment, left forward of center, in driver seat back outboard side	Driver Seat Components	A14D Seat Lumbar Support Pump - Driver
A14P	Seat Lumbar Support Pump – Passenger	APH	In the passenger compartment, right forward of center, in the passenger seat back outboard side	Passenger Seat Components	A14P Seat Lumbar Support Pump - Passenger (APH)
A15	Starter/Generator	HP6	In the engine compartment, right front of engine	—	• A15 Starter/Generator X1 (HP6) • A15 Starter/Generator X2 (HP6)
A22	Radio Controls	—	In the passenger compartment, center front, part of the info display module, in instrument panel, above HVAC controls	Front of Instrument Panel Components	—
A23D	Door Latch Assembly – Driver	—	Inside the driver door, at rear below middle	Driver Door Components	A23D Door Latch Assembly - Driver
A23LR	Door Latch Assembly – Left Rear	—	Inside the left rear door, at rear below middle	Left Rear Door Components	A23LR Door Latch Assembly - Left Rear
A23P	Door Latch Assembly – Passenger	—	Inside the passenger door, at rear below middle	Passenger Door Components	A23P Door Latch Assembly - Passenger
A23RR	Door Latch Assembly – Right Rear	—	Inside the right rear door, at rear below middle	Right Rear Door Components	A23RR Door Latch Assembly - Right Rear
A24D	Door Handle Assembly – Driver Exterior	ATH	On the outside of driver door, rear middle	Driver Door Components	A24D Door Handle Assembly - Driver Exterior (ATH)
A24LR	Door Handle Assembly - Left Rear Exterior	ATH	On the outside of left rear door, rear middle	Left Rear Door Components	A24LR Door Handle Assembly - Left Rear Exterior (ATH)
A24P	Door Handle Assembly – Passenger Exterior	ATH	On the outside of passenger door, rear middle	Passenger Door Components	A24P Door Handle Assembly - Passenger Exterior (ATH)
A24RR	Door Handle Assembly - Right Rear Exterior	ATH	On the outside of right rear door, rear middle	Right Rear Door Components	A24RR Door Handle Assembly - Right Rear Exterior (ATH)
A26	HVAC Controls	—	In the passenger compartment, front center, on instrument panel, below radio controls	Front of Instrument Panel Components	A26 HVAC Controls
A33	Media Disc Player	—	In the passenger compartment, front center, on instrument panel, below and forward of radio controls	—	A33 Media Disc Player
B1	A/C Refrigerant Pressure Sensor	—	At the front of vehicle, right of center, front of A/C condenser, mounted to right side near bottom	Radiator Assembly Components	• B1 A/C Refrigerant Pressure Sensor (LFX or LUK) • B1 A/C Refrigerant Pressure Sensor (LKW)
B5LF	Wheel Speed Sensor – Left Front	—	At the left front suspension, mounted to knuckle, rearward of axle	Fuel Composition Sensor, Wheel Speed Sensors and Parking Brake	B5LF Wheel Speed Sensor - Left Front
B5LR	Wheel Speed Sensor – Left Rear	—	At the left rear suspension, mounted to knuckle, forward side	Fuel Composition Sensor, Wheel Speed Sensors and Parking Brake	B5LR Wheel Speed Sensor - Left Rear
B5RF	Wheel Speed Sensor – Right Front	—	At the right front suspension, mounted to knuckle, rearward of axle	Fuel Composition Sensor, Wheel Speed Sensors and Parking Brake	B5RF Wheel Speed Sensor - Right Front
B5RR	Wheel Speed Sensor – Right Rear	—	At the right rear suspension, mounted to knuckle, forward side	Fuel Composition Sensor, Wheel Speed Sensors and Parking Brake	B5RR Wheel Speed Sensor - Right Rear
B7D	Air Temperature Sensor – Duct Left Lower	CJ2	In the passenger compartment, within the instrument panel, center front, left side middle of HVAC assembly	HVAC Assembly Components (CJ2)	B7D Air Temperature Sensor - Duct Left Lower (CJ2)
B7E	Air Temperature Sensor – Duct Right Lower	CJ2	In the passenger compartment, within the instrument panel, center front, right side middle of HVAC assembly	HVAC Assembly Components (CJ2)	B7E Air Temperature Sensor - Duct Right Lower (CJ2)
B7H	Air Temperature Sensor – Duct Left Upper	CJ2	In the passenger compartment, within the instrument panel, center front, left side top of HVAC assembly	HVAC Assembly Components (CJ2)	B7H Air Temperature Sensor - Duct Left Upper (CJ2)
B7J	Air Temperature Sensor – Duct Right Upper	CJ2	In the passenger compartment, within the instrument panel, center front, right side top of HVAC assembly	HVAC Assembly Components (CJ2)	B7J Air Temperature Sensor - Duct Right Upper (CJ2)
B9	Ambient Air Temperature Sensor	—	At the front of vehicle, left of center, mounted to rear of lower grille	Front of Vehicle Components	B9 Ambient Air Temperature Sensor
B10B	Ambient Light/Sunload Sensor	—	In the passenger compartment, center front, in instrument panel, rear of windshield defroster outlet	Front of Instrument Panel Components	B10B Ambient Light/Sunload Sensor
B12A	Transmission Fluid Pressure Switch	—	In the engine compartment, part of the control solenoid valve assembly, mounted to the valve body inside the transmission	—	—
B13	Transmission Fluid Temperature Sensor	—	In the engine compartment, part of the control solenoid valve assembly, mounted to the valve body inside the transmission	—	—

3820020

1. **Mouse-over:** None at this time.
2. **Hotspot Link to Information:**

⇒ A future update may include links to individual subsystem schematic(s) for each component/ harness item.

⇒ **Components**

− Links to individual locator view within one of the eight component view categories and will show where the component is located in the vehicle.

− Links to individual connector end view(s) within Component Connector End Views.

⇒ **Electrical Centers (Fuse Blocks)**

− Links to individual locator view within one of the eight component view categories and will show where the component is located in the vehicle.

− Links to individual connector end view(s) within Electrical Center Identification Views.

⇒ **Inline Harness Connectors**

− Links to individual harness routing view(s) within Harness Routing Views and will show where the harness item is located on the vehicle harness.

− Links to individual connector end view(s) within Inline Harness Connector End Views.

⇒ **Grounds**

- Links to individual locator view within Ground Views component view and will show where the ground is located in the vehicle.

⇒ **Splices**

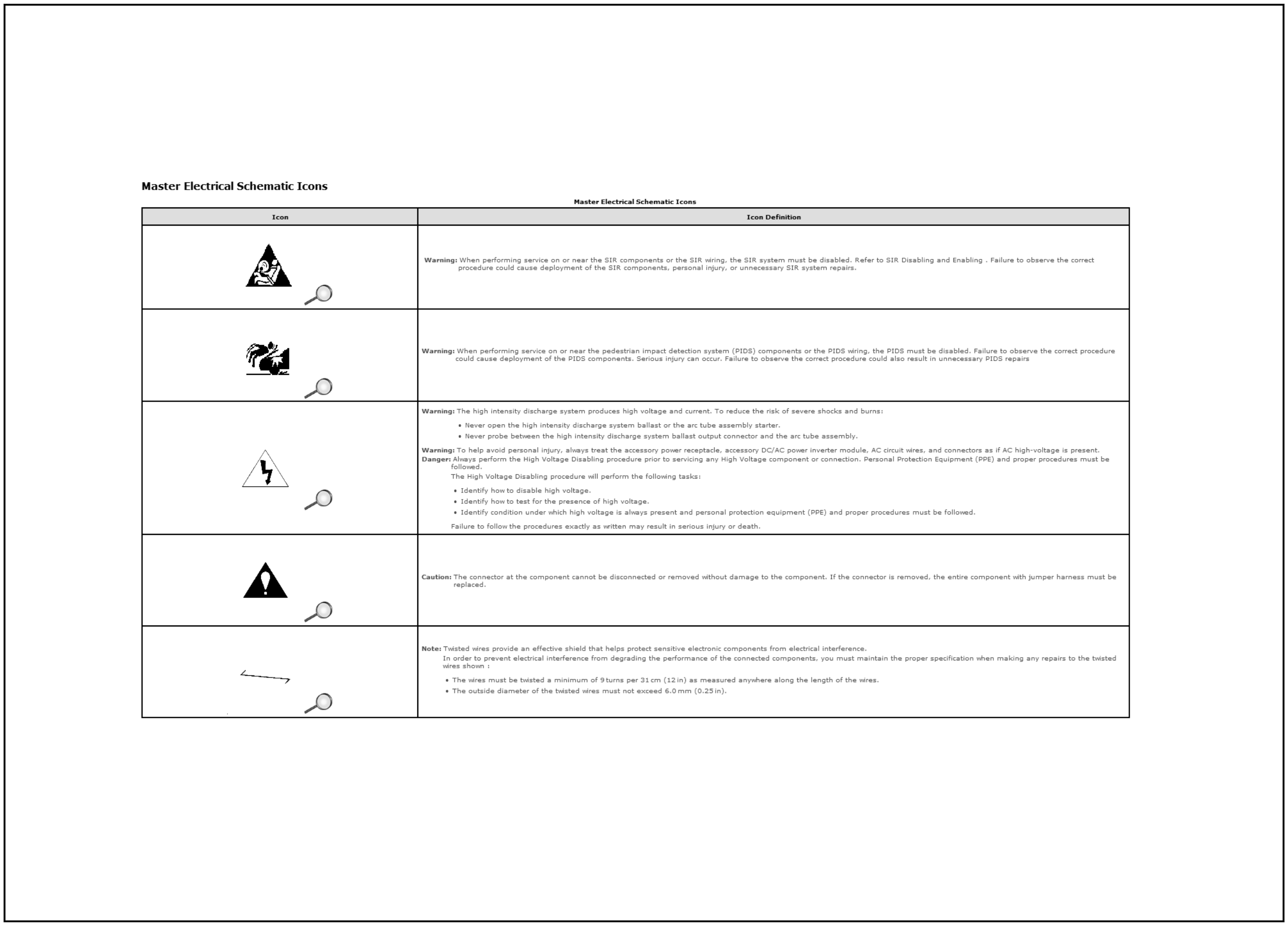
- Links to individual harness routing view(s) within Harness Routing Views and will show where the harness item is located on the vehicle harness.

⇒ **Splice Packs**

- Links to individual harness routing view(s) within Harness Routing Views and will show where the harness item is located on the vehicle harness.
- Links to individual connector end view(s) within Splice Pack Connector End Views.

Master Electrical Schematic Icons

While the master electrical schematic icons list format has not changed, it will continue to include icons used in the vehicle schematics along with the message for the icon.



Master Electrical Schematic Icons

Master Electrical Schematic Icons

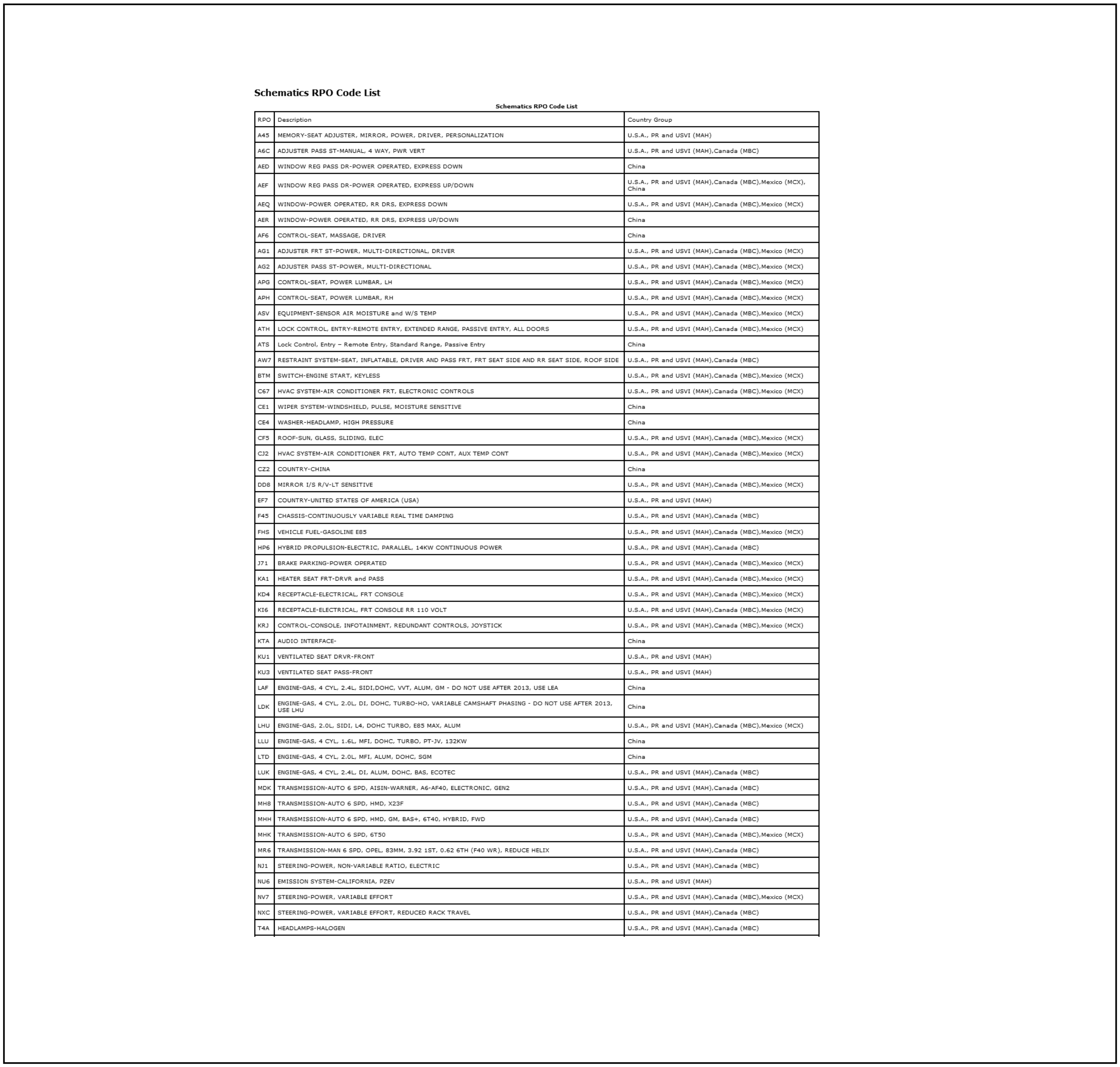
Icon	Icon Definition
⚠	**Warning:** When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Refer to SIR Disabling and Enabling . Failure to observe the correct procedure could cause deployment of the SIR components, personal injury, or unnecessary SIR system repairs.
⚠	**Warning:** When performing service on or near the pedestrian impact detection system (PIDS) components or the PIDS wiring, the PIDS must be disabled. Failure to observe the correct procedure could cause deployment of the PIDS components. Serious injury can occur. Failure to observe the correct procedure could also result in unnecessary PIDS repairs
⚡	**Warning:** The high intensity discharge system produces high voltage and current. To reduce the risk of severe shocks and burns: • Never open the high intensity discharge system ballast or the arc tube assembly starter. • Never probe between the high intensity discharge system ballast output connector and the arc tube assembly. **Warning:** To help avoid personal injury, always treat the accessory power receptacle, accessory DC/AC power inverter module, AC circuit wires, and connectors as if AC high-voltage is present. **Danger:** Always perform the High Voltage Disabling procedure prior to servicing any High Voltage component or connection. Personal Protection Equipment (PPE) and proper procedures must be followed. The High Voltage Disabling procedure will perform the following tasks: • Identify how to disable high voltage. • Identify how to test for the presence of high voltage. • Identify condition under which high voltage is always present and personal protection equipment (PPE) and proper procedures must be followed. Failure to follow the procedures exactly as written may result in serious injury or death.
⚠	**Caution:** The connector at the component cannot be disconnected or removed without damage to the component. If the connector is removed, the entire component with jumper harness must be replaced.
⟿	**Note:** Twisted wires provide an effective shield that helps protect sensitive electronic components from electrical interference. In order to prevent electrical interference from degrading the performance of the connected components, you must maintain the proper specification when making any repairs to the twisted wires shown : • The wires must be twisted a minimum of 9 turns per 31 cm (12 in) as measured anywhere along the length of the wires. • The outside diameter of the twisted wires must not exceed 6.0 mm (0.25 in).

3820510

1. **Mouse-over:** None at this time.
2. **Hotspot Link to Information:** None at this time.

Schematic RPO Code List

The schematic RPO code list only includes RPOs shown in schematics and also includes the country groupings for the options. This list is in addition to the vehicle RPO Code List that is included in General Information.



Schematics RPO Code List

Schematics RPO Code List

RPO	Description	Country Group
A45	MEMORY-SEAT ADJUSTER, MIRROR, POWER, DRIVER, PERSONALIZATION	U.S.A., PR and USVI (MAH)
A6C	ADJUSTER PASS ST-MANUAL, 4 WAY, PWR VERT	U.S.A., PR and USVI (MAH),Canada (MBC)
AED	WINDOW REG PASS DR-POWER OPERATED, EXPRESS DOWN	China
AEF	WINDOW REG PASS DR-POWER OPERATED, EXPRESS UP/DOWN	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX), China
AEQ	WINDOW-POWER OPERATED, RR DRS, EXPRESS DOWN	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
AER	WINDOW-POWER OPERATED, RR DRS, EXPRESS UP/DOWN	China
AF6	CONTROL-SEAT, MASSAGE, DRIVER	China
AG1	ADJUSTER FRT ST-POWER, MULTI-DIRECTIONAL, DRIVER	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
AG2	ADJUSTER PASS ST-POWER, MULTI-DIRECTIONAL	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
APG	CONTROL-SEAT, POWER LUMBAR, LH	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
APH	CONTROL-SEAT, POWER LUMBAR, RH	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
ASV	EQUIPMENT-SENSOR AIR MOISTURE and W/S TEMP	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
ATH	LOCK CONTROL, ENTRY-REMOTE ENTRY, EXTENDED RANGE, PASSIVE ENTRY, ALL DOORS	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
ATS	Lock Control, Entry – Remote Entry, Standard Range, Passive Entry	China
AW7	RESTRAINT SYSTEM-SEAT, INFLATABLE, DRIVER AND PASS FRT, FRT SEAT SIDE AND RR SEAT SIDE, ROOF SIDE	U.S.A., PR and USVI (MAH),Canada (MBC)
BTM	SWITCH-ENGINE START, KEYLESS	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
C67	HVAC SYSTEM-AIR CONDITIONER FRT, ELECTRONIC CONTROLS	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
CE1	WIPER SYSTEM-WINDSHIELD, PULSE, MOISTURE SENSITIVE	China
CE4	WASHER-HEADLAMP, HIGH PRESSURE	China
CF5	ROOF-SUN, GLASS, SLIDING, ELEC	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
CJ2	HVAC SYSTEM-AIR CONDITIONER FRT, AUTO TEMP CONT, AUX TEMP CONT	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
CZ2	COUNTRY-CHINA	China
DD8	MIRROR I/S R/V-LT SENSITIVE	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
EF7	COUNTRY-UNITED STATES OF AMERICA (USA)	U.S.A., PR and USVI (MAH)
F45	CHASSIS-CONTINUOUSLY VARIABLE REAL TIME DAMPING	U.S.A., PR and USVI (MAH),Canada (MBC)
FHS	VEHICLE FUEL-GASOLINE E85	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
HP6	HYBRID PROPULSION-ELECTRIC, PARALLEL, 14KW CONTINUOUS POWER	U.S.A., PR and USVI (MAH),Canada (MBC)
J71	BRAKE PARKING-POWER OPERATED	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
KA1	HEATER SEAT FRT-DRVR and PASS	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
KD4	RECEPTACLE-ELECTRICAL, FRT CONSOLE	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
KI6	RECEPTACLE-ELECTRICAL, FRT CONSOLE RR 110 VOLT	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
KRJ	CONTROL-CONSOLE, INFOTAINMENT, REDUNDANT CONTROLS, JOYSTICK	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
KTA	AUDIO INTERFACE-	China
KU1	VENTILATED SEAT DRVR-FRONT	U.S.A., PR and USVI (MAH)
KU3	VENTILATED SEAT PASS-FRONT	U.S.A., PR and USVI (MAH)
LAF	ENGINE-GAS, 4 CYL, 2.4L, SIDI,DOHC, VVT, ALUM, GM - DO NOT USE AFTER 2013, USE LEA	China
LDK	ENGINE-GAS, 4 CYL, 2.0L, DI, DOHC, TURBO-HO, VARIABLE CAMSHAFT PHASING - DO NOT USE AFTER 2013, USE LHU	China
LHU	ENGINE-GAS, 2.0L, SIDI, L4, DOHC TURBO, E85 MAX, ALUM	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
LLU	ENGINE-GAS, 4 CYL, 1.6L, MFI, DOHC, TURBO, PT-JV, 132KW	China
LTD	ENGINE-GAS, 4 CYL, 2.0L, MFI, ALUM, DOHC, SGM	China
LUK	ENGINE-GAS, 4 CYL, 2.4L, DI, ALUM, DOHC, BAS, ECOTEC	U.S.A., PR and USVI (MAH),Canada (MBC)
MDK	TRANSMISSION-AUTO 6 SPD, AISIN-WARNER, A6-AF40, ELECTRONIC, GEN2	U.S.A., PR and USVI (MAH),Canada (MBC)
MH8	TRANSMISSION-AUTO 6 SPD, HMD, X23F	U.S.A., PR and USVI (MAH),Canada (MBC)
MHH	TRANSMISSION-AUTO 6 SPD, HMD, GM, BAS+, 6T40, HYBRID, FWD	U.S.A., PR and USVI (MAH),Canada (MBC)
MHK	TRANSMISSION-AUTO 6 SPD, 6T50	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
MR6	TRANSMISSION-MAN 6 SPD, OPEL, 83MM, 3.92 1ST, 0.62 6TH (F40 WR), REDUCE HELIX	U.S.A., PR and USVI (MAH),Canada (MBC)
NJ1	STEERING-POWER, NON-VARIABLE RATIO, ELECTRIC	U.S.A., PR and USVI (MAH),Canada (MBC)
NU6	EMISSION SYSTEM-CALIFORNIA, PZEV	U.S.A., PR and USVI (MAH)
NV7	STEERING-POWER, VARIABLE EFFORT	U.S.A., PR and USVI (MAH),Canada (MBC),Mexico (MCX)
NXC	STEERING-POWER, VARIABLE EFFORT, REDUCED RACK TRAVEL	U.S.A., PR and USVI (MAH),Canada (MBC)
T4A	HEADLAMPS-HALOGEN	U.S.A., PR and USVI (MAH),Canada (MBC)

3820023

1. **Mouse-over:** None at this time.
2. **Hotspot Link to Information:** None at this time.

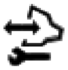
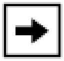
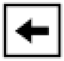
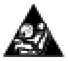
Electrical Schematic Symbols

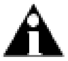
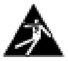
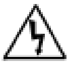
Voltage Indicators

Symbol	Description
B+ 1988677	Battery Voltage
IGN 0 1988679	Ignition Switch– Off Position
IGN I 1988682	Ignition Switch– Accessory Position
IGN II 1988686	Ignition Switch– Run Position
IGN II 1988691	Ignition Switch– Start Position

General Icons

Symbol	Description
LOC 1990537	Master Component List Icon This icon is used on the schematic to link to the Master Electrical Component List.
DESC 1990538	Description and Operation Icon This icon is used on the schematic to link to the Description and Operation of that particular system.

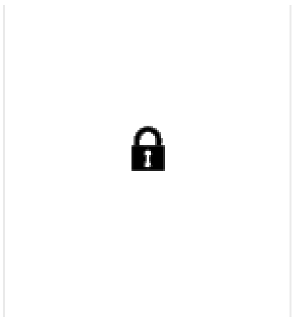
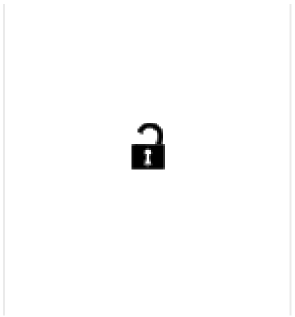
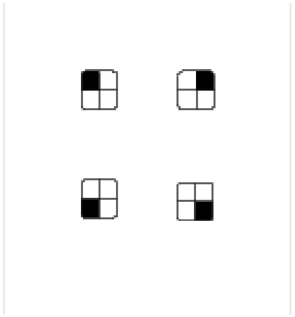
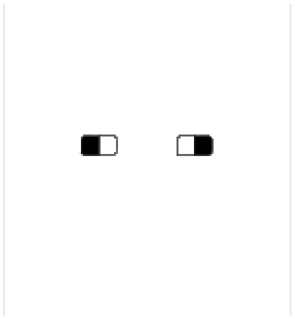
Symbol	Description
 1988674	Computer Programming Icon This icon is used on the schematic to link to Control Module References, which identifies which components need programming upon replacement.
 1990541	Next Schematic Page Icon This icon is used on the schematic to navigate to the next schematic in the subsystem.
 1990542	Previous Schematic Page Icon This icon is used on the schematic to navigate to the previous schematic in the subsystem.
 1988667	Supplemental Inflatable Restraint (SIR) or Supplemental Restraint System (SRS) Icon This icon is used to alert the technician that the system contains SIR/SRS components that require certain precautions before servicing.

Symbol	Description
 1988670	Information Icon This icon is used to alert the technician that there is additional information that will aid in servicing a system.
 1988672	Danger Icon This icon is intended to alert the technician that a component within the system contains labeling with the same icon. This icon is used when a source component has potential for 60 volts DC or greater or has potential for 42 volts AC or greater.
 1988673	High Voltage Icon This icon is intended to alert the technician that a component within the system contains labeling with the same icon. This icon is used when a component/circuit has potential for 60 volts DC or greater or has potential for 42 volts AC or greater.

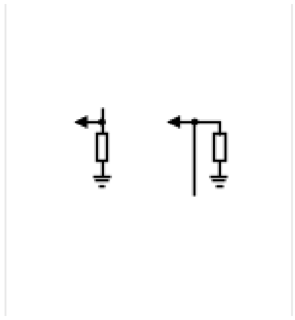
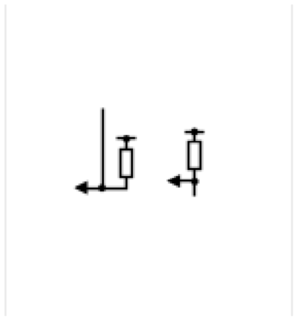
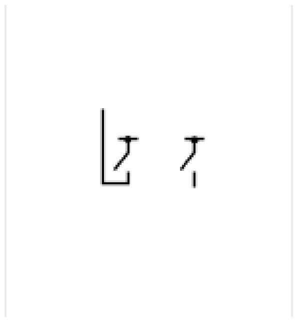
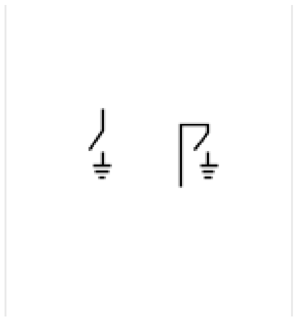
Symbol	Description
⚠ 1990543	Caution Icon This icon is used to advise the technician to use caution when servicing this component. This icon may be used when a component/circuit has a voltage range potential between 30-60 volts DC or 15-42 volts AC.
⇅ 1988675	Functional Serial Data Communication This icon is used to show the technician that the serial data circuit detail is shown incomplete. It also provides an active link to the Data Communication Schematics were the circuit is shown complete.

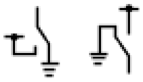
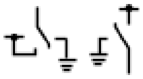
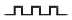
Switch Position Icons

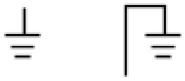
Symbol	Description
↑ ∧ △ 1989016	Generic Up Arrows
↓ ∨ ▽ 1990554	Generic Down Arrows
← < ◁ 1990555	Generic Left Arrows
→ > ▷ 1990556	Generic Right Arrows
↓↓ 1990557	Generic Express Down Arrows
⏻ 1990558	On/Off Icon

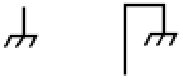
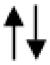
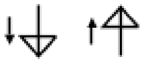
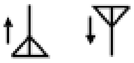
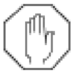
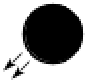
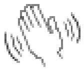
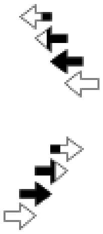
Symbol	Description
 1990559	Generic Lock Icon
 1990560	Generic Unlock Icon
 1989018	Generic Window Switch Positions– 4 Door
 1989020	Generic Window Switch Positions– 2 Door

Module Circuit Function Icons

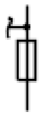
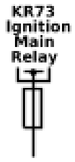
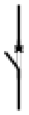
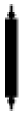
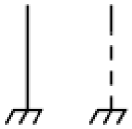
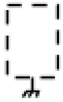
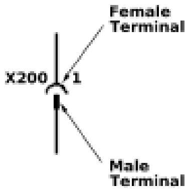
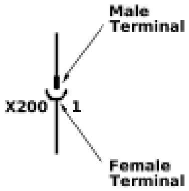
Symbol	Description
 1988774	I/O Pull-Down Resistors (−)
 1990567	I/O Pull-Up Resistors (+)
 1988775	I/O High-Side Drive Switch (+)
 1990568	I/O Low-Side Drive Switch (−)

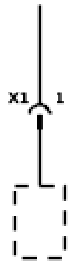
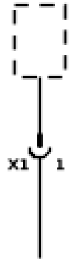
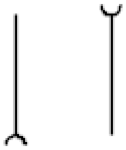
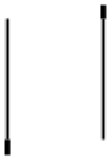
Symbol	Description
 1990570	I/O Bidirectional Switch (+/−)
 6535609	I/O Bidirectional Switch (+/−) Neutral State
 1990571	Pulse-Width Modulation Symbol
B+ 1990573	Battery Voltage

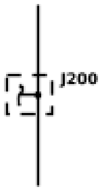
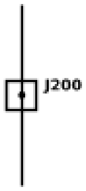
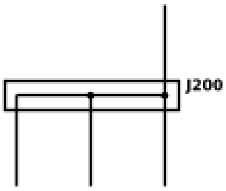
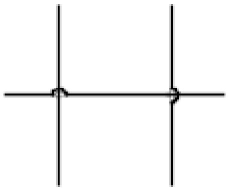
Symbol	Description
IGN 1990574	Ignition Voltage
5V 1990576	Voltage Reference
5V AC 1990577	A/C Voltage
 1988986	Low Reference

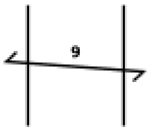
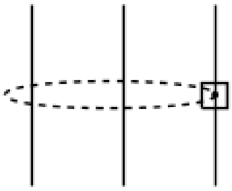
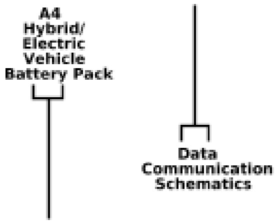
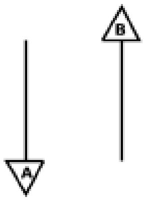
Symbol	Description
 1990578	Ground
 1990579	Serial Data
 1988973	Antenna Signal– In
 1988974	Antenna Signal– Out
 2161152	Brake Apply
 5371975	Bulb Out
 6659366	Approach Lighting Animation
 6659367	Sequential Turn Signal Animation

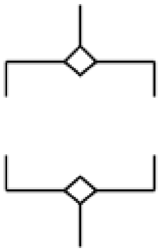
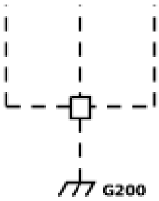
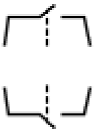
Harness Components

Symbol	Description
 1988731	Fuse
 KR73 Ignition Main Relay 1988733	Fuse Supplied by a Relay
 1988740	Circuit Breaker
 1988745	Fusible Link
 1988987	Ground
 1988746	Case Ground
 Female Terminal X200 1 Male Terminal 1988977	Inline Harness Connector
 Male Terminal X200 1 Female Terminal 1990974	Inline Harness Connector

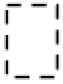
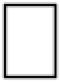
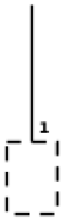
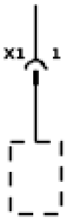
Symbol	Description
 1990975	Pigtail Connection
 1990976	Pigtail Connection
 1990977	Provisional or Diagnostic Connector
 1990978	Blunt Cut Wire

Symbol	Description
 1988980	Incomplete Physical Splice
 1988981	Complete Physical Splice– 2 Wires
 1988982	Complete Physical Splice– 3 or more wires
 1990979	Wire Crosses

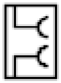
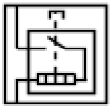
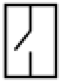
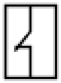
Symbol	Description
 1988988	Twisted Wires
 1988990	Shield
 A4 Hybrid/ Electric Vehicle Battery Pack Data Communication Schematics 1990980	Circuit References
 1990981	Circuit Continuation Arrowheads

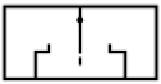
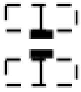
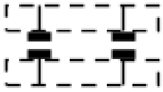
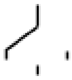
Symbol	Description
 1988983	Option Breakpoint
 1988984	Ground Circuit Connection
 1988985	Connector Shorting Clip

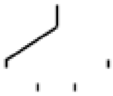
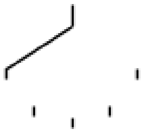
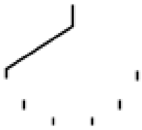
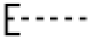
Component Parts

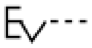
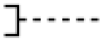
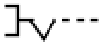
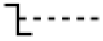
Symbol	Description
 1988694	Partial Component When a component is represented in a dashed box, the component or its wiring is not shown in its entirety.
 1988698	Entire Component When a component is represented in a solid box the component or its wiring is shown in its entirety.
 1988712	Connector Directly Attached to Component
 1988715	Pigtail Connector

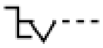
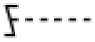
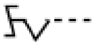
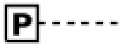
Switches and Relays

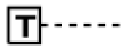
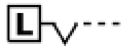
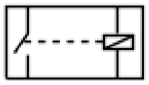
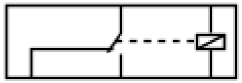
Symbol	Description
 1991015	Accessory Power Outlet
 1991016	Cigar Lighter
 1988991	Switch– 2 Position Normally Open
 1988992	Switch– 2 Position Normally Closed

Symbol	Description
	Switch– Rocker
	Switch– Contact Plate (1 Wire)
	Switch– Contact Plate (2 Wire)
	Switch– 3 Position

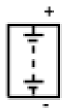
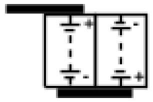
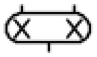
Symbol	Description
	Switch– 4 Position
	Switch– 5 Position
	Switch– 6 Position
	Switch Actuator– Push (Momentary)

Symbol	Description
 1988998	Switch Actuator– Push (Latching)
 1988999	Switch Actuator– Pull (Momentary)
 1989000	Switch Actuator– Pull (Latching)
 1989001	Switch Actuator– Rotate (Momentary)

Symbol	Description
 1989002	Switch Actuator– Rotate (Latching)
 1989003	Switch Actuator– Slide (Momentary)
 1989004	Switch Actuator– Slide (Latching)
 1989007	Switch Actuator– Pressure (Momentary)

Symbol	Description
 1989010	Switch Actuator– Temperature (Momentary)
 1989013	Switch Actuator– Volume (Latching)
 1988975	4-Pin Single Pole/Throw Relay– Normally Open
 1990539	5-Pin Relay– Normally Closed

Devices and Sensors

Symbol	Description
 1988751	Battery
 1988753	Battery Assembly– Hybrid
1988717	Single Filament Light Bulb
 1988719	Double Filament Light Bulb

Symbol	Description
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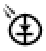
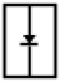
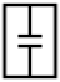
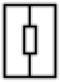
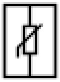
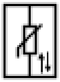
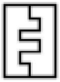
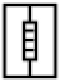
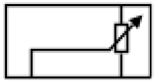
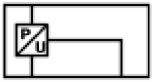
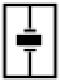
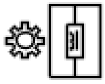
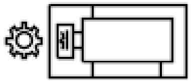
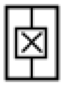
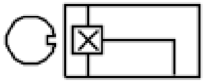
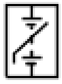
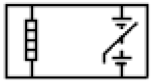
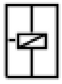
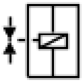
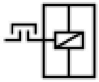
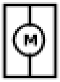
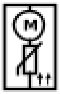
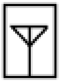
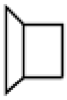
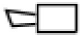
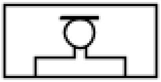
 1988725	Photo Sensor
 1990988	Gauge
 1988776	Diode
 1988748	Capacitor
 1988755	Resistor
 1988759	Variable Resistor
 1990991	Variable Resistor– NTC

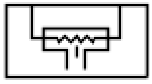
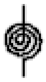
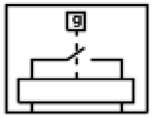
Symbol	Description
 1990992	Breakable Wire
 1988778	Heating Element
 1988771	Position Sensor
 1988773	Pressure Sensor

Symbol	Description
 1990993	Knock Sensor
 1990994	Inductive Type Sensor– 2-Wire
 1990996	Inductive Type Sensor– 3-Wire
 1990998	Hall Effect Sensor– 2-Wire

Symbol	Description
 1990999	Hall Effect Sensor– 3-Wire
 1991000	Oxygen Sensor– 2-Wire
 1991001	Heated Oxygen Sensor– 4-Wire
 1988970	Solenoid– Actuator

Symbol	Description
 1988971	Solenoid– Valve
 1988972	Clutch
 1988779	Motor
 1991003	Motor with PTC

Symbol	Description
 1988729	Antenna
 1991005	Speaker
 1991006	Horn
 1991007	Microphone

Symbol	Description
 1991008	Airbag
 1991009	SIR Coil
 1991010	SIR Impact Sensor

Schematics RPO Code List

Schematics RPO Code List

RPO	Option Name
5W4	SALES PACKAGE-SPECIAL SERVICE, MUNICIPAL
9L7	EQUIPMENT-ACSRY WRG JUNC BLK
A2S	ADJUSTER DRIVER SEAT-4WAY, DISCONT MAN RECLINE, MAN FORE/AFT

RPO	Option Name
A2X	ADJUSTER DRIVER SEAT-8WAY, PWR RECLINE, PWR FORE/AFT, PWR HEIGHT, PWR TILT
A45	MEMORY-SEAT ADJUSTER, MIRROR, POWER, DRIVER, PERSONALIZATION
A48	WINDOW RR-FULL WIDTH, SLIDING, POWER
A7K	ADJUSTER PASS ST-8WAY, PWR RECLINE, PWR FORE/AFT, PWR HEIGHT, PWR TILT
AED	WINDOW REG PASS DR-POWER OPERATED,EXPRESS DOWN (DO NOT USE NEXT NEW MAJOR)
AEF	WINDOW REG PASS DR-POWER OPERATED, EXPRESS UP/DOWN (DO NOT USE NEXT NEW MAJOR)
AEQ	WINDOW REG REAR DR-POWER OPERATED, EXPRESS DOWN (DO NOT USE NEXT NEW MAJOR)
AF6	CONTROL-SEAT, MASSAGE, DRIVER
AKE	CONTROL-SEAT, MASSAGE, PASSENGER
AL0	SENSOR INDICATOR-INFLATABLE RESTRAINT, FRT PASS/CHILD PRESENCE DETECTOR
ASV	EQUIPMENT-SENSOR AIR MOISTURE and W/S TEMP
AU3	LOCK CONTROL-SIDE DR, ELEC
AVJ	LOCK CONTROL, ENTRY-REMOTE ENTRY, EXTENDED RANGE, PASSIVE ENTRY, FRONT DOORS
AVK	LUMBAR DRIVER-SEAT, POWER, 4 WAY
AVU	LUMBAR PASSENGER-SEAT, POWER, 4-WAY
AXG	WINDOW REG DRVR DR-POWER OPERATED, EXPRESS UP/DOWN (DO NOT USE NEXT NEW MAJOR)
AZ3	SEAT-FRT SPLIT, DRIVER, PASS, FULL FEATURE CENTER
BRS	STEPS, RUNNINGBOARD-SIDE, RETRACTABLE, POWER, BRIGHT
C32	HEATER AIR SYSTEM-HEATING/DEFROSTER SYSTEM, REINFORCED, ELECTRIC
C49	DEFOGGER-RR WINDOW, ELECTRIC
C9I	SWITCH-ROLL OVER SENSING
CAB	TRUCK WITHOUT PICKUP BOX
CE1	WIPER SYS WINDSHIELD-PULSE, MOISTURE SENSITIVE
CF5	ROOF-SUN, GLASS, SLIDING, ELEC (DO NOT USE NEXT NEW MAJOR)
CJ2	HVAC SYSTEM-AIR CONDITIONER FRT, AUTO TEMP CONT, AUX TEMP CONT
CREW	VEHICLE CAB-FOUR DOOR-FULL SIZE REAR DOOR
D07	CONSOLE-FRT COMPT, FLOOR, CUSTOM
DD8	MIRROR I/S R/V-LT SENSITIVE
DEN	MIRROR O/S-LH and RH, MANUAL, MANUAL FOLD, FLAT/DRVR, CNVX/PASS
DEZ	MIRROR O/S-LH and RH, ELEC REMOTE, POWER FOLD, HEAT, PERM LIGHT, LT SENSITIVE DRVR, FLAT/DRVR, CNVX/PASS
DH6	MIRROR I/S FRT VAN-LH and RH, SUNSHADE, ILLUM (DO NOT USE NEXT NEW MAJOR)
DLF	MIRROR O/S-LH and RH, RC, ELEC, HEAT, MAN FOLD, FLAT/DRVR, CNVXPASS
DPO	MIRROR O/S-LH and RH, WIDE FIELD OF VIEW, MAN EXTEND, MAN FOLD, HEATED, REMOTE CONT, AUX CARGO LMP, AUX CLEAR LMP
DQS	MIRROR O/S-LH and RH, WIDE LOAD, VERT GLS,MAN EXT,PWR FLD,HTD,TURN SIG IND,R/CON,MEMORY,AUX CLEAR LP,AUX CARGO LP
DRZ	MIRROR I/S R/V-LT SENSITIVE, FULL VIDEO DISPLAY
FHS	VEHICLE FUEL-GASOLINE E85
FHX	VEHICLE FUEL-DIESEL B20
FJW	VEHICLE FUEL-GASOLINE E15
G93	AXLE-FRT ELECTRONIC LOCKING DIFFERENTIAL, DRIVER SELECT
G94	AXLE-RR ELECTRONIC LOCKING DIFFERENTIAL, DRIVER SELECT

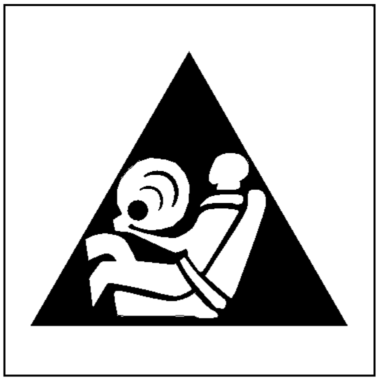
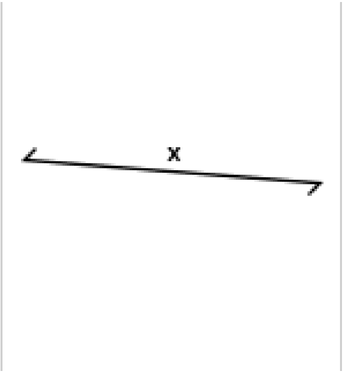
RPO	Option Name
GA4	TRIM PACKAGE-AT4 X
GFF	TRIM PACKAGE-BASE
GFG	TRIM PACKAGE-AT4
GFI	TRIM PACKAGE-SLE
GFJ	TRIM PACKAGE-ELEVATION
GFS	TRIM PACKAGE-ELEVATION-L
GFU	TRIM PACKAGE-SLT
GFW	TRIM PACKAGE-DENALI
GFY	TRIM PACKAGE-DENALI ULTIMATE
HS1	ALERT-SAFETY HAPTIC SEAT
IOK	RADIO-INFOTAINMENT SYSTEM - 3.X MID/HIGH HMI,ENHANCED CONNECTIVITY 2.0, VOICE RECOGNITION
IOR	RADIO-INFOTAINMENT SYSTEM - 3.X LOW HMI, MIDLEVEL CONNECTIVITY 3.X
JBP	BRAKE LINING WEAR SY-LIFE SPAN PROGNOSTIC INDICATOR
JHD	BRK APL CTRL FEATURE-HILL DESCENT, GEAR HOLD
JL1	BRK APL CTRL FEATURE-INTEGRATED TRAILER BRAKE
K4C	CHARGER-INDUCTIVE PORTABLE WIRELESS DEVICE (DNU AFTER MY 26, SEE BFO)
KA1	HEATER SEAT FRT-DRVR and PASS (DNU NEXT NEW MAJOR)
KA6	HEATER SEAT-REAR (DNU NEXT NEW MAJOR)
KC5	RECEPTACLE-ELECTRICAL, ACCESSORY (DNU NEW/MAJOR - USE KH8)
KC9	RECEPTACLE PUBX-ELECTRICAL, 110 VOLT
KCA	RECEPTACLE PUBX-ELECTRICAL, 230 VOLT
KGU	MODULE-UPFITTER, SERIAL DATA GATEWAY
KI3	STEERING WHEEL HEAT-AUTOMATIC
KI4	RECEPTACLE I/P-ELECTRICAL, 110 VOLT
KI5	RECEPTACLE I/P-ELECTRICAL, 230 VOLT
KQV	HEATER-SEAT, VENTED, FRT (DO NOT USE NEXT NEW MAJOR, USE KU9)
KSG	CRUISE CONTROL-AUTOMATIC, ADAPTIVE, WITH STOP/GO
KW5	GENERATOR-220 AMP
KW7	GENERATOR-170 AMP
L3B	ENGINE-GAS, 4 CYL, L4, 2.7L, SIDI, VVT, TURBO, DOHC, ALUM
L84	ENGINE-GAS, 8 CYL, 5.3L, V8, DI, DFM, ALUM, GEN 5
L87	ENGINE-GAS, 8 CYL, V8, 6.2L, DI, DFM, ALUM, GEN 5
LZ0	ENGINE-DIESEL, 6 CYL, 3.0L, CRI, L6, DOHC, TURBO, VGT, ALUM, CSS50V, VAR. 2
MFC	TRANSMISSION-AUTO 8 SPD, 8L80, GEN 2, ATSS, CPA
MHS	TRANSMISSION-AUTO 10 SPD, 10L80, GRX, GEN 1, ATSS, ETRS, VAR 1
MHT	TRANSMISSION-AUTO 10 SPD, 10L80, GRX, GEN 1, ATSS, VAR 1
MI2	TRANSMISSION-AUTO 10 SPD, 10L80, GRX, VAR 1, GEN 1
MQB	TRANSMISSION-AUTO 10 SPD, 10L80, ATSS, CPA, GEN 2
MQC	TRANSMISSION-AUTO 10 SPD, 10L80, ATSS, ETRS, CPA, GEN 2
N06	STEERING COLUMN LOCK-ELECTRICAL
N38	STEERING COLUMN-TILT, TELESCOPING, POWER
N57	STEERING WHEEL-SYNTHETIC, 4 SPOKE, THIN, ROUND

RPO	Option Name
NK5	STEERING WHEEL-STANDARD (DNU NEXT NEW MAJOR)
NP0	TRANSFER CASE-ACTIVE, SINGLE SPEED,SWITCH ACTIVATED,ALUM
NP5	STEERING WHEEL-LEATHER WRAPPED (DNU NEXT NEW MAJOR)
NPP	EXHAUST SYSTEM-PERFORMANCE
NQH	TRANSFER CASE-ACTIVE, TWO SPEED, SWITCH ACTIVATED, ALUM
QK1	GATE TYPE-PUBX END STANDARD
QK2	GATE TYPE-PUBX END ENHANCED
QT5	GATE FUNCTION-MANUAL ASSIST POWER RELEASE
QT6	GATE FUNCTION-POWER
REGULAR	VEHICLE CAB-TWO DOOR
T3U	LAMP FRT FOG-FRT FOG
U2K	DIGITAL AUDIO SYSTEM-S-BAND
UBC	RECPT USB ARMREST-DUAL, CHARGE, DATA
UBI	RECPT USB FLR CNSL R-DUAL, CHARGE
UD5	PARK ASSIST-FRONT AND REAR
UDA	COMMUNICATION SYSTEM-VEHICLE, DEACTIVATED
UDV	DISPLAY INSTRUMENT-DRIVER INFO ENHANCED, FULL CLUSTER (MULTI COLOR GRAPHIC)
UE0	COMMUNICATION SYSTEM-VEHICLE - NONE (DO NOT USE NEXT NEW MAJOR)
UE1	COMMUNICATION SYSTEM-VEHICLE, ONSTAR
UET	INDICATOR-SMART TRAILER INTEGRATION
UEU	SENSOR INDICATOR-FORWARD COLLISION ALERT
UF2	LAMP-CARGO
UGN	COLL IMMINENT BRK-ALL SPEED, VEH FWD MOVEMENT, BRAKE PREFILL, INTEGRATED BRAKE ASSIST
UHX	LANE ACTIVE SAFETY-KEEP ASSIST
UHY	COLL IMMINENT BRK-LOW SPEED, VEH FWD MOVEMENT, BRAKE PREFILL, INTEGRATED BRAKE ASSIST
UK3	CONTROL-STEERING WHEEL, ACCESSORY
UKC	SIDE ACTIVE SAFETY-OBSTACLE DETECTION ENHANCED
UKL	LANE ACTIVE SAFETY-KEEP ASSIST, HANDS FREE LANE FOLLOWING(ENTIRE SPEED RANGE)
UKV	SIDE ACTIVE SAFETY-OBSTACLE DETECTION ENHANCED, EXTENDED TRAILER VIEW
UQA	SPEAKER SYSTEM-PREMIUM AUDIO, BRANDED AMPLIFIER
UQF	SPEAKER SYSTEM-STANDARD AUDIO
UQS	SPEAKER SYSTEM-PREMIUM AUDIO, BRANDED SURROUND AMPLIFIER
URC	SWITCH-FLEXRIDE MODE SYSTEM
UTJ	THEFT DETERENT-ELECTRICAL, UNAUTHORIZED ENTRY
UV2	VISION-360 VIEW, MONO, HD DIGITAL
UV6	HEAD UP DISPLAY-WINDSHIELD
UVN	VISION AUXILIARY-CARGO BED
VTI	SHUTTERS-FRONT GRILLE, ACTIVE, UPR
VV4	COMMUNICATION EQUIP-MOBILE INTERNET CONNECTIVITY
WMI	SHUTTERS-FRONT GRILLE, ACTIVE, UPR AND LWR

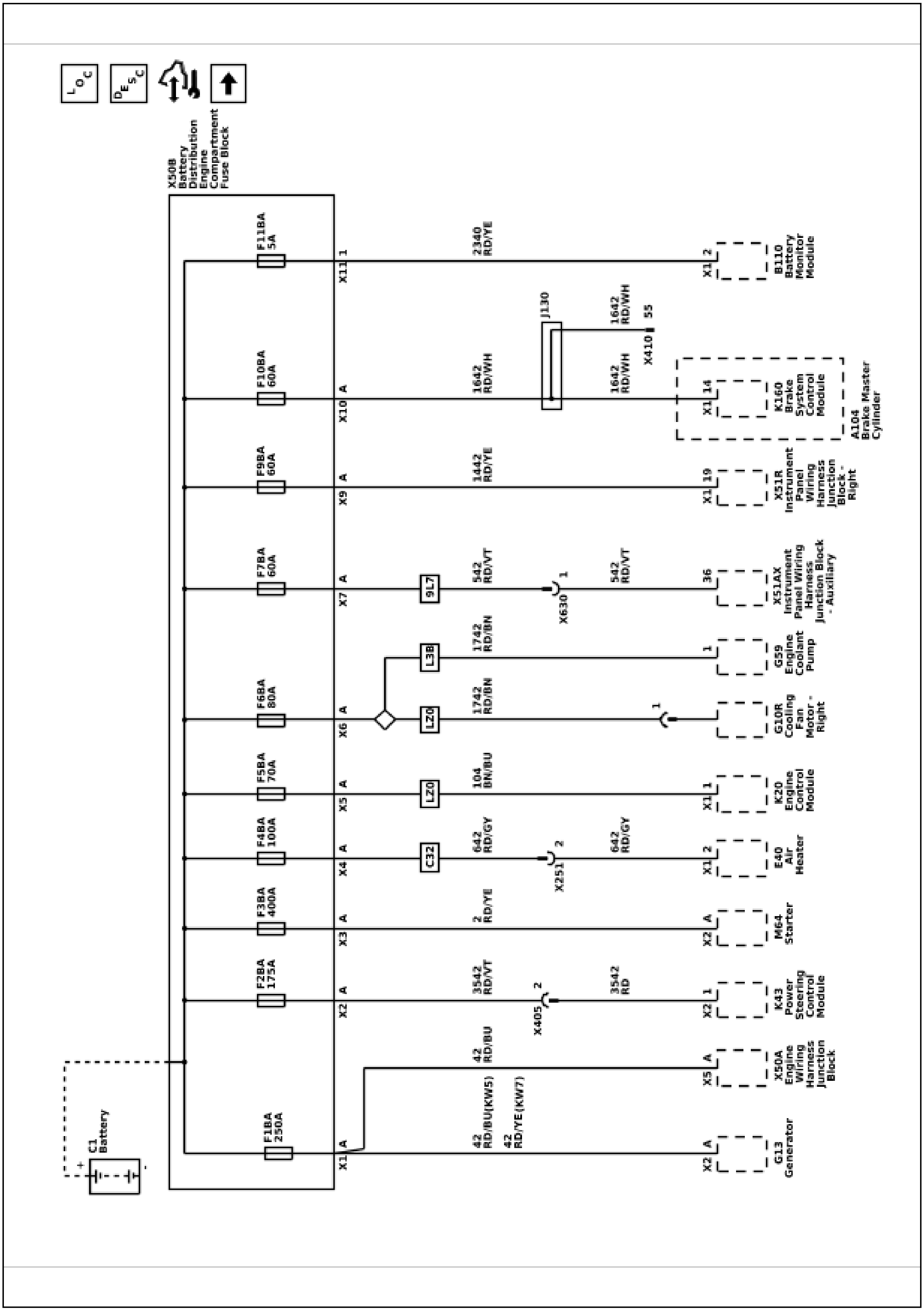
RPO	Option Name
Z45	CHASSIS PACKAGE-CONTINUOUS DAMPING CONTROL
Z82	TRAILER PROVISIONS-SPECIAL EQUIPMENT, H.D.

Master Electrical Schematic Icons

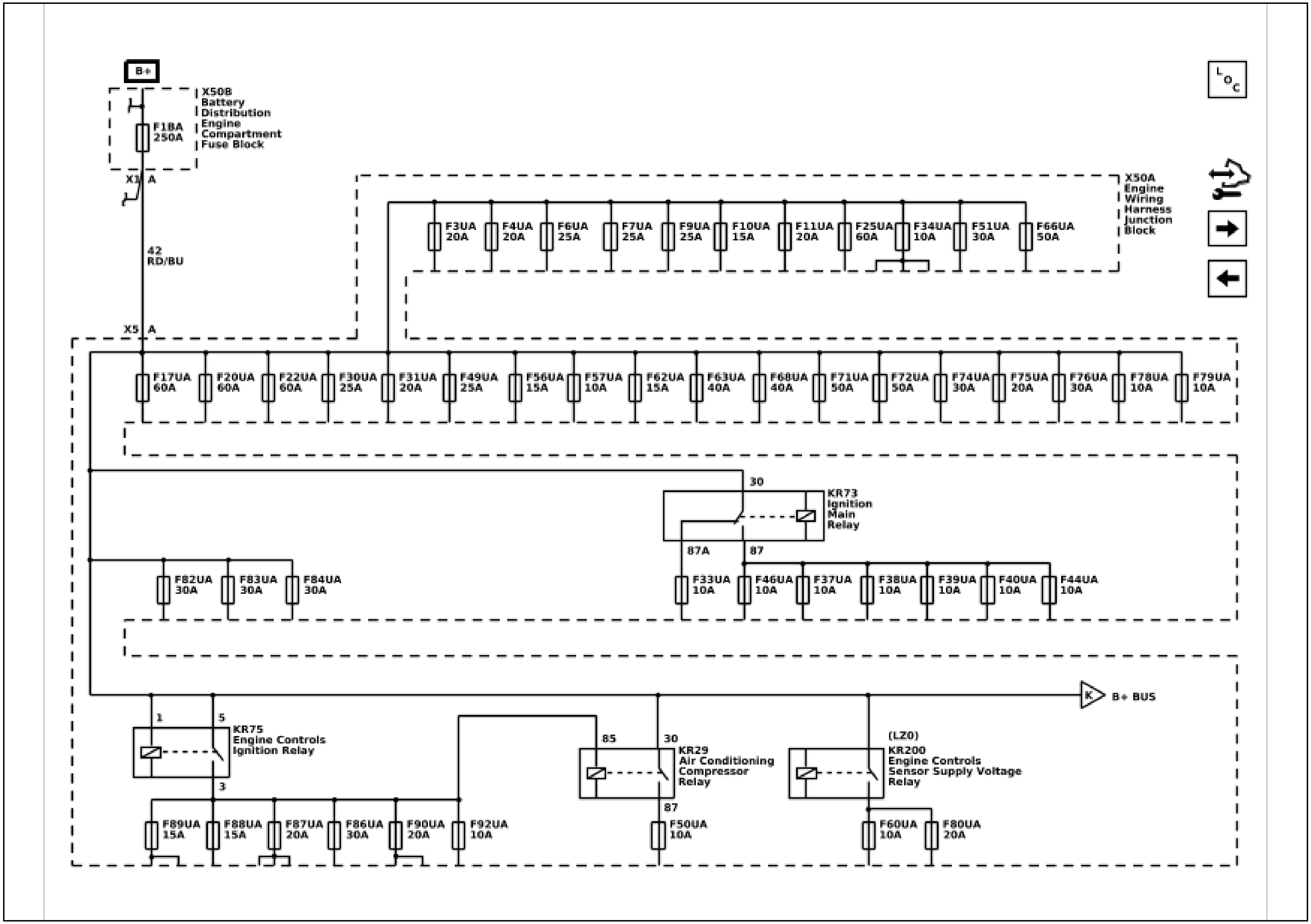
Master Electrical Schematic Icons

Icon	Icon Definition
 19386	***Warning: When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Refer to SIR Disabling and Enabling . Failure to observe the correct procedure could cause deployment of the SIR components, personal injury, or unnecessary SIR system repairs.***
 902886	**Note:** Twisted-pair wires provide an effective shield that helps protect sensitive electronic components from electrical interference. If the wires were covered with shielding, install new shielding.In order to prevent electrical interference from degrading the performance of the connected components, you must maintain the proper specification when making any repairs to the twisted-pair wires shown : • The wires must be twisted a minimum of 9 turns per 31 cm (12 in) as measured anywhere along the length of the wires. • The outside diameter of the twisted wires must not exceed 6.0 mm (0.25 in).

Power Distribution Schematics (Battery Distribution Engine Compartment Fuse Block)

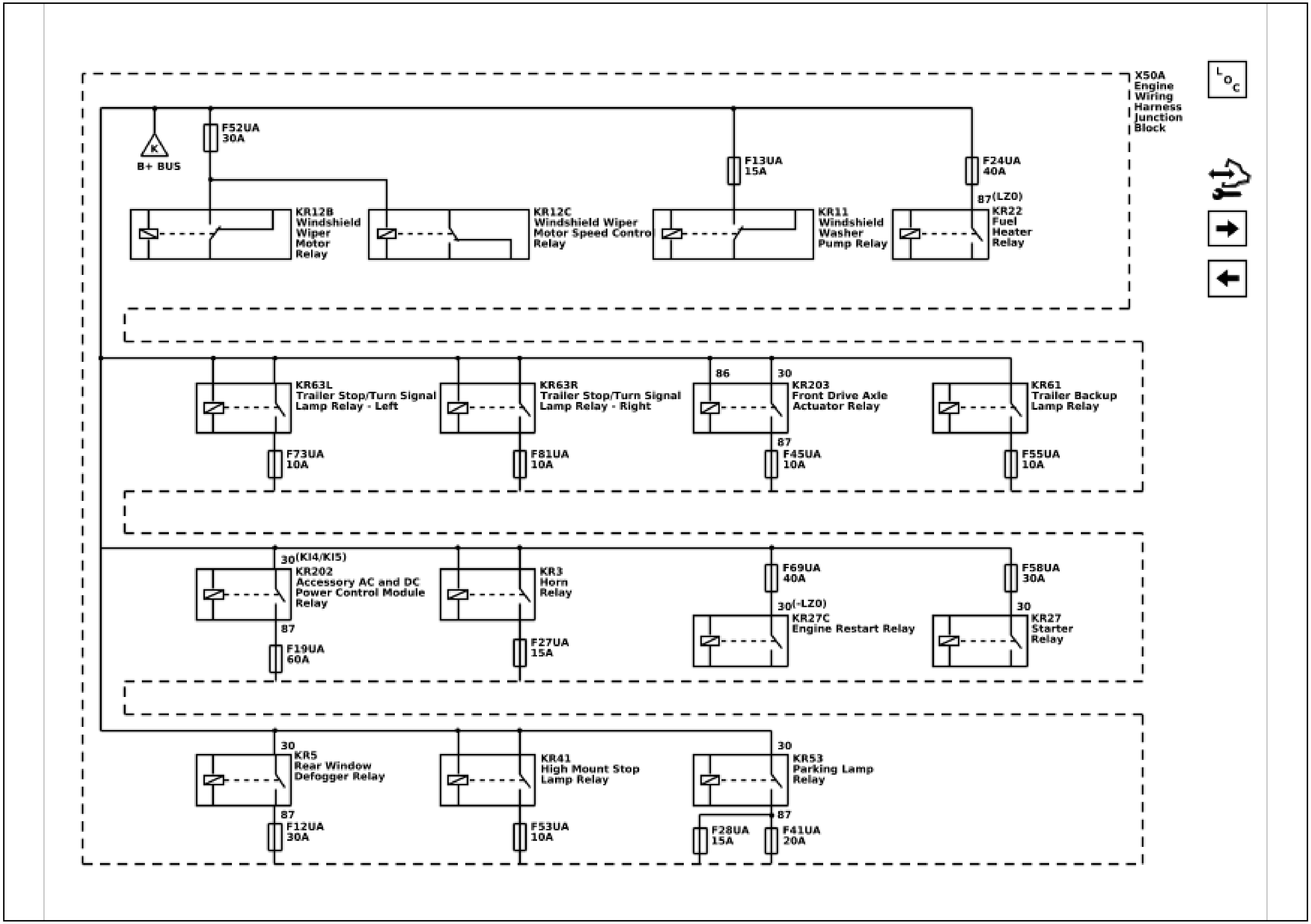

6847061
X508 Battery Distribution Engine Compartment Fuse Block
C1 Battery
+
-
F1BA 250A
F2BA 175A
F3BA 400A
F4BA 100A
F5BA 70A
F6BA 80A
F7BA 60A
F9BA 60A
F10BA 60A
F11BA 5A
X1 A
X2 A
X3 A
X4 A
X5 A
X6 A
X7 A
X9 A
X10 A
X11 1
42 RD/BU(KW5)
42 RD/YE(KW7)
42 RD/BU
3542 RD/VT
X405 2
3542 RD
2 RD/YE
C32
642 RD/GY
X251 2
642 RD/GY
LZ0
104 BN/BU
LZ0
1742 RD/BN
L3B
1742 RD/BN
1
9L7
542 RD/VT
X630 1
542 RD/VT
1442 RD/YE
1642 RD/WH
J130
1642 RD/WH
X410 55
1642 RD/WH
2340 RD/YE
X2 A
G13 Generator
X5 A
X50A Engine Wiring Harness Junction Block
X2 1
K43 Power Steering Control Module
X2 A
M64 Starter
X1 2
E40 Air Heater
X1 1
K20 Engine Control Module
G10R Cooling Fan Motor - Right
1
G59 Engine Coolant Pump
36
X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary
X1 19
X51R Instrument Panel Wiring Harness Junction Block - Right
X1 14
K160 Brake System Control Module
A104 Brake Master Cylinder
X1 2
B110 Battery Monitor Module

Power Distribution Schematics (Engine Wiring Harness Junction Block - B+ Bus - 1 of 2)


B+
X50B Battery Distribution Engine Compartment Fuse Block
F18A 250A
X1 A
42 RD/BU
X5 A
X50A Engine Wiring Harness Junction Block
F3UA 20A
F4UA 20A
F6UA 25A
F7UA 25A
F9UA 25A
F10UA 15A
F11UA 20A
F25UA 60A
F34UA 10A
F51UA 30A
F66UA 50A
F17UA 60A
F20UA 60A
F22UA 60A
F30UA 25A
F31UA 20A
F49UA 25A
F56UA 15A
F57UA 10A
F62UA 15A
F63UA 40A
F68UA 40A
F71UA 50A
F72UA 50A
F74UA 30A
F75UA 20A
F76UA 30A
F78UA 10A
F79UA 10A
30
KR73 Ignition Main Relay
87A
87
F33UA 10A
F46UA 10A
F37UA 10A
F38UA 10A
F39UA 10A
F40UA 10A
F44UA 10A
F82UA 30A
F83UA 30A
F84UA 30A
K B+ BUS
1
5
KR75 Engine Controls Ignition Relay
3
85
30
KR29 Air Conditioning Compressor Relay
87
(LZ0)
KR200 Engine Controls Sensor Supply Voltage Relay
F89UA 15A
F88UA 15A
F87UA 20A
F86UA 30A
F90UA 20A
F92UA 10A
F50UA 10A
F60UA 10A
F80UA 20A

6847062

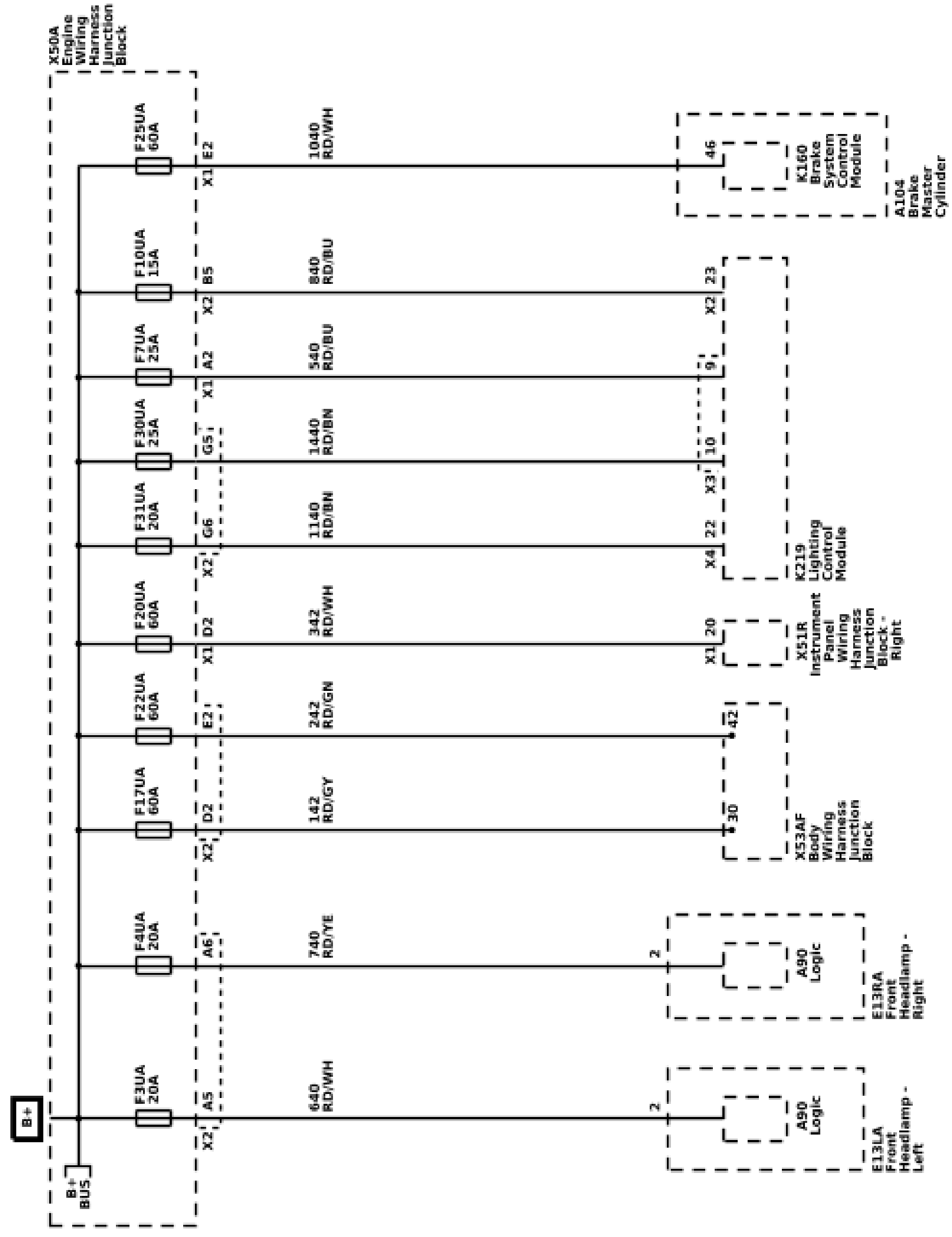
Power Distribution Schematics (Engine Wiring Harness Junction Block - B+ Bus - 2 of 2)


X50A Engine Wiring Harness Junction Block
B+ BUS
K
F52UA 30A
F13UA 15A
F24UA 40A
87(LZ0)
KR12B Windshield Wiper Motor Relay
KR12C Windshield Wiper Motor Speed Control Relay
KR11 Windshield Washer Pump Relay
KR22 Fuel Heater Relay
86
30
KR63L Trailer Stop/Turn Signal Lamp Relay - Left
KR63R Trailer Stop/Turn Signal Lamp Relay - Right
KR203 Front Drive Axle Actuator Relay
KR61 Trailer Backup Lamp Relay
87
F73UA 10A
F81UA 10A
F45UA 10A
F55UA 10A
30(KI4/KI5)
KR202 Accessory AC and DC Power Control Module Relay
87
KR3 Horn Relay
F69UA 40A
F58UA 30A
30(-LZ0)
KR27C Engine Restart Relay
30
KR27 Starter Relay
F19UA 60A
F27UA 15A
30
KR5 Rear Window Defogger Relay
KR41 High Mount Stop Lamp Relay
30
KR53 Parking Lamp Relay
87
F12UA 30A
F53UA 10A
F28UA 15A
87
F41UA 20A
L O C

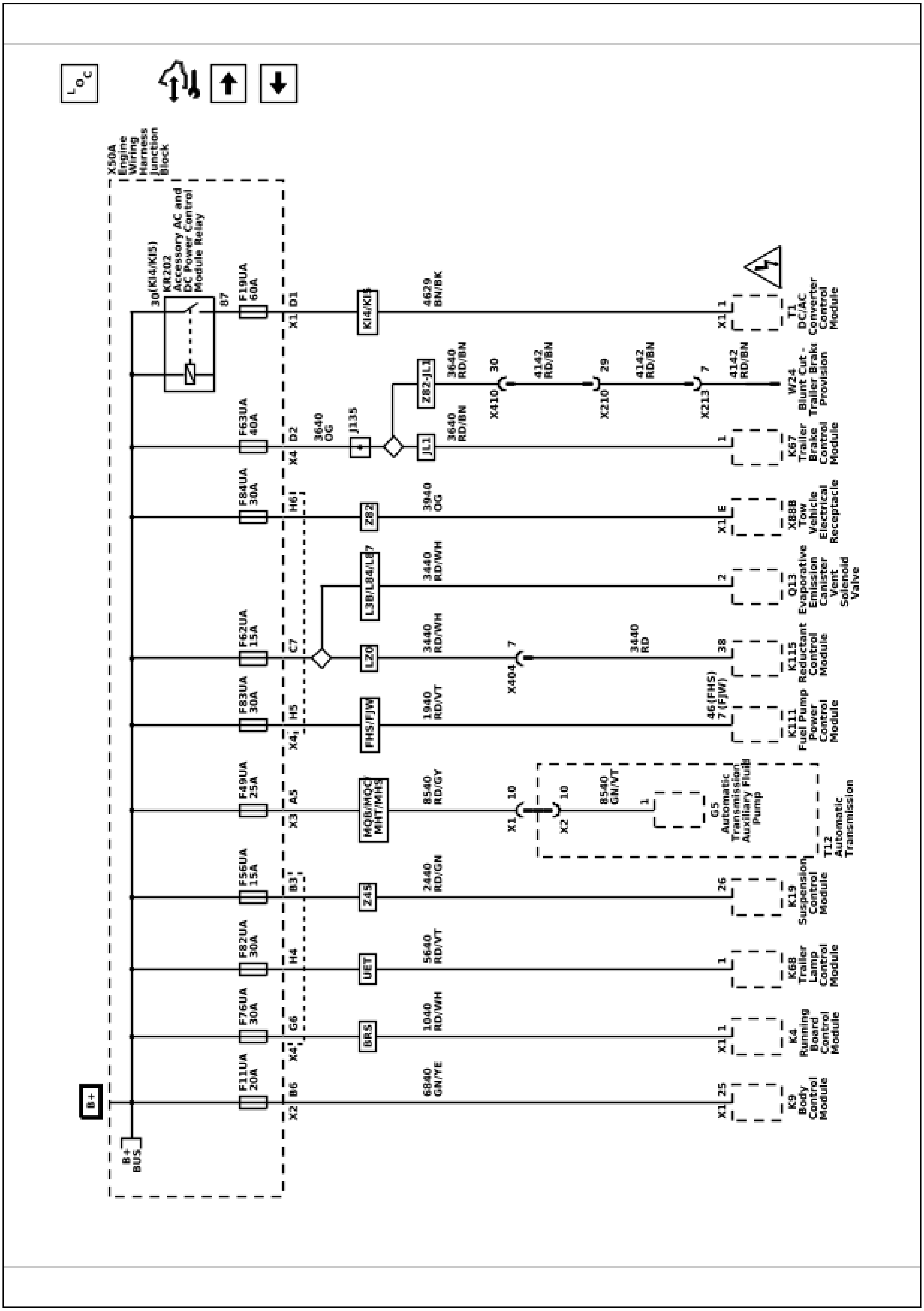
6847063

Power Distribution Schematics (F3UA, F4UA, F7UA, F10UA, F17UA, F20UA, F22UA, F25UA, F30UA, and F31UA Fuses)

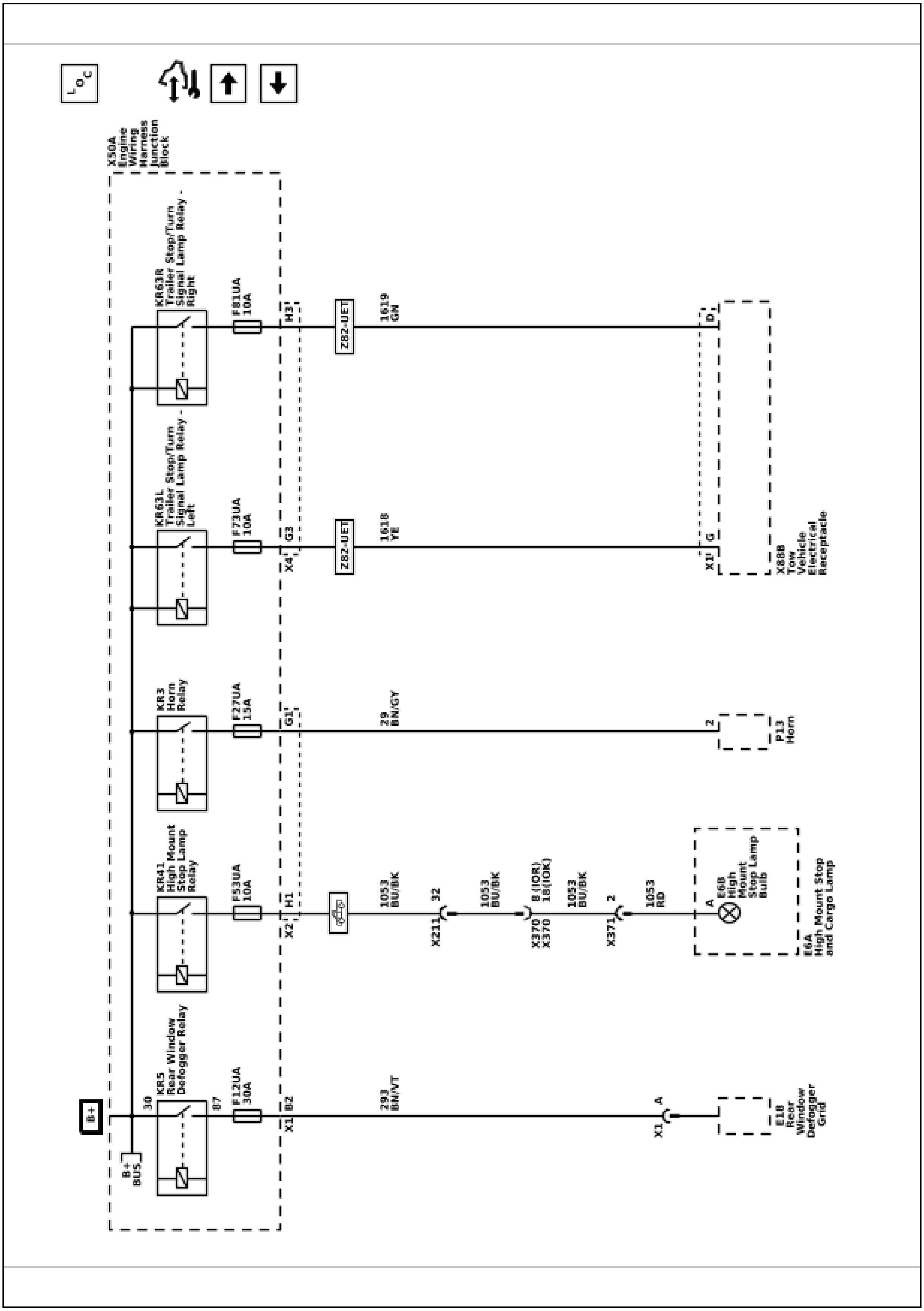
6847064


X50A Engine Wiring Harness Junction Block
B+
B+ BUS
F25UA 60A
X1 E2
1040 RD/WH
F10UA 15A
X2 B5
840 RD/BU
F7UA 25A
X1 A2
540 RD/BU
F30UA 25A
G5
1440 RD/BN
F31UA 20A
X2 G6
1140 RD/BN
F20UA 60A
X1 D2
342 RD/WH
F22UA 60A
E2
242 RD/GN
F17UA 60A
X2 D2
142 RD/GY
F4UA 20A
A6
740 RD/YE
F3UA 20A
X2 A5
640 RD/WH
46
K160 Brake System Control Module
A104 Brake Master Cylinder
X2 23
9
X3 10
X4 22
K219 Lighting Control Module
X1 20
X51R Instrument Panel Wiring Harness Junction Block - Right
42
30
X53AF Body Wiring Harness Junction Block
2
A90 Logic
E13RA Front Headlamp - Right
2
A90 Logic
E13LA Front Headlamp - Left

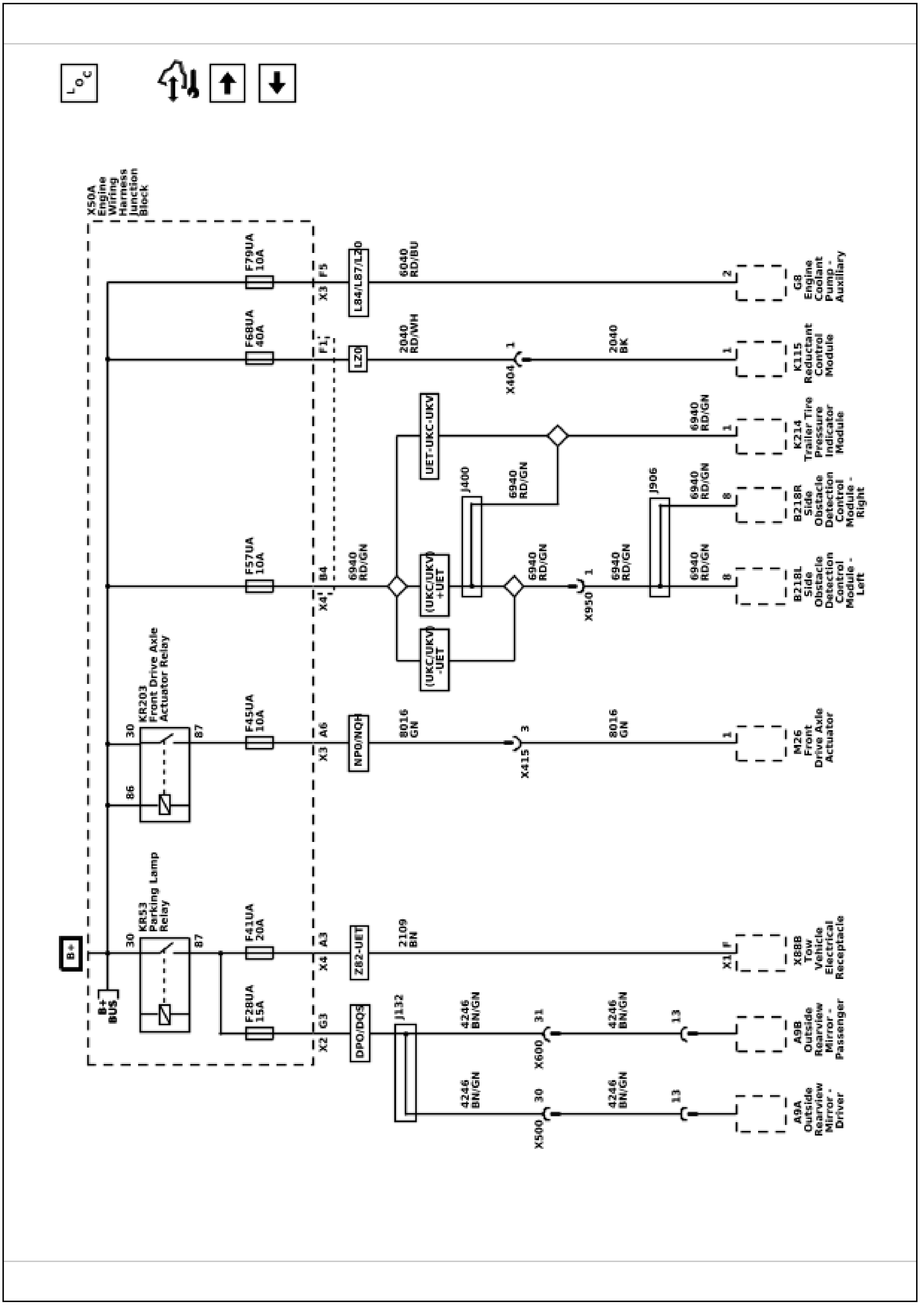
Power Distribution Schematics (F11UA, F19UA, F49UA, F56UA, F62UA, F63UA, F76UA, F82UA, F83UA, and F84UA Fuses)


6847065
X50A Engine Wiring Harness Junction Block
B+
B+ BUS
30 (KI4/KI5) KR202 Accessory AC and DC Power Control Module Relay
87
F19UA 60A
X1 D1
KI4/KI5
4629 BN/BK
X1 1
T1 DC/AC Converter Control Module
F63UA 40A
X4 D2
3640 OG
J135
JL1
3640 RD/BN
Z82-JL1
3640 RD/BN
X410 30
4142 RD/BN
X210 29
4142 RD/BN
X213 7
4142 RD/BN
W24 Blunt Cut - Trailer Brake Provision
1
K67 Trailer Brake Control Module
F84UA 30A
H6
Z82
3940 OG
X1 E
X88B Tow Vehicle Electrical Receptacle
L38/L84/L87
3440 RD/WH
2
Q13 Evaporative Emission Canister Vent Solenoid Valve
F62UA 15A
C7
LZ0
3440 RD/WH
X404 7
3440 RD
38
K115 Reductant Control Module
F83UA 30A
X4 H5
FHS/FJW
1940 RD/VT
46 (FHS) 7 (FJW)
K111 Fuel Pump Power Control Module
F49UA 25A
X3 A5
MQB/MQC/MHT/MHS
8540 RD/GY
X1 10
X2 10
8540 GN/VT
1
G5 Automatic Transmission Auxiliary Fluid Pump
T12 Automatic Transmission
F56UA 15A
B3
Z45
2440 RD/GN
26
K19 Suspension Control Module
F82UA 30A
H4
UET
5640 RD/VT
1
K68 Trailer Lamp Control Module
F76UA 30A
X4 G6
BRS
1040 RD/WH
X1 1
K4 Running Board Control Module
F11UA 20A
X2 B6
6840 GN/YE
X1 25
K9 Body Control Module

Power Distribution Schematics (F12UA, F27UA, F53UA, F73UA, and F81UA Fuses)


6847066
X50A Engine Wiring Harness Junction Block
B+
B+ BUS
30
87
KR5 Rear Window Defogger Relay
F12UA 30A
X1 B2
293 BN/VT
X1 A
E18 Rear Window Defogger Grid
KR41 High Mount Stop Lamp Relay
F53UA 10A
X2 H1
1053 BU/BK
X211 32
1053 BU/BK
X370 8 (IOR)
X370 18(IOK)
1053 BU/BK
X371 2
1053 RD
A
E6B High Mount Stop Lamp Bulb
E6A High Mount Stop and Cargo Lamp
KR3 Horn Relay
F27UA 15A
G1
29 BN/GY
2
P13 Horn
KR63L Trailer Stop/Turn Signal Lamp Relay - Left
F73UA 10A
X4 G3
Z82-UET
1618 YE
X1 G
KR63R Trailer Stop/Turn Signal Lamp Relay - Right
F81UA 10A
H3
Z82-UET
1619 GN
D
X88B Tow Vehicle Electrical Receptacle

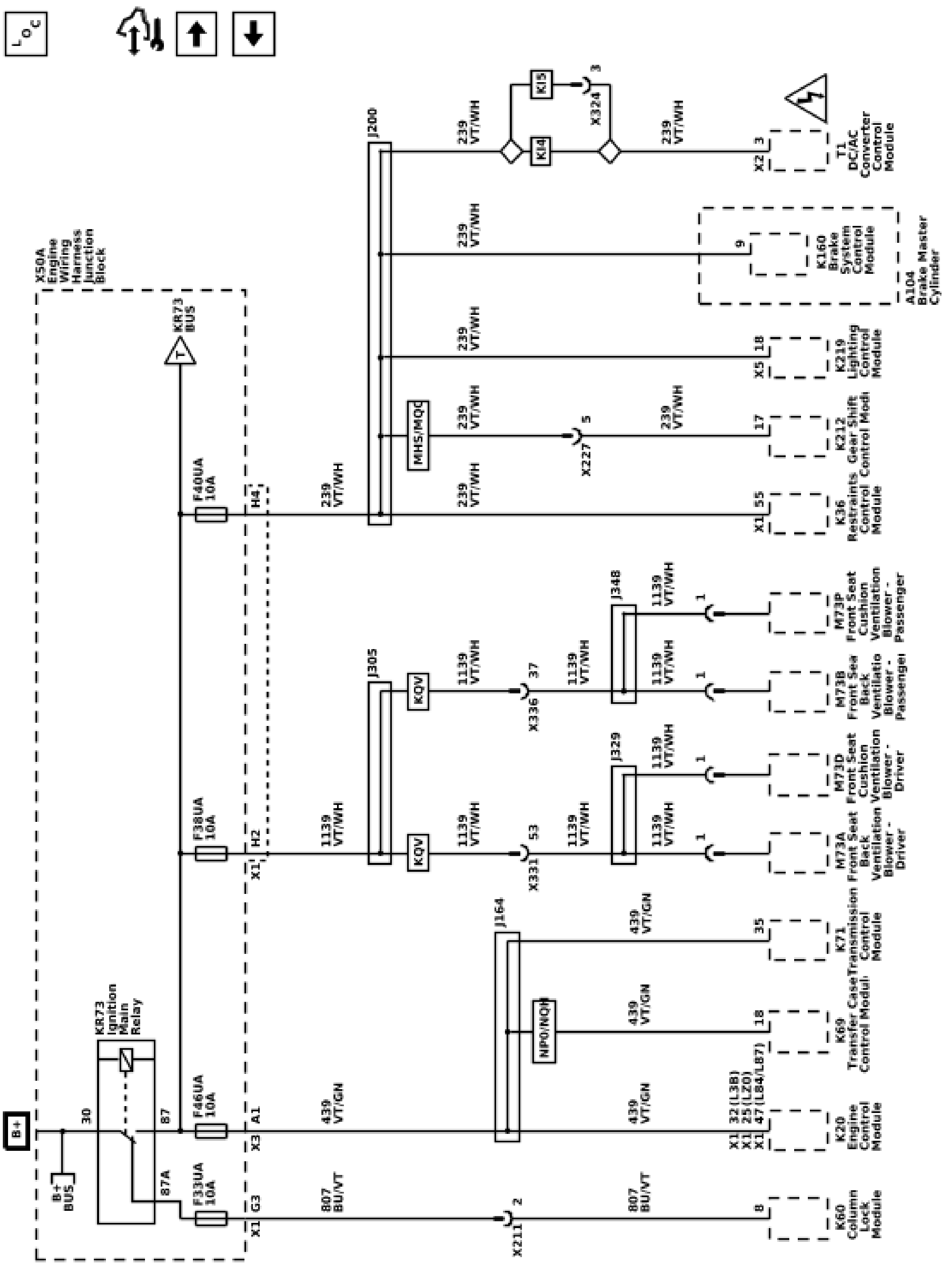
Power Distribution Schematics (F28UA, F41UA, F45UA, F57UA, F68UA, and F79UA Fuses)


X50A Engine Wiring Harness Junction Block
B+
B+ BUS
KR53 Parking Lamp Relay
30
87
KR203 Front Drive Axle Actuator Relay
30
86
87
F28UA 15A
F41UA 20A
F45UA 10A
F57UA 10A
F68UA 40A
F79UA 10A
X2 G3
X4 A3
X3 A6
X4 B4
F1
X3 F5
DP0/DQS
Z82-UET
NP0/NQH
L20
L84/L87/L20
UET-UKC-UKV
(UKC/UKV) +UET
(UKC/UKV) -UET
J132
J400
J906
4246 BN/GN
2109 BN
8016 GN
6940 RD/GN
2040 RD/WH
2040 BK
6040 RD/BU
X500 30
X600 31
13
X1 F
X415 3
X950 1
X404 1
1
2
8
A9A Outside Rearview Mirror - Driver
A9B Outside Rearview Mirror - Passenger
X88B Tow Vehicle Electrical Receptacle
M26 Front Drive Axle Actuator
B218L Side Obstacle Detection Control Module - Left
B218R Side Obstacle Detection Control Module - Right
K214 Trailer Tire Pressure Indicator Module
K115 Reductant Control Module
G8 Engine Coolant Pump - Auxiliary

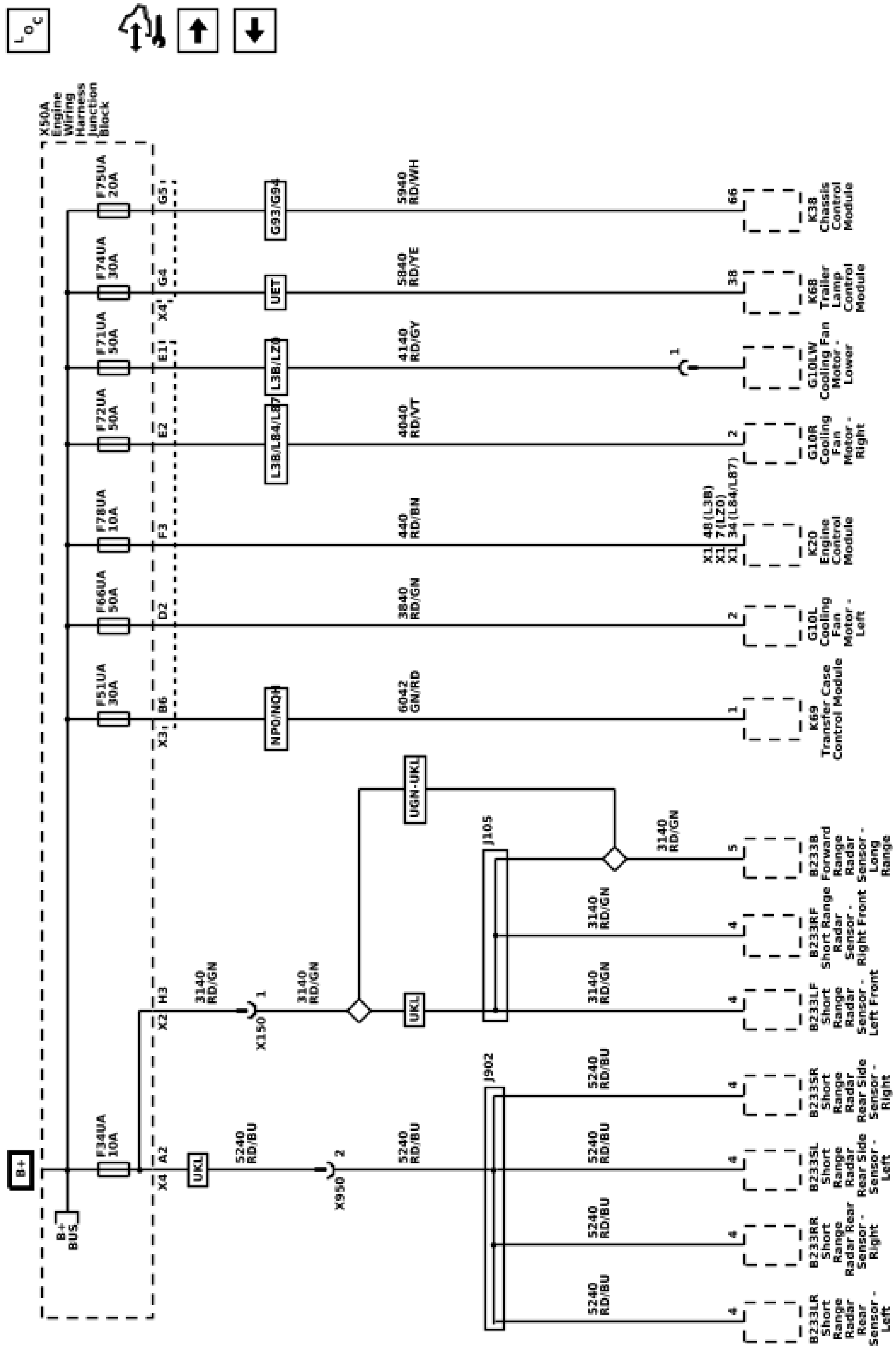
6847067

Power Distribution Schematics (F33UA, F38UA, F40UA, and F46UA Fuses)

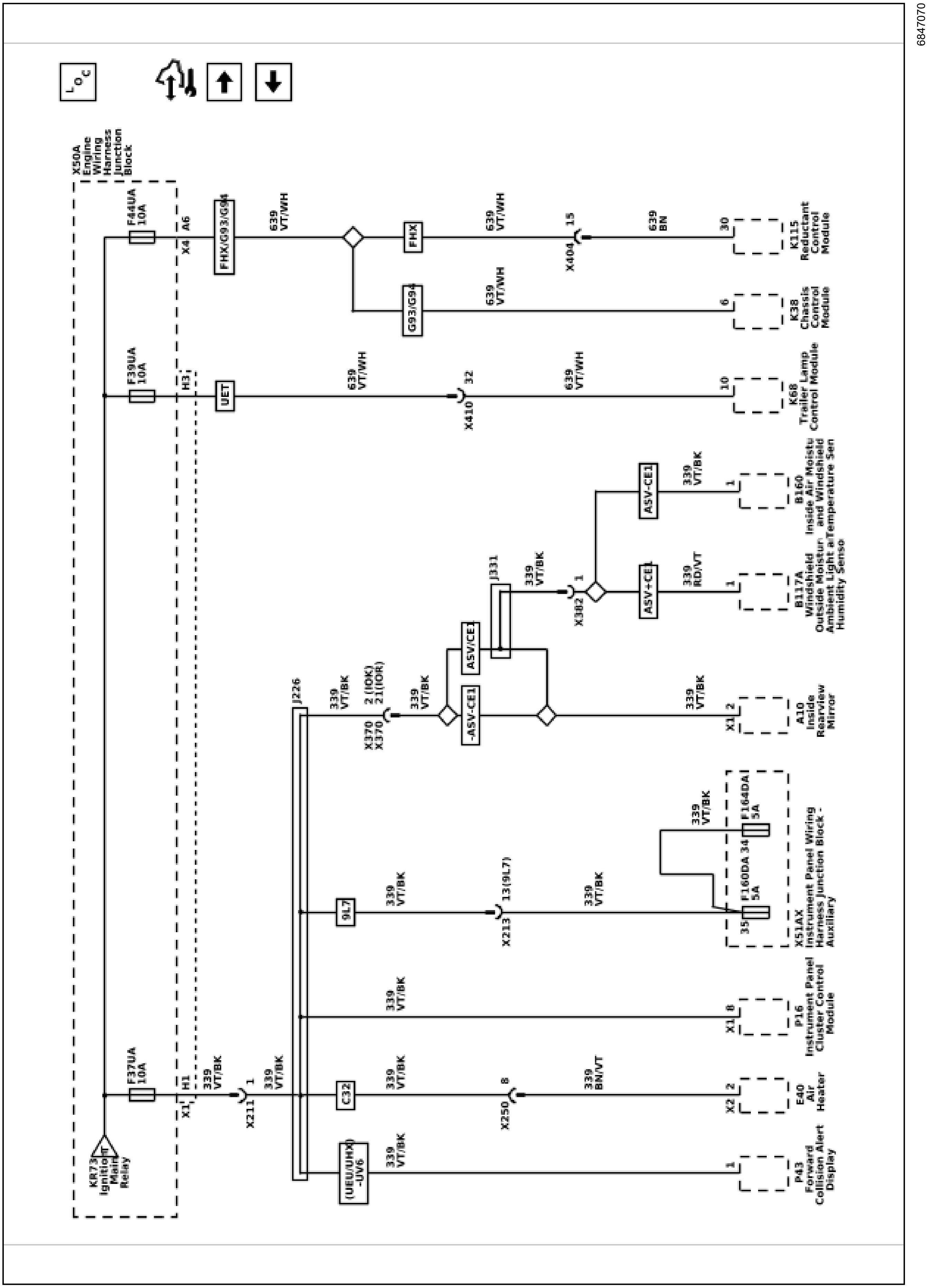
6847068


X50A Engine Wiring Harness Junction Block
KR73 BUS
B+
B+ BUS
30
87
87A
KR73 Ignition Main Relay
F46UA 10A
F33UA 10A
F38UA 10A
F40UA 10A
X1 G3
X3 A1
X1 H2
H4
807 BU/VT
439 VT/GN
1139 VT/WH
239 VT/WH
X211 2
J164
NP0/NQH
J305
KQV
X331 53
X336 37
J329
J348
1
J200
MH5/MQC
X227 5
KI4
KI5
X324 3
X1 32 (L3B)
X1 25 (LZ0)
X1 47 (L84/L87)
8
18
35
X1 55
17
X5 18
9
X2 3
K60 Column Lock Module
K20 Engine Control Module
K69 Transfer Case Control Module
K71 Transmission Control Module
M73A Front Seat Back Ventilation Blower - Driver
M73D Front Seat Cushion Ventilation Blower - Driver
M73B Front Seat Back Ventilation Blower - Passenger
M73P Front Seat Cushion Ventilation Blower - Passenger
K36 Restraints Control Module
K212 Gear Shift Control Module
K219 Lighting Control Module
K160 Brake System Control Module
A104 Brake Master Cylinder
T1 DC/AC Converter Control Module

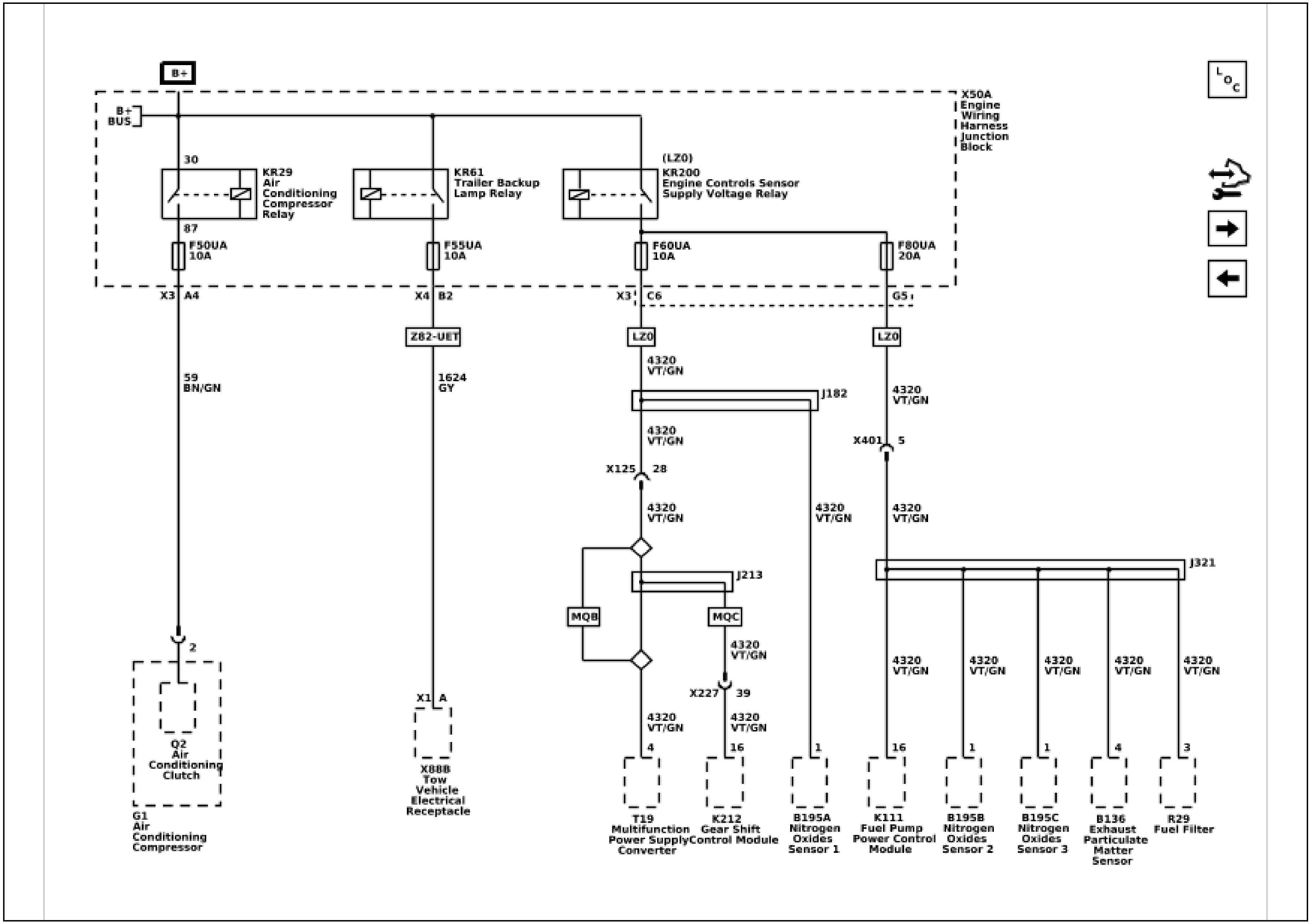
Power Distribution Schematics (F34UA, F51UA, F66UA, F71UA, F72UA, F74UA, F75UA, and F78UA Fuses)


6847069
B+
B+ BUS
X50A Engine Wiring Harness Junction Block
F34UA 10A
X4 A2
X2 H3
F51UA 30A
X3 B6
F66UA 50A
D2
F78UA 10A
F3
F72UA 50A
E2
F71UA 50A
E11
F74UA 30A
X4 G4
F75UA 20A
G5
UKL
5240 RD/BU
X950 2
3140 RD/GN
X150 1
UKL
UGN-UKL
NPO/NQH
L3B/L84/L87
L3B/LZ0
UET
G93/G94
6042 GN/RD
3840 RD/GN
440 RD/BN
4040 RD/VT
4140 RD/GY
5840 RD/YE
5940 RD/WH
J902
J105
1
K69 Transfer Case Control Module
2
G10L Cooling Fan Motor - Left
X1 48 (L3B)
X1 7 (LZ0)
X1 34 (L84/L87)
K20 Engine Control Module
2
G10R Cooling Fan Motor - Right
1
G10LW Cooling Fan Motor - Lower
38
K68 Trailer Lamp Control Module
66
K38 Chassis Control Module
4
B233LR Short Range Radar Rear Sensor - Left
4
B233RR Short Range Radar Rear Sensor - Right
4
B233SL Short Range Radar Rear Side Sensor - Left
4
B233SR Short Range Radar Rear Side Sensor - Right
4
B233LF Short Range Radar Sensor - Left Front
4
B233RF Short Range Radar Sensor - Right Front
5
B233B Forward Range Radar Sensor - Long Range

Power Distribution Schematics (F37UA, F39UA, and F44UA Fuses)

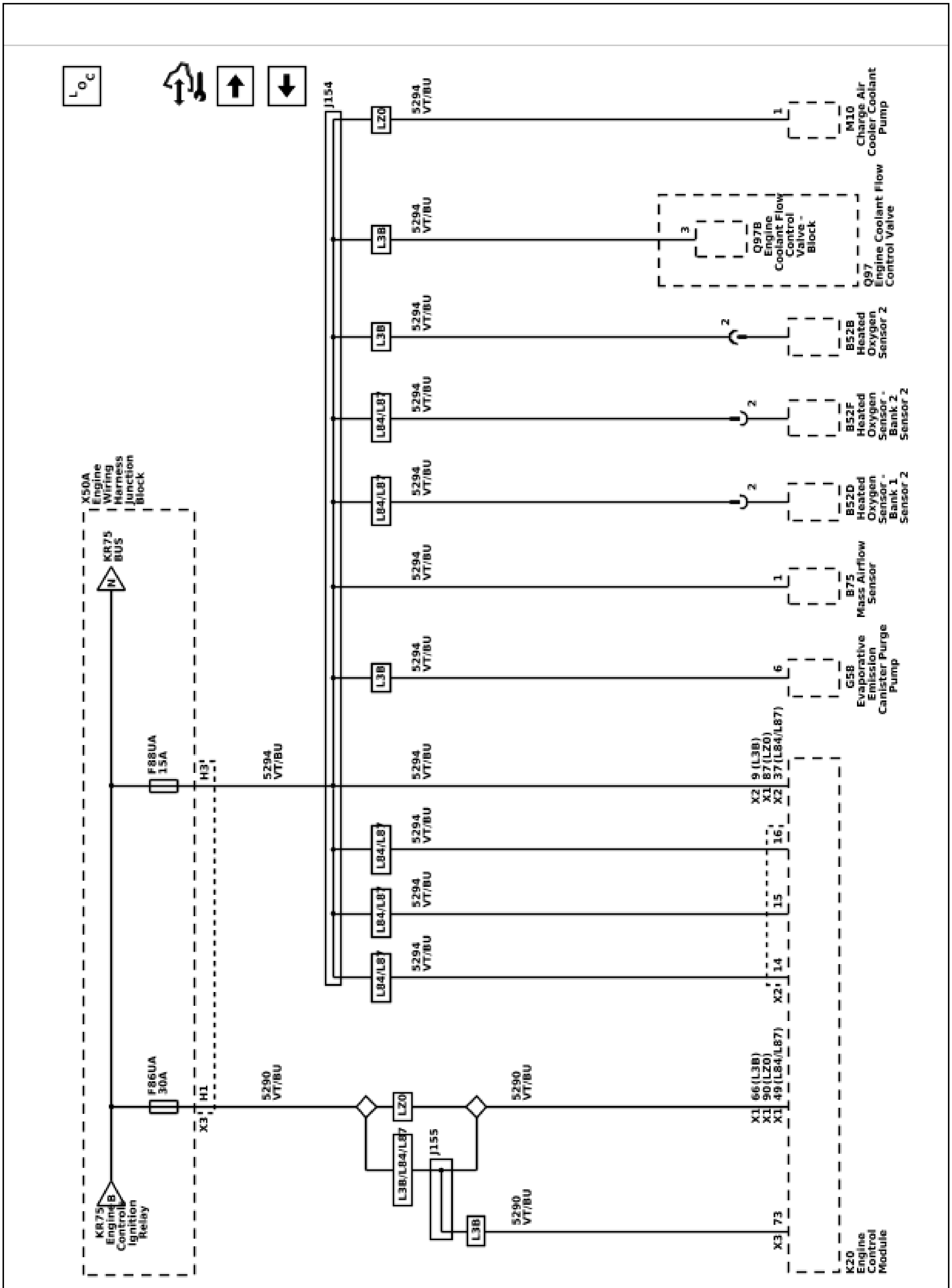

6847070
X50A Engine Wiring Harness Junction Block
F44UA 10A
A6
X4
FHX/G93/G94
639 VT/WH
FHX
639 VT/WH
15
X404
639 BN
30
K115 Reductant Control Module
G93/G94
639 VT/WH
6
K38 Chassis Control Module
F39UA 10A
H3
UET
639 VT/WH
32
X410
639 VT/WH
10
K68 Trailer Lamp Control Module
ASV-CE1
339 VT/BK
1
B160 Inside Air Moistu and Windshield Temperature Sen
J331
339 VT/BK
1
X382
ASV+CE1
339 RD/VT
1
B117A Windshield Outside Moistur Ambient Light a Humidity Senso
J226
339 VT/BK
2 (IOK)
21 (IOR)
X370
X370
339 VT/BK
ASV/CE1
-ASV-CE1
339 VT/BK
X1 2
A10 Inside Rearview Mirror
339 VT/BK
F164DA 5A
34
F160DA 5A
35
X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary
9L7
339 VT/BK
13 (9L7)
X213
339 VT/BK
339 VT/BK
X1 8
P16 Instrument Panel Cluster Control Module
F37UA 10A
H1
X1
339 VT/BK
1
X211
339 VT/BK
C32
339 VT/BK
8
X250
339 BN/VT
X2 2
E40 Air Heater
KR73 Ignition Main Relay
(UEU/UHX) -UV6
339 VT/BK
1
P43 Forward Collision Alert Display

Power Distribution Schematics (F50UA, F55UA, F60UA, and F80UA Fuses)

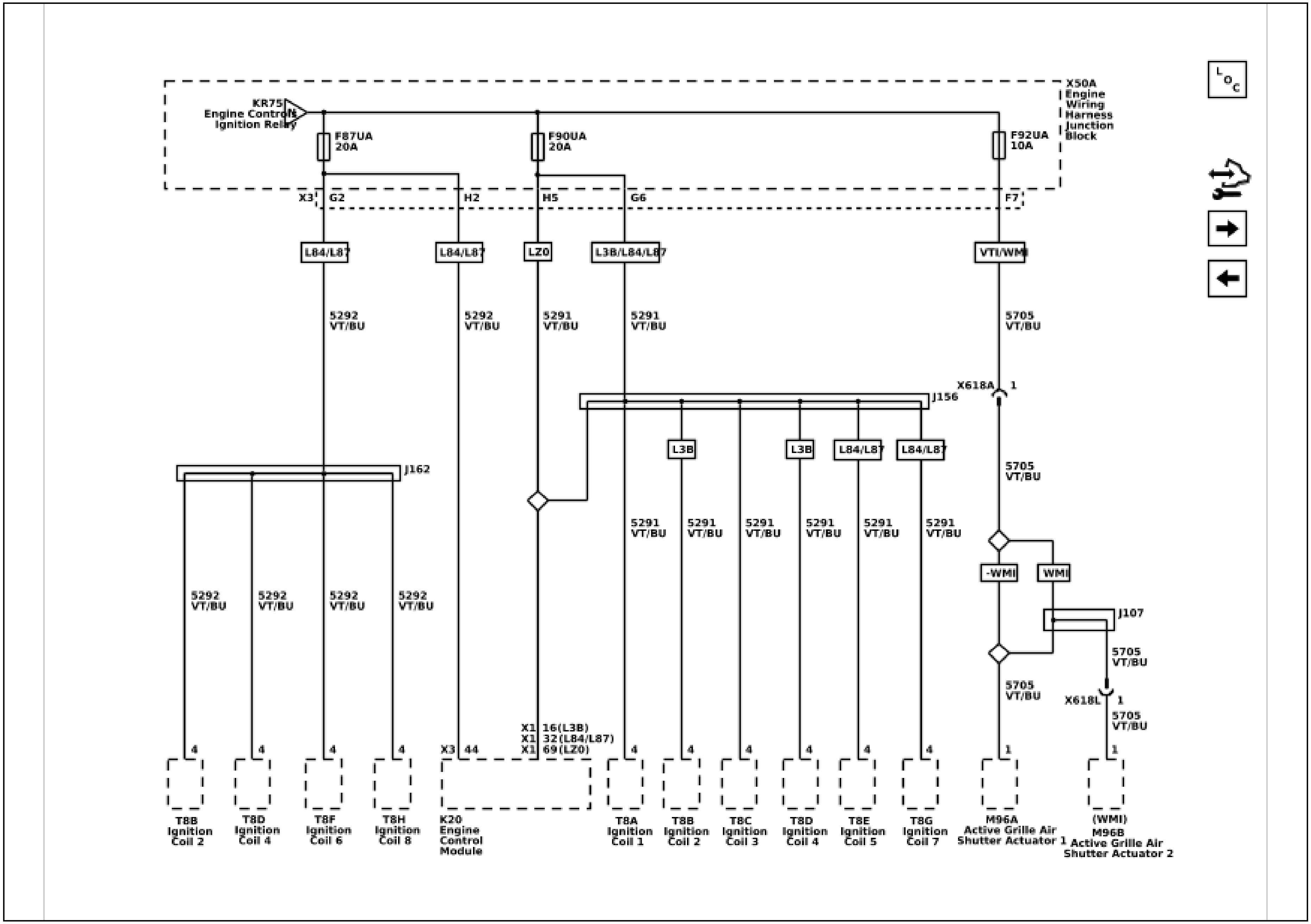

B+
B+ BUS
X50A Engine Wiring Harness Junction Block
30
KR29 Air Conditioning Compressor Relay
87
F50UA 10A
X3 A4
59 BN/GN
2
Q2 Air Conditioning Clutch
G1 Air Conditioning Compressor
KR61 Trailer Backup Lamp Relay
F55UA 10A
X4 B2
Z82-UET
1624 GY
X1 A
X88B Tow Vehicle Electrical Receptacle
(LZ0)
KR200 Engine Controls Sensor Supply Voltage Relay
F60UA 10A
X3 C6
LZ0
4320 VT/GN
J182
X125 28
MQB
J213
MQC
X227 39
4
T19 Multifunction Power Supply Converter
16
K212 Gear Shift Control Module
1
B195A Nitrogen Oxides Sensor 1
F80UA 20A
G5
X401 5
J321
K111 Fuel Pump Power Control Module
B195B Nitrogen Oxides Sensor 2
B195C Nitrogen Oxides Sensor 3
B136 Exhaust Particulate Matter Sensor
3
R29 Fuel Filter

6847071

Power Distribution Schematics (F86UA and F88UA Fuses)

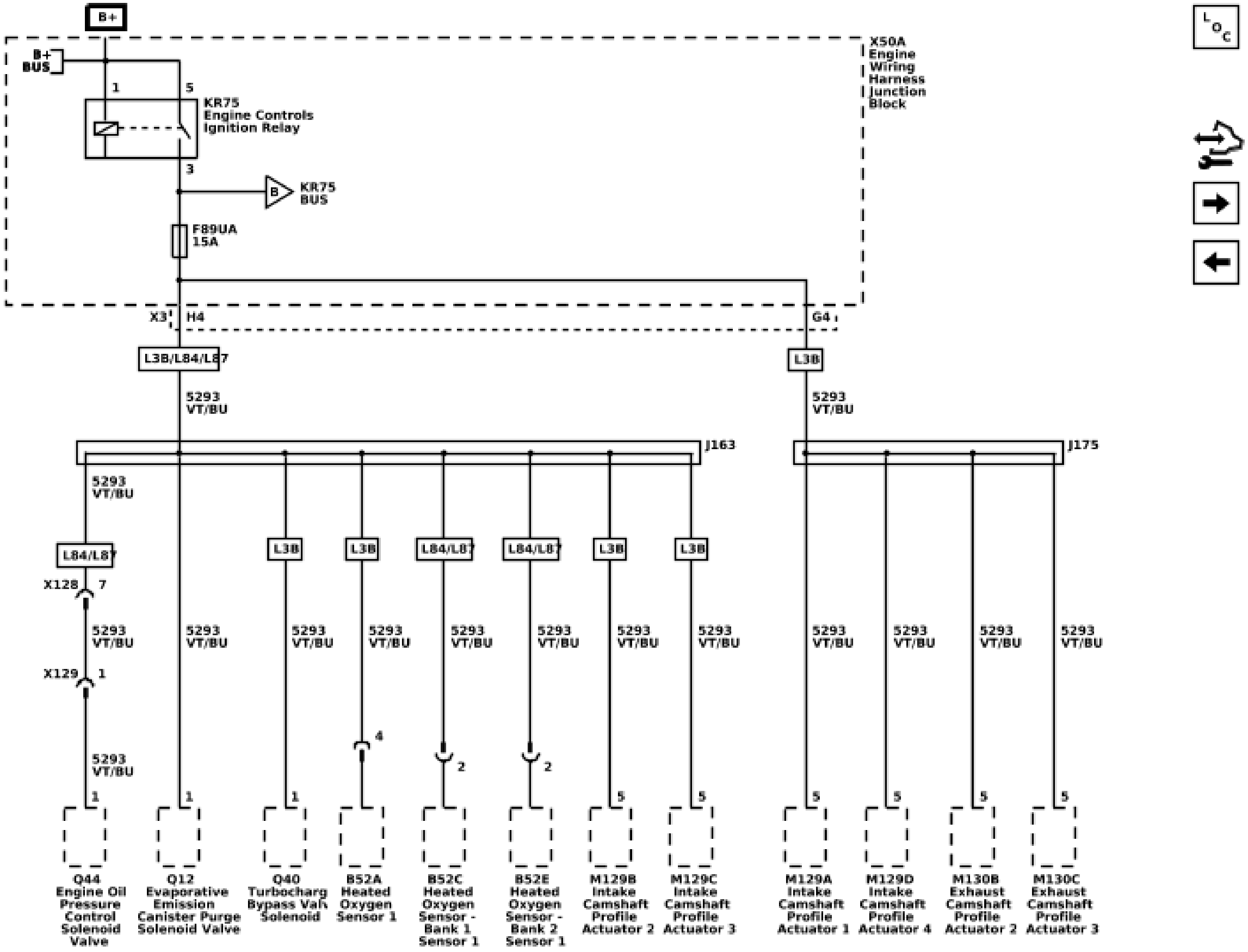

6847072
J154
KR75 Engine Control Ignition Relay
KR75 BUS
X50A Engine Wiring Harness Junction Block
F88UA 15A
F86UA 30A
H3
H1
X3
5294 VT/BU
5290 VT/BU
LZ0
L3B
L84/L87
L3B/L84/L87
J155
M10 Charge Air Cooler Coolant Pump
1
3
Q97B Engine Coolant Flow Control Valve - Block
Q97 Engine Coolant Flow Control Valve
2
B52B Heated Oxygen Sensor 2
B52F Heated Oxygen Sensor - Bank 2 Sensor 2
B52D Heated Oxygen Sensor - Bank 1 Sensor 2
B75 Mass Airflow Sensor
6
G58 Evaporative Emission Canister Purge Pump
X2 9 (L3B)
X1 87 (LZ0)
X2 37 (L84/L87)
16
15
X2 14
X1 66 (L3B)
X1 90 (LZ0)
X1 49 (L84/L87)
X3 73
K20 Engine Control Module

Power Distribution Schematics (F87UA, F90UA, and F92UA Fuses)


X50A Engine Wiring Harness Junction Block
KR75 Engine Control Ignition Relay
F87UA 20A
F90UA 20A
F92UA 10A
X3
G2
H2
H5
G6
F7
L84/L87
L84/L87
LZ0
L3B/L84/L87
VTI/WMI
5292 VT/BU
5291 VT/BU
5705 VT/BU
X618A 1
J156
J162
L3B
L3B
L84/L87
L84/L87
-WMI
WMI
J107
X618L 1
X1 16(L3B)
X1 32(L84/L87)
X1 69(LZ0)
X3 44
4
1
T8B Ignition Coil 2
T8D Ignition Coil 4
T8F Ignition Coil 6
T8H Ignition Coil 8
K20 Engine Control Module
T8A Ignition Coil 1
T8B Ignition Coil 2
T8C Ignition Coil 3
T8D Ignition Coil 4
T8E Ignition Coil 5
T8G Ignition Coil 7
M96A Active Grille Air Shutter Actuator 1
(WMI) M96B Active Grille Air Shutter Actuator 2

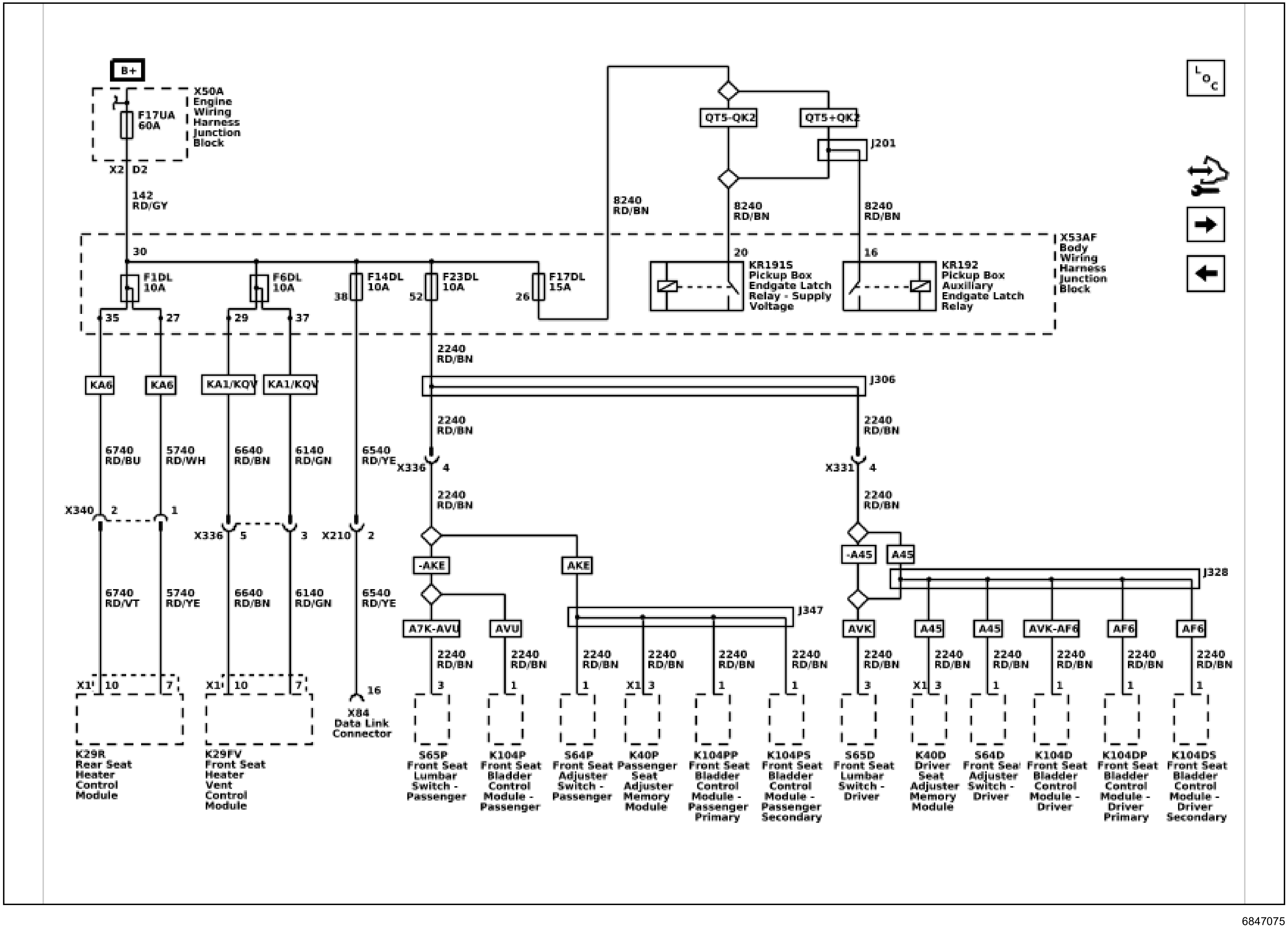
6847073

Power Distribution Schematics (F89UA Fuse)

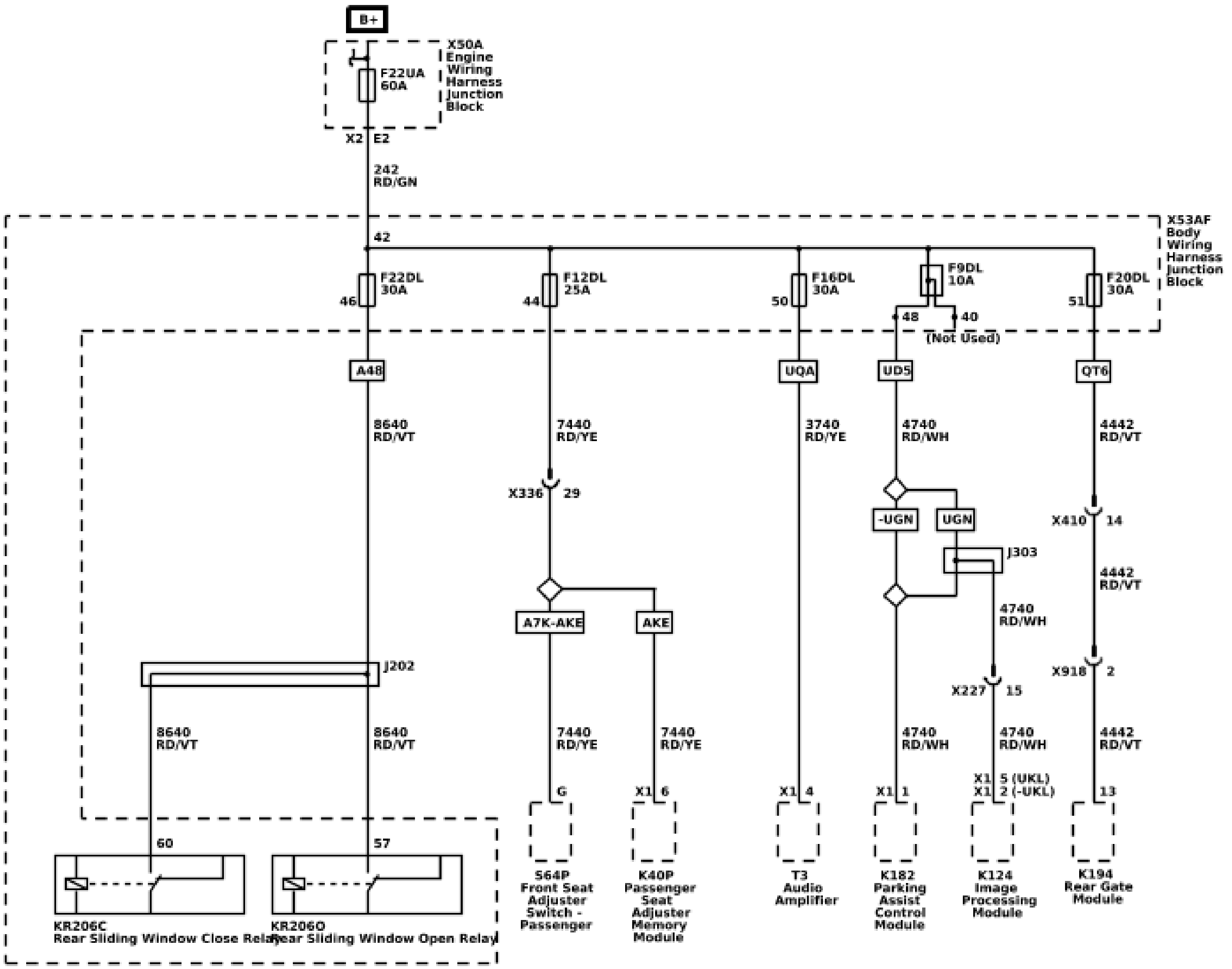

B+
B+ BUS
X50A Engine Wiring Harness Junction Block
1
5
KR75 Engine Controls Ignition Relay
3
B
KR75 BUS
F89UA 15A
X3
H4
G4
L3B/L84/L87
L3B
5293 VT/BU
J163
J175
L84/L87
X128
7
X129
1
L3B
L84/L87
4
2
5
Q44 Engine Oil Pressure Control Solenoid Valve
Q12 Evaporative Emission Canister Purge Solenoid Valve
Q40 Turbocharg Bypass Valv Solenoid
B52A Heated Oxygen Sensor 1
B52C Heated Oxygen Sensor - Bank 1 Sensor 1
B52E Heated Oxygen Sensor - Bank 2 Sensor 1
M129B Intake Camshaft Profile Actuator 2
M129C Intake Camshaft Profile Actuator 3
M129A Intake Camshaft Profile Actuator 1
M129D Intake Camshaft Profile Actuator 4
M130B Exhaust Camshaft Profile Actuator 2
M130C Exhaust Camshaft Profile Actuator 3

6847074

Power Distribution Schematics (F1DL, F6DL, F14DL, F17DL, and F23DL Fuses)

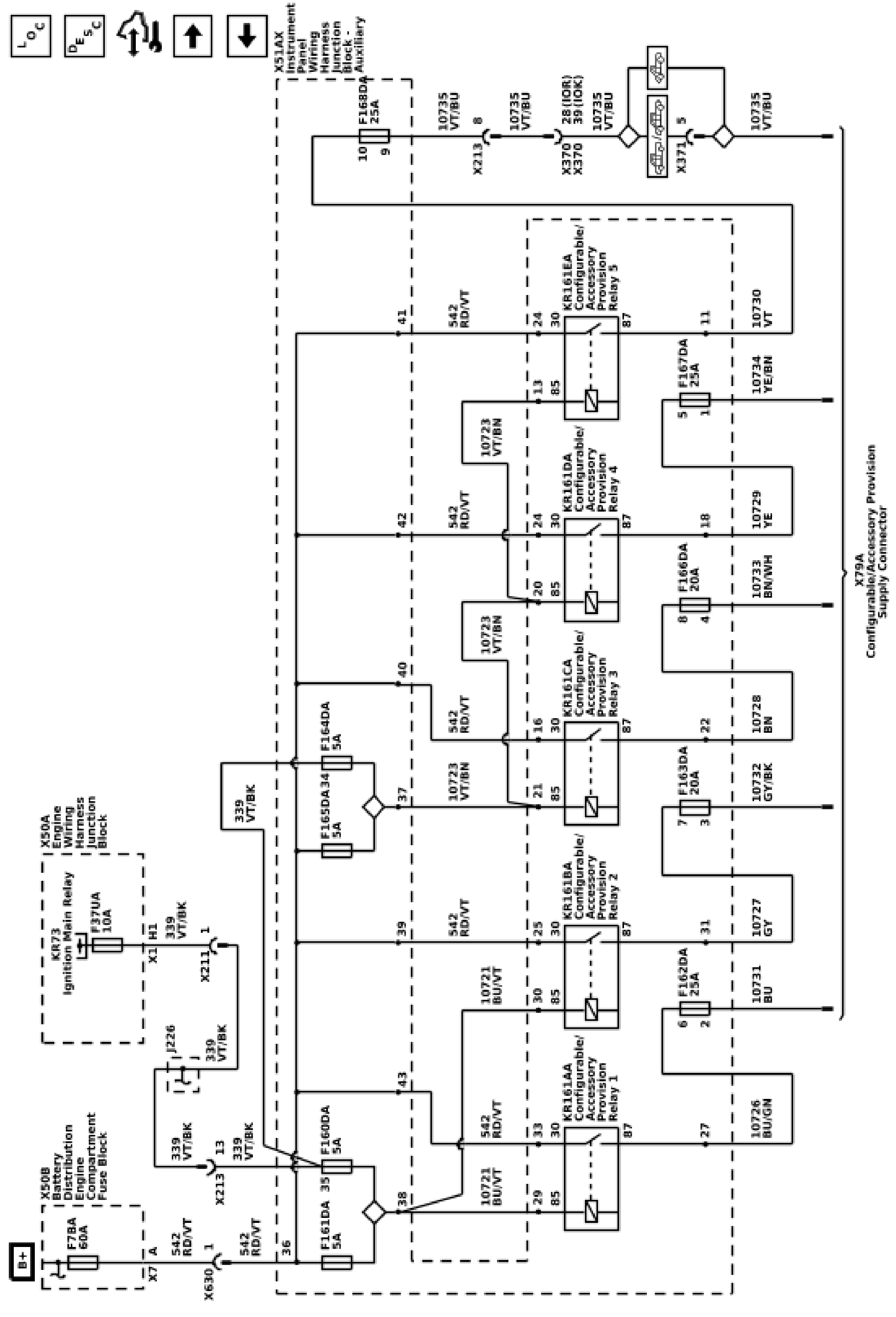

B+
X50A Engine Wiring Harness Junction Block
F17UA 60A
X2 D2
142 RD/GY
30
F1DL 10A
F6DL 10A
F14DL 10A
F23DL 10A
F17DL 15A
35
27
29
37
38
52
26
X53AF Body Wiring Harness Junction Block
8240 RD/BN
QT5-QK2
QT5+QK2
J201
20
16
KR191S Pickup Box Endgate Latch Relay - Supply Voltage
KR192 Pickup Box Auxiliary Endgate Latch Relay
KA6
KA6
KA1/KQV
KA1/KQV
6740 RD/BU
5740 RD/WH
6640 RD/BN
6140 RD/GN
6540 RD/YE
2240 RD/BN
J306
X340 2
1
X336 5
3
X210 2
X336 4
X331 4
6740 RD/VT
5740 RD/YE
6640 RD/BN
6140 RD/GN
6540 RD/YE
-AKE
AKE
A7K-AVU
AVU
J347
-A45
A45
J328
AVK
A45
A45
AVK-AF6
AF6
AF6
X1 10
7
X1 10
7
16
3
1
1
X1 3
1
1
3
X1 3
1
1
1
1
K29R Rear Seat Heater Control Module
K29FV Front Seat Heater Vent Control Module
X84 Data Link Connector
S65P Front Seat Lumbar Switch - Passenger
K104P Front Seat Bladder Control Module - Passenger
S64P Front Seat Adjuster Switch - Passenger
K40P Passenger Seat Adjuster Memory Module
K104PP Front Seat Bladder Control Module - Passenger Primary
K104PS Front Seat Bladder Control Module - Passenger Secondary
S65D Front Seat Lumbar Switch - Driver
K40D Driver Seat Adjuster Memory Module
S64D Front Seat Adjuster Switch - Driver
K104D Front Seat Bladder Control Module - Driver
K104DP Front Seat Bladder Control Module - Driver Primary
K104DS Front Seat Bladder Control Module - Driver Secondary
L O C
6847075

Power Distribution Schematics (F9DL, F12DL, F16DL, F20DL, and F22DL Fuses)

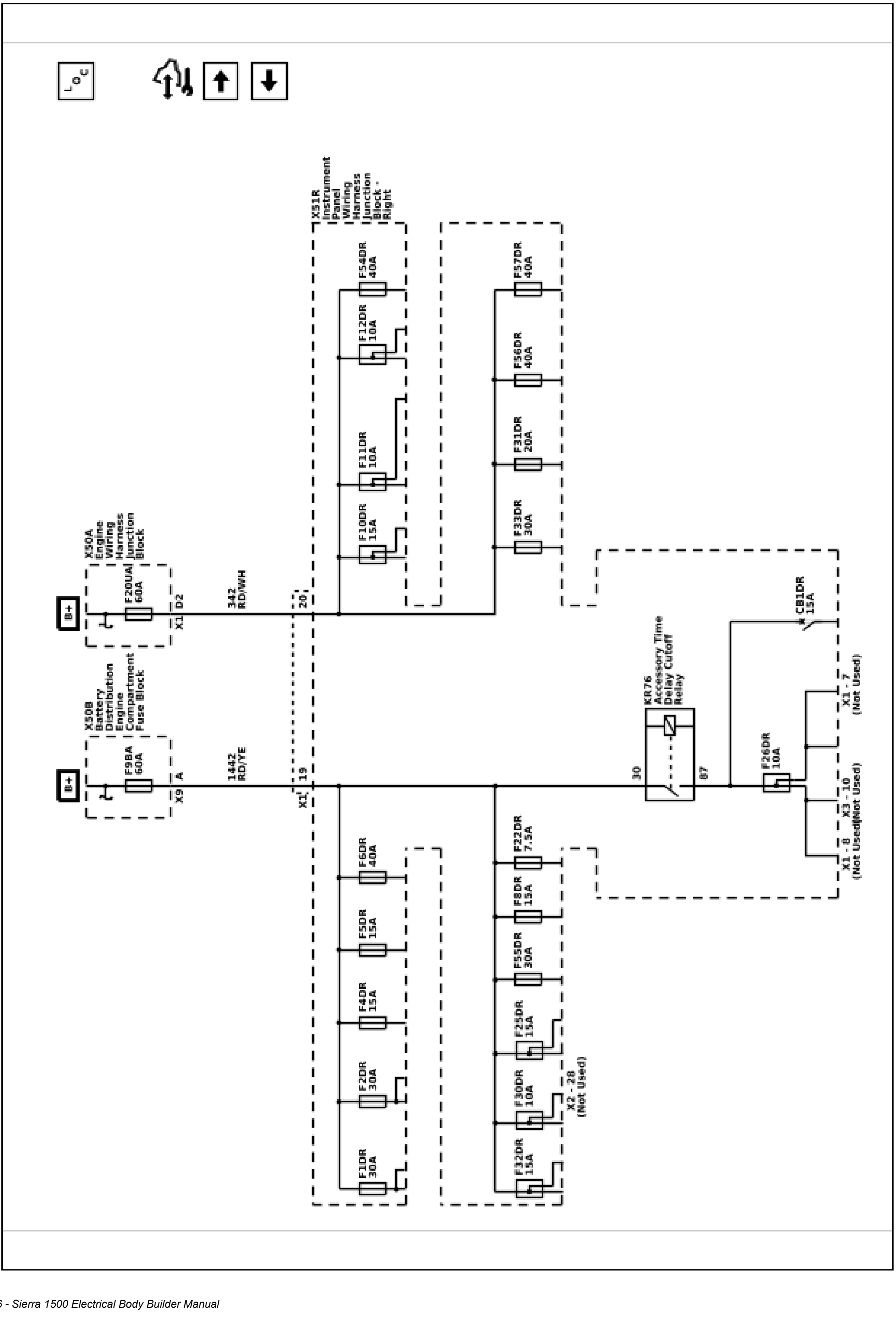

B+
F22UA
60A
X50A
Engine
Wiring
Harness
Junction
Block
X2 E2
242
RD/GN
42
X53AF
Body
Wiring
Harness
Junction
Block
F22DL
30A
46
F12DL
25A
44
F16DL
30A
50
F9DL
10A
48
40
(Not Used)
F20DL
30A
51
A48
UQA
UD5
QT6
8640
RD/VT
7440
RD/YE
3740
RD/YE
4740
RD/WH
4442
RD/VT
X336 29
-UGN
UGN
J303
X410 14
4442
RD/VT
A7K-AKE
AKE
4740
RD/WH
J202
X918 2
X227 15
8640
RD/VT
8640
RD/VT
7440
RD/YE
7440
RD/YE
4740
RD/WH
4740
RD/WH
4442
RD/VT
G
X1 6
X1 4
X1 1
X1 5 (UKL)
X1 2 (-UKL)
13
60
57
S64P
Front Seat
Adjuster
Switch -
Passenger
K40P
Passenger
Seat
Adjuster
Memory
Module
T3
Audio
Amplifier
K182
Parking
Assist
Control
Module
K124
Image
Processing
Module
K194
Rear Gate
Module
KR206C
Rear Sliding Window Close Relay
KR206O
Rear Sliding Window Open Relay

6847076

Power Distribution Schematics (Instrument Panel Wiring Harness Junction Block - Auxiliary (9L7))

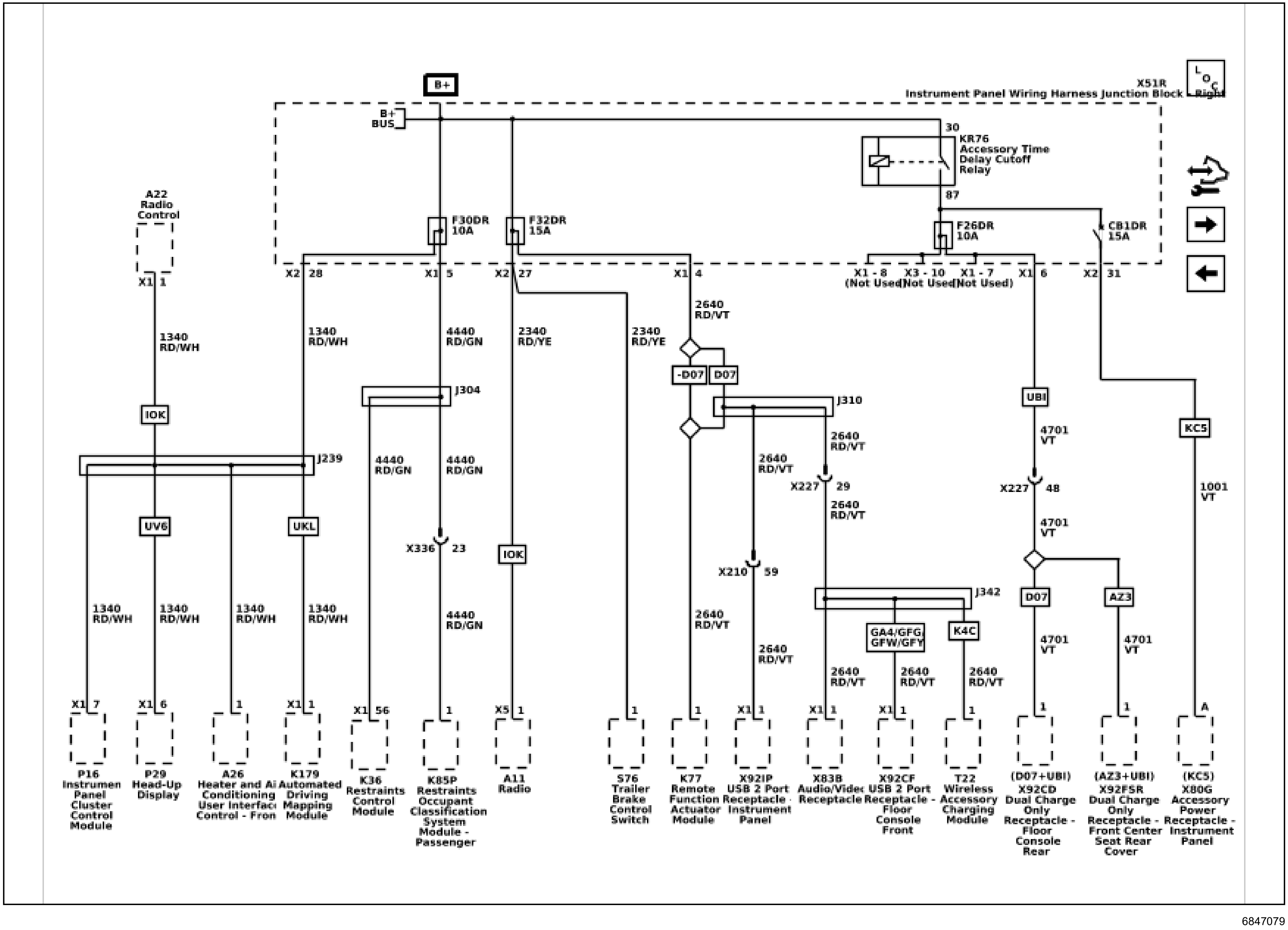

B+
X50B Battery Distribution Engine Compartment Fuse Block
F7BA 60A
X7 A
542 RD/VT
X630 1
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F37UA 10A
X1 H1
339 VT/BK
X211 1
J226
X213 13
X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary
36
35
34
F161DA 5A
F160DA 5A
F165DA 5A
F164DA 5A
38
37
43
39
40
42
41
10721 BU/VT
10723 VT/BN
KR161AA Configurable/ Accessory Provision Relay 1
KR161BA Configurable/ Accessory Provision Relay 2
KR161CA Configurable/ Accessory Provision Relay 3
KR161DA Configurable/ Accessory Provision Relay 4
KR161EA Configurable/ Accessory Provision Relay 5
29 85
33 30
30 85
25 30
21 85
16 30
20 85
24 30
13 85
24 30
87
27
31
22
18
11
F162DA 25A
F163DA 20A
F166DA 20A
F167DA 25A
F168DA 25A
6 2
7 3
8 4
5 1
10 9
10726 BU/GN
10731 BU
10727 GY
10732 GY/BK
10728 BN
10733 BN/WH
10729 YE
10734 YE/BN
10730 VT
10735 VT/BU
X213 8
X370 28 (IOR)
X370 39 (IOK)
X371 5
X79A Configurable/Accessory Provision Supply Connector
6847077

Power Distribution Schematics (Instrument Panel Wiring Harness Junction Block - Right - B+ Bus)

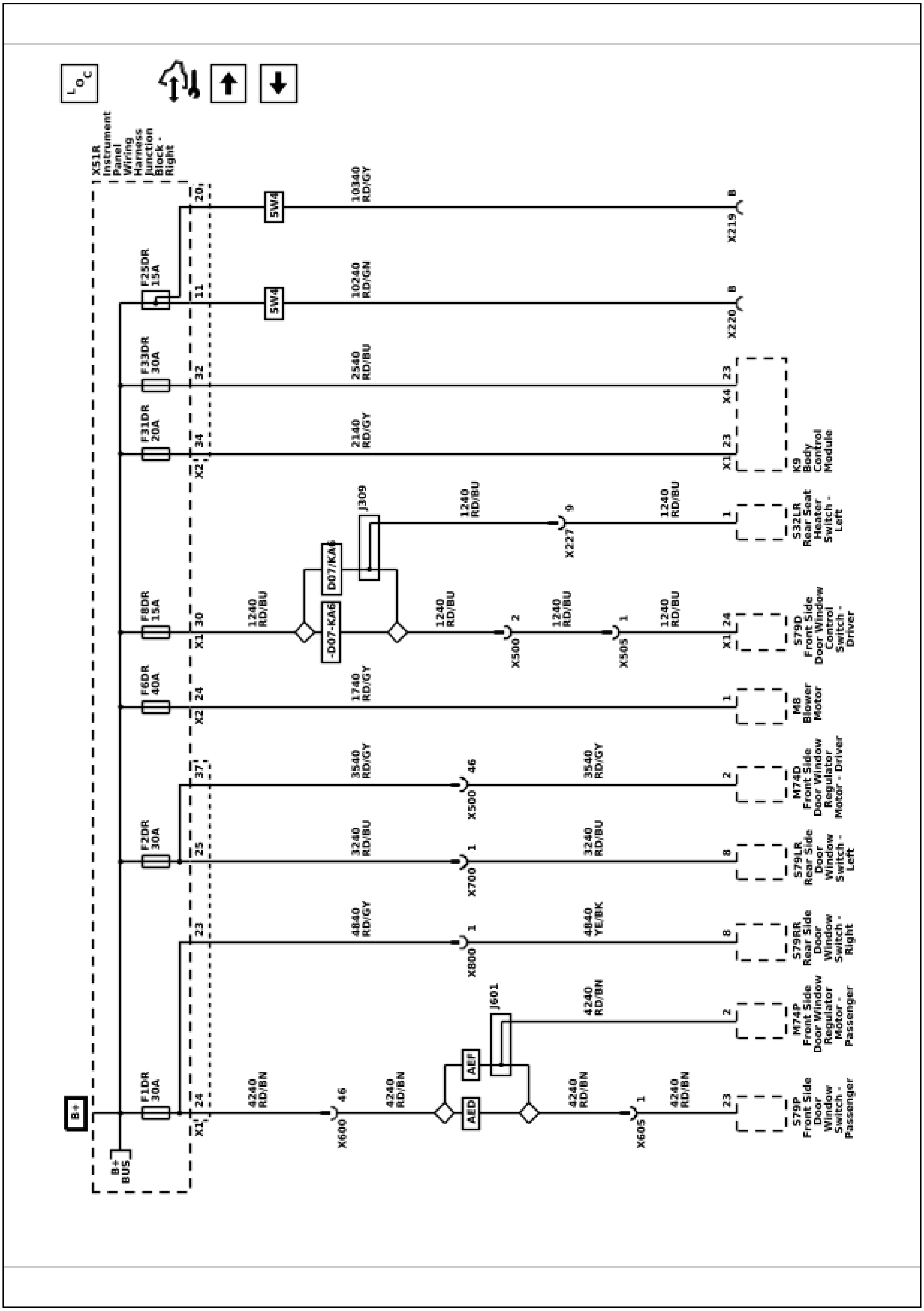

B+
X50A Engine Wiring Harness Junction Block
F20UA 60A
X1 D2
342 RD/WH
B+
X50B Battery Distribution Engine Compartment Fuse Block
F9BA 60A
X9 A
1442 RD/YE
X1 20
X1 19
X51R Instrument Panel Wiring Harness Junction Block - Right
F54DR 40A
F12DR 10A
F11DR 10A
F10DR 15A
F57DR 40A
F56DR 40A
F31DR 20A
F33DR 30A
F6DR 40A
F5DR 15A
F4DR 15A
F2DR 30A
F1DR 30A
F22DR 7.5A
F8DR 15A
F55DR 30A
F25DR 15A
F30DR 10A
F32DR 15A
X2 - 28 (Not Used)
KR76 Accessory Time Delay Cutoff Relay
30
87
CB1DR 15A
F26DR 10A
X1 - 7 (Not Used)
X3 - 10 (Not Used)
X1 - 8 (Not Used)

6847078

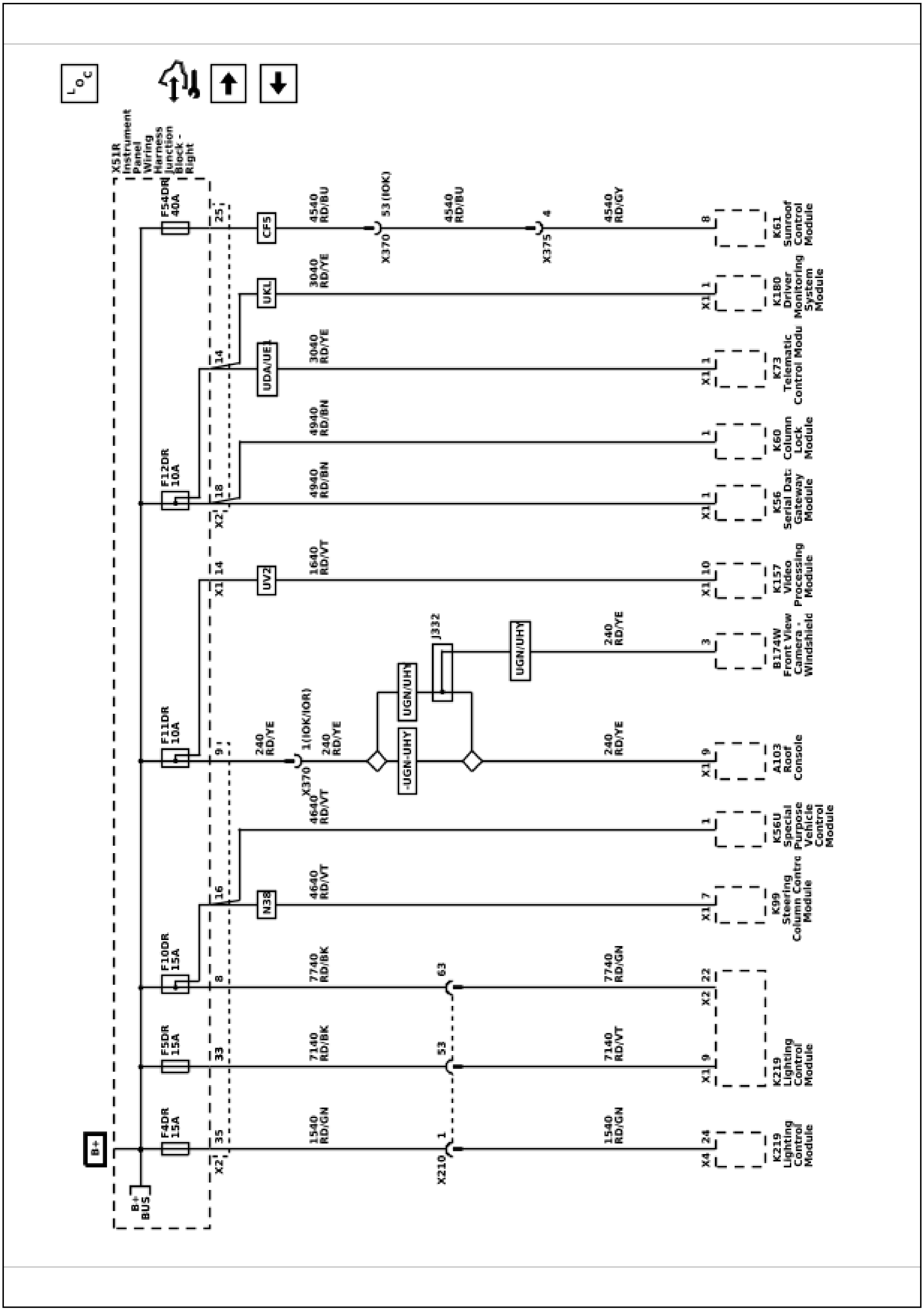
Power Distribution Schematics (CB1DR Circuit Breaker, F26DR, F30DR, and F32DR Fuses)


X51R
Instrument Panel Wiring Harness Junction Block - Right
B+
B+ BUS
30
KR76 Accessory Time Delay Cutoff Relay
87
F30DR 10A
F32DR 15A
F26DR 10A
CB1DR 15A
A22 Radio Control
X1 1
X2 28
X1 5
X2 27
X1 4
X1 - 8 (Not Used)
X3 - 10 (Not Used)
X1 - 7 (Not Used)
X1 6
X2 31
1340 RD/WH
4440 RD/GN
2340 RD/YE
2640 RD/VT
4701 VT
1001 VT
IOK
-D07
D07
J304
J310
J239
J342
UBI
KC5
UV6
UKL
X336 23
X227 29
X227 48
X210 59
AZ3
GA4/GFG/GFW/GFY
K4C
X1 7
X1 6
1
X1 1
X1 56
X5 1
A
P16 Instrument Panel Cluster Control Module
P29 Head-Up Display
A26 Heater and Air Conditioning User Interface Control - Front
K179 Automated Driving Mapping Module
K36 Restraints Control Module
K85P Restraints Occupant Classification System Module - Passenger
A11 Radio
S76 Trailer Brake Control Switch
K77 Remote Function Actuator Module
X92IP USB 2 Port Receptacle - Instrument Panel
X83B Audio/Video Receptacle
X92CF USB 2 Port Receptacle - Floor Console Front
T22 Wireless Accessory Charging Module
(D07+UBI) X92CD Dual Charge Only Receptacle - Floor Console Rear
(AZ3+UBI) X92FSR Dual Charge Only Receptacle - Front Center Seat Rear Cover
(KC5) X80G Accessory Power Receptacle - Instrument Panel
6847079

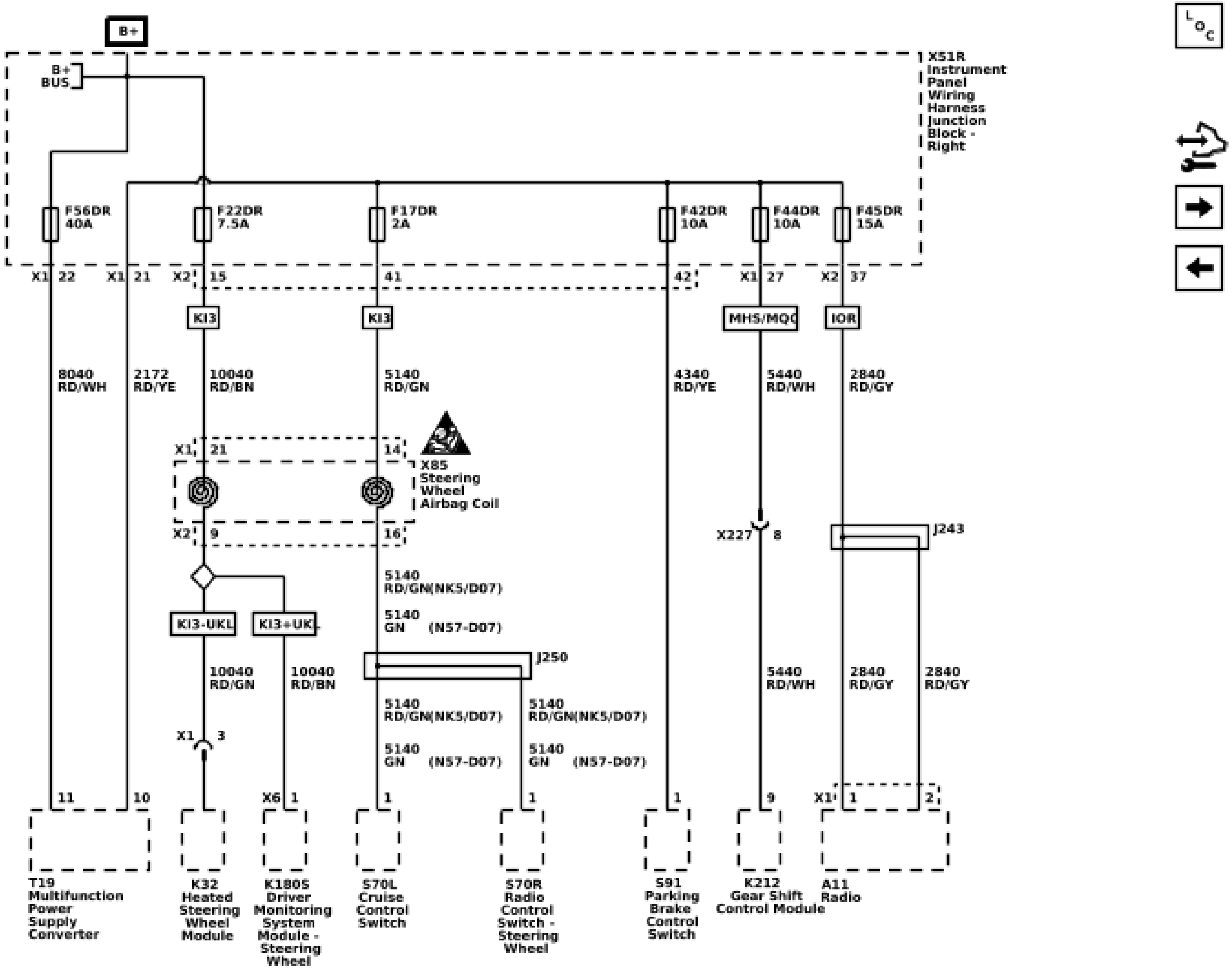
Power Distribution Schematics (F1DR, F2DR, F6DR, F8DR, F25DR, F31DR, and F33DR Fuses)


6847080
B+
B+ BUS
X51R Instrument Panel Wiring Harness Junction Block - Right
F1DR 30A
F2DR 30A
F6DR 40A
F8DR 15A
F31DR 20A
F33DR 30A
F25DR 15A
X1 24
23
25
37
X2 24
X1 30
X2 34
32
11
20
4240 RD/BN
X600 46
AED
AEF
J601
X605 1
23
S79P Front Side Door Window Switch - Passenger
4240 RD/BN
2
M74P Front Side Door Window Regulator Motor - Passenger
4840 RD/GY
X800 1
4840 YE/BK
8
S79RR Rear Side Door Window Switch - Right
3240 RD/BU
X700 1
8
S79LR Rear Side Door Window Switch - Left
3540 RD/GY
X500 46
2
M74D Front Side Door Window Regulator Motor - Driver
1740 RD/GY
1
M8 Blower Motor
1240 RD/BU
-D07-KA6
D07/KA6
J309
X500 2
X505 1
X1 24
S79D Front Side Door Window Control Switch - Driver
X227 9
1
S32LR Rear Seat Heater Switch - Left
2140 RD/GY
X1 23
2540 RD/BU
X4 23
K9 Body Control Module
10240 RD/GN
5W4
X220 B
10340 RD/GY
5W4
X219 B

Power Distribution Schematics (F4DR, F5DR, F10DR, F11DR, F12DR, and F54DR Fuses)

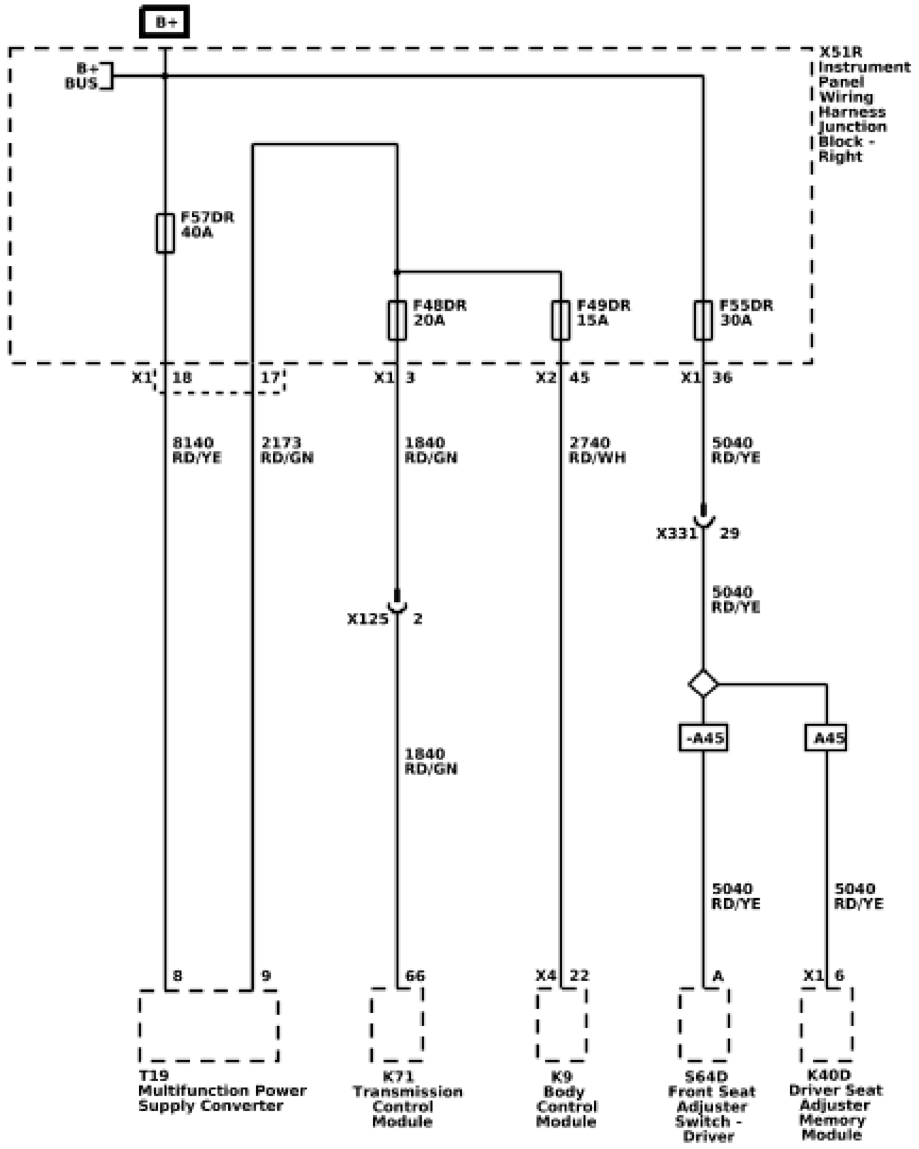

6847081
B+
B+ BUS
X51R Instrument Panel Wiring Harness Junction Block - Right
F4DR 15A
F5DR 15A
F10DR 15A
F11DR 10A
F12DR 10A
F54DR 40A
X2 35
33
8
16
X1 14
9
X2 18
14
25
1540 RD/GN
X210 1
1540 RD/GN
X4 24
K219 Lighting Control Module
7140 RD/BK
53
7140 RD/VT
X1 9
7740 RD/BK
63
7740 RD/GN
X2 22
K219 Lighting Control Module
N38
4640 RD/VT
X1 7
K99 Steering Column Control Module
4640 RD/VT
1
K56U Special Purpose Vehicle Control Module
240 RD/YE
X370 1(IOK/IOR)
240 RD/YE
-UGN-UHY
UGN/UHY
J332
UGN/UHY
240 RD/YE
X1 9
A103 Roof Console
240 RD/YE
3
B174W Front View Camera - Windshield
UV2
1640 RD/VT
X1 10
K157 Video Processing Module
4940 RD/BN
X1 1
K56 Serial Data Gateway Module
4940 RD/BN
1
K60 Column Lock Module
UDA/UE1
3040 RD/YE
X1 1
K73 Telematic Control Module
UKL
3040 RD/YE
X1 1
K180 Driver Monitoring System Module
CF5
4540 RD/BU
X370 53 (IOK)
4540 RD/BU
X375 4
4540 RD/GY
8
K61 Sunroof Control Module

Power Distribution Schematics (F17DR, F22DR, F42DR, F44DR, F45DR, and F56DR Fuses)


B+
B+ BUS
X51R Instrument Panel Wiring Harness Junction Block - Right
F56DR 40A
F22DR 7.5A
F17DR 2A
F42DR 10A
F44DR 10A
F45DR 15A
X1 22
X1 21
X2 15
41
42
X1 27
X2 37
KI3
KI3
MHS/MQC
IOR
8040 RD/WH
2172 RD/YE
10040 RD/BN
5140 RD/GN
4340 RD/YE
5440 RD/WH
2840 RD/GY
X1 21
14
X85 Steering Wheel Airbag Coil
X2 9
16
X227 8
J243
5140 RD/GN(NK5/D07)
5140 GN (N57-D07)
KI3-UKL
KI3+UKL
J250
10040 RD/GN
10040 RD/BN
5140 RD/GN(NK5/D07)
5140 GN (N57-D07)
5140 RD/GN(NK5/D07)
5140 GN (N57-D07)
5440 RD/WH
2840 RD/GY
2840 RD/GY
X1 3
11
10
X6 1
1
1
1
9
X1 1
2
T19 Multifunction Power Supply Converter
K32 Heated Steering Wheel Module
K180S Driver Monitoring System Module - Steering Wheel
S70L Cruise Control Switch
S70R Radio Control Switch - Steering Wheel
S91 Parking Brake Control Switch
K212 Gear Shift Control Module
A11 Radio

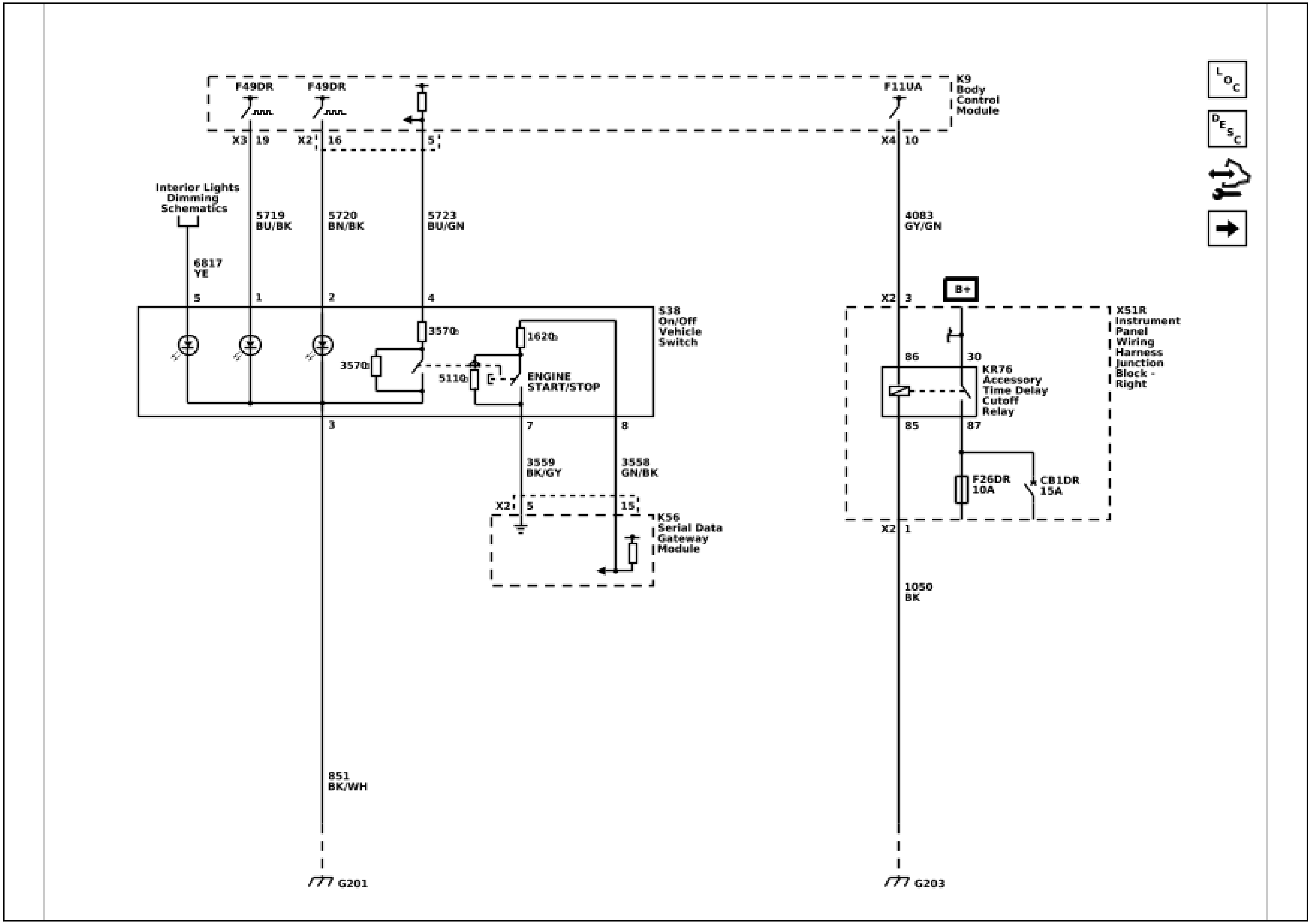
6847082

Power Distribution Schematics (F48DR, F49DR, F55DR, and F57DR Fuses)


B+
B+ BUS
X51R Instrument Panel Wiring Harness Junction Block - Right
F57DR 40A
F48DR 20A
F49DR 15A
F55DR 30A
X1 18
17
X1 3
X2 45
X1 36
8140 RD/YE
2173 RD/GN
1840 RD/GN
2740 RD/WH
5040 RD/YE
X331 29
5040 RD/YE
X125 2
1840 RD/GN
-A45
A45
5040 RD/YE
5040 RD/YE
8
9
66
X4 22
A
X1 6
T19 Multifunction Power Supply Converter
K71 Transmission Control Module
K9 Body Control Module
S64D Front Seat Adjuster Switch - Driver
K40D Driver Seat Adjuster Memory Module

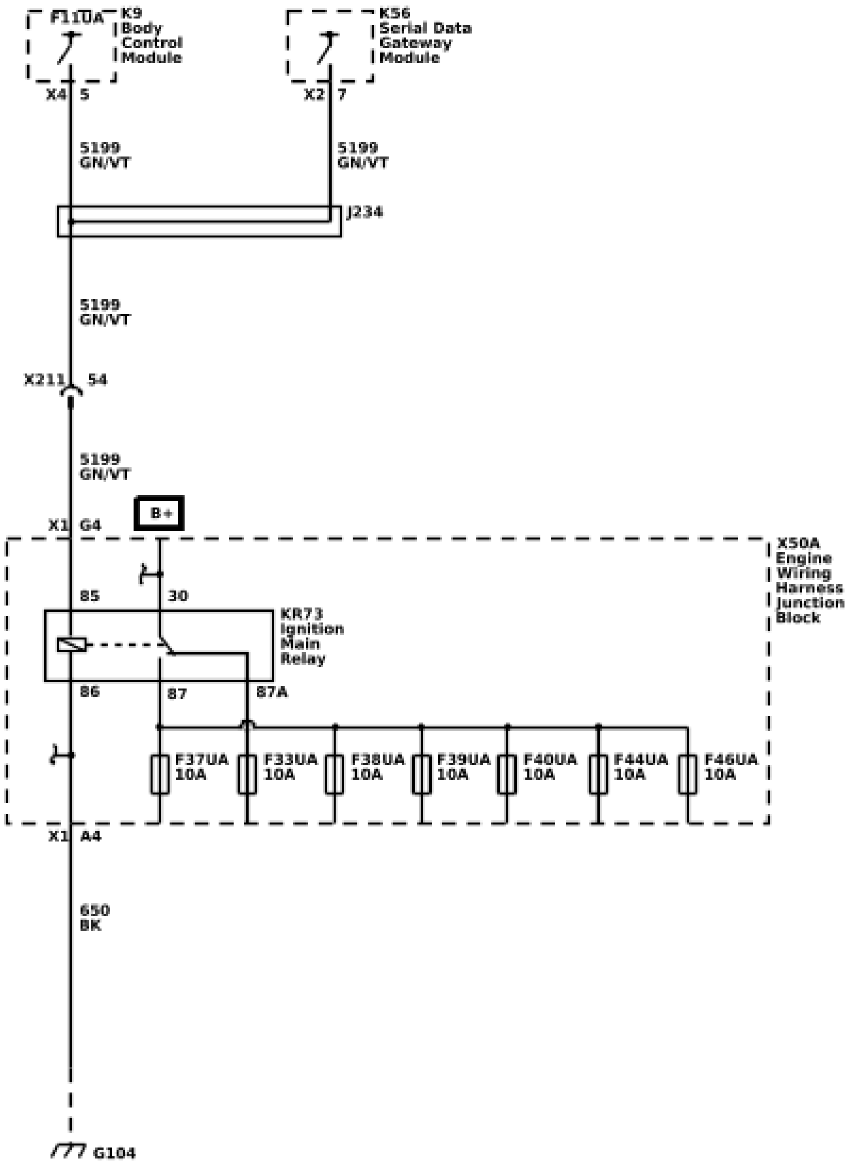
6847083

Power Moding Schematics (On/Off Vehicle Switch and Retained Accessory Power)


K9
Body
Control
Module
F49DR
F49DR
F11UA
X3 19
X2 16
5
X4 10
Interior Lights
Dimming
Schematics
6817
YE
5719
BU/BK
5720
BN/BK
5723
BU/GN
4083
GY/GN
5
1
2
4
S38
On/Off
Vehicle
Switch
3570Ω
3570Ω
1620Ω
511Ω
ENGINE
START/STOP
3
7
8
3559
BK/GY
3558
GN/BK
X2 5
15
K56
Serial Data
Gateway
Module
851
BK/WH
G201
B+
X2 3
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
86
30
KR76
Accessory
Time Delay
Cutoff
Relay
85
87
F26DR
10A
CB1DR
15A
X2 1
1050
BK
G203
L O C
D E S C

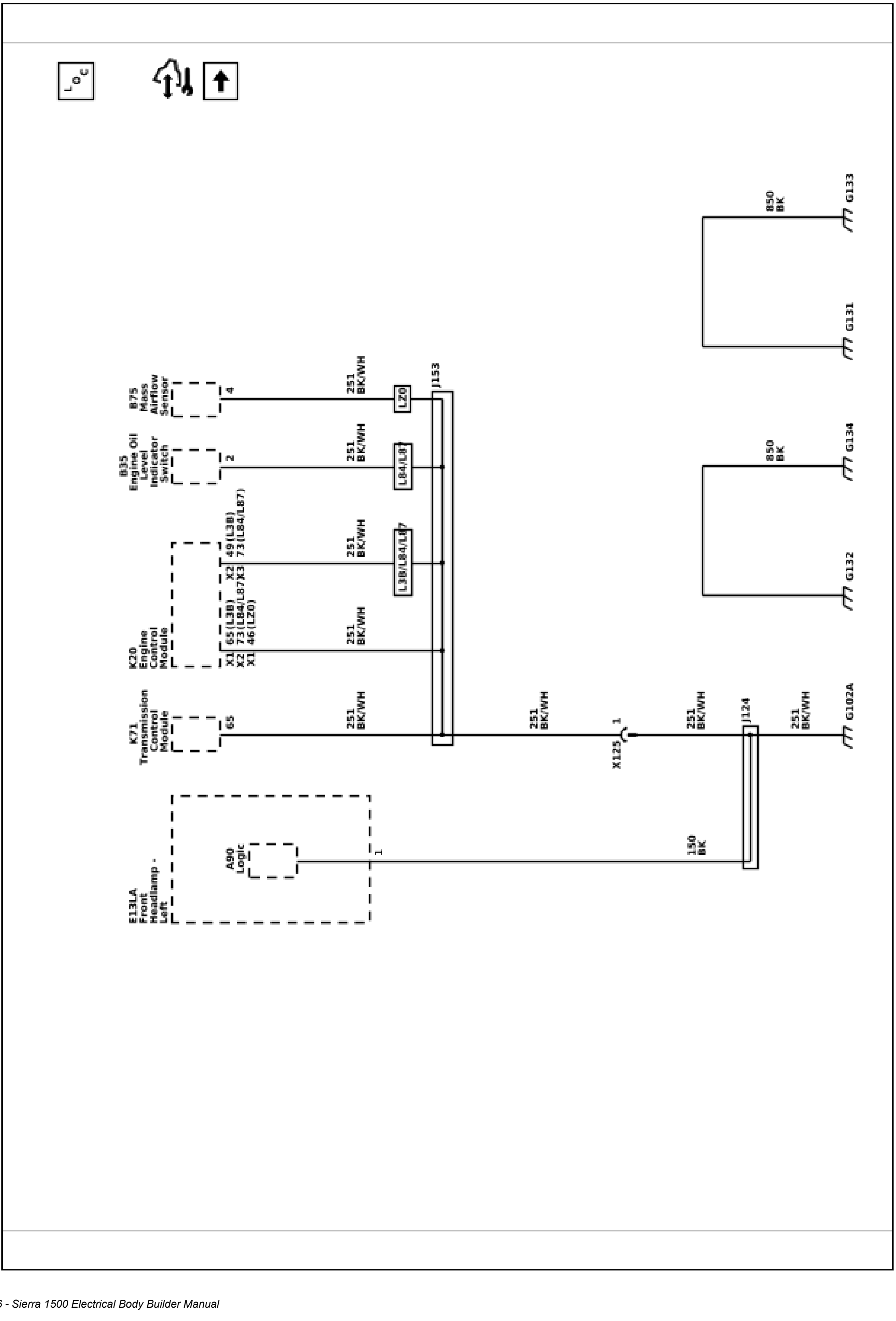
6847115

Power Moding Schematics (Ignition Main Relay)

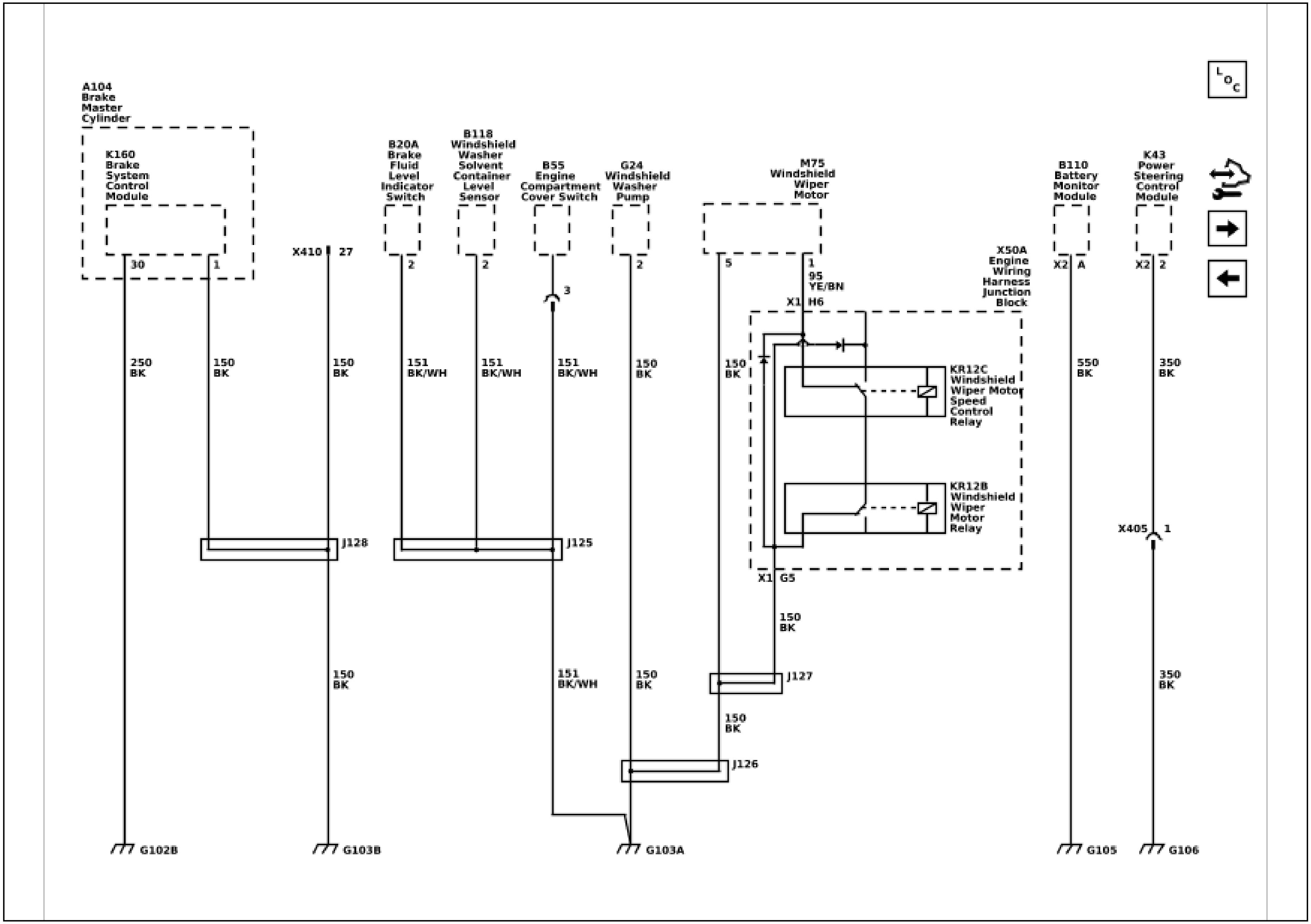

F110A
K9 Body Control Module
X4 5
K56 Serial Data Gateway Module
X2 7
5199 GN/VT
5199 GN/VT
J234
5199 GN/VT
X211 54
5199 GN/VT
B+
X1 G4
X50A Engine Wiring Harness Junction Block
85
30
KR73 Ignition Main Relay
86
87
87A
F37UA 10A
F33UA 10A
F38UA 10A
F39UA 10A
F40UA 10A
F44UA 10A
F46UA 10A
X1 A4
650 BK
G104

6847116

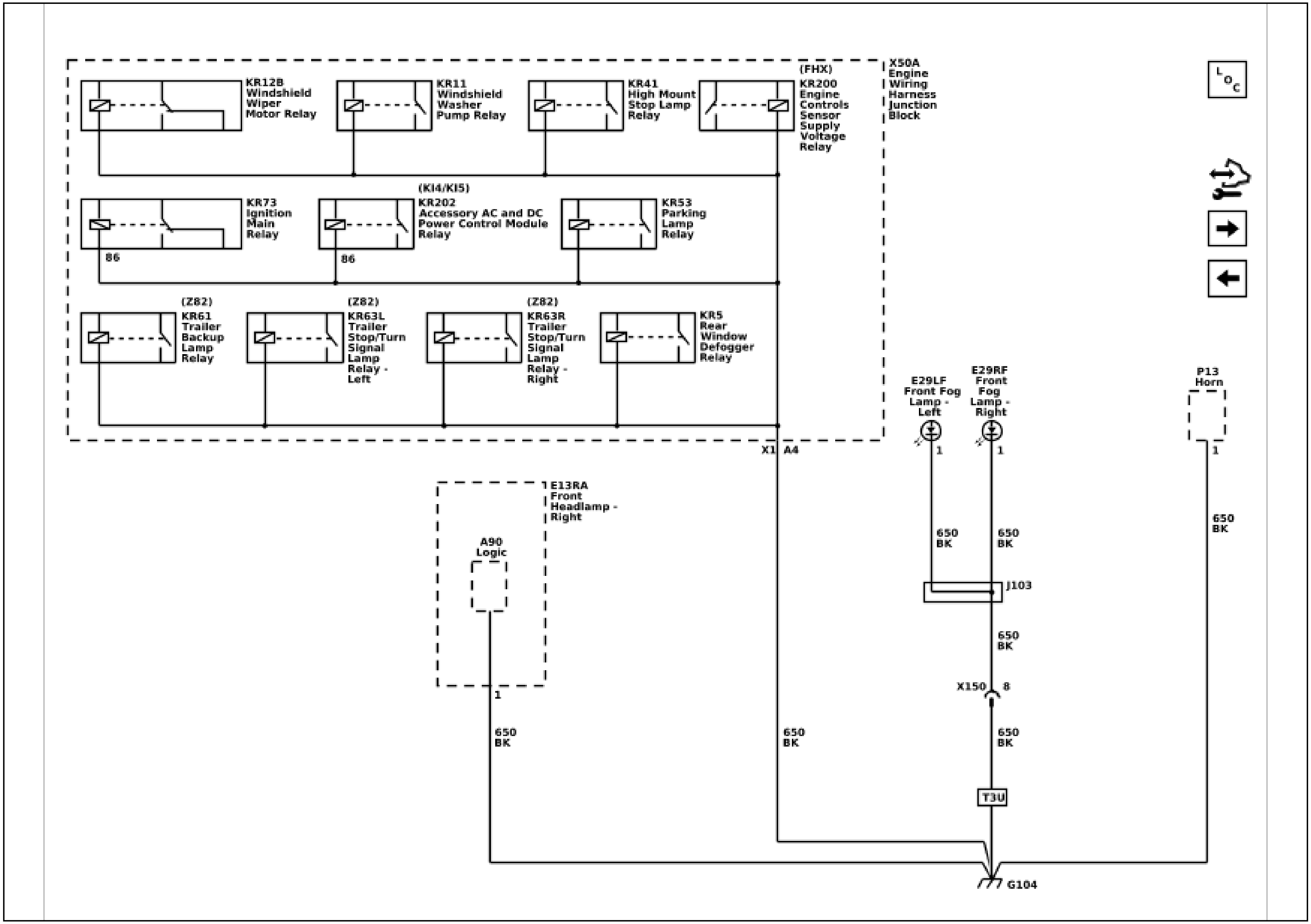
Ground Distribution Schematics (G102A, G131, G132, G133, and G134)


6847084
E13LA Front Headlamp - Left
A90 Logic
1
150 BK
K71 Transmission Control Module
65
K20 Engine Control Module
X1 65(L3B)
X2 73(L84/L87)
X1 46(LZ0)
X2 49(L3B)
X3 73(L84/L87)
B35 Engine Oil Level Indicator Switch
2
B75 Mass Airflow Sensor
4
251 BK/WH
LZ0
L84/L87
L3B/L84/L87
J153
X125
1
J124
G102A
G132
G134
G131
G133
850 BK

Ground Distribution Schematics (G102B, G103A, G103B, G105, and G106)

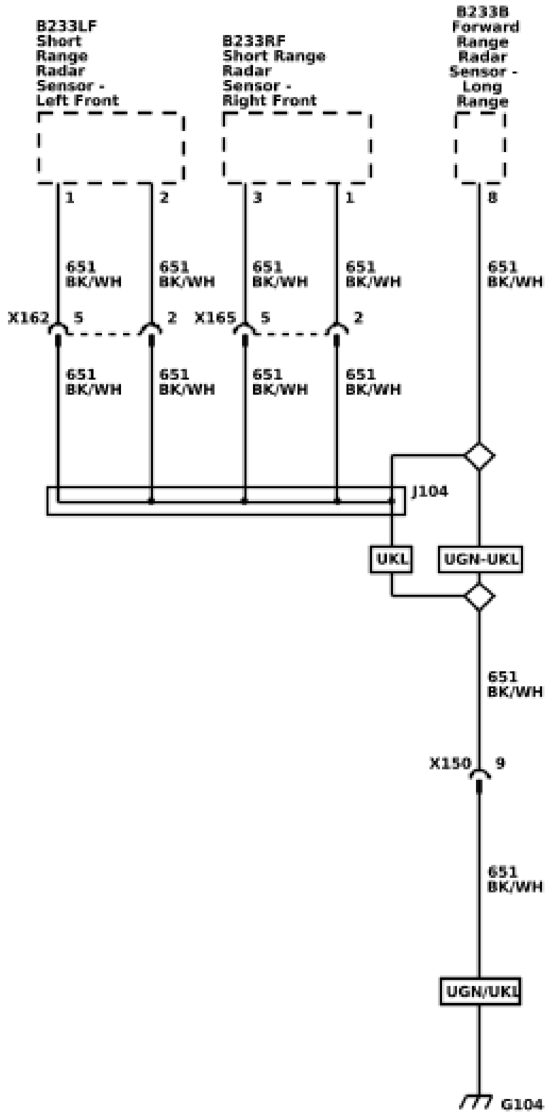

A104 Brake Master Cylinder
K160 Brake System Control Module
30
1
250 BK
150 BK
X410
27
150 BK
J128
150 BK
B20A Brake Fluid Level Indicator Switch
2
151 BK/WH
B118 Windshield Washer Solvent Container Level Sensor
2
151 BK/WH
J125
B55 Engine Compartment Cover Switch
3
151 BK/WH
151 BK/WH
G24 Windshield Washer Pump
2
150 BK
150 BK
J126
M75 Windshield Wiper Motor
5
150 BK
150 BK
J127
1
95 YE/BN
X1 H6
X50A Engine Wiring Harness Junction Block
KR12C Windshield Wiper Motor Speed Control Relay
KR12B Windshield Wiper Motor Relay
X1 G5
150 BK
B110 Battery Monitor Module
X2 A
550 BK
K43 Power Steering Control Module
X2 2
350 BK
X405 1
350 BK
G102B
G103B
G103A
G105
G106
6847085

Ground Distribution Schematics (G104 - 1 of 2)


X50A Engine Wiring Harness Junction Block
KR12B Windshield Wiper Motor Relay
KR11 Windshield Washer Pump Relay
KR41 High Mount Stop Lamp Relay
(FHX) KR200 Engine Controls Sensor Supply Voltage Relay
KR73 Ignition Main Relay
86
(KI4/KI5) KR202 Accessory AC and DC Power Control Module Relay
86
KR53 Parking Lamp Relay
(Z82) KR61 Trailer Backup Lamp Relay
(Z82) KR63L Trailer Stop/Turn Signal Lamp Relay - Left
(Z82) KR63R Trailer Stop/Turn Signal Lamp Relay - Right
KR5 Rear Window Defogger Relay
X1 A4
E29LF Front Fog Lamp - Left
E29RF Front Fog Lamp - Right
P13 Horn
1
1
1
650 BK
650 BK
650 BK
J103
650 BK
X150 8
650 BK
T3U
E13RA Front Headlamp - Right
A90 Logic
1
650 BK
650 BK
G104

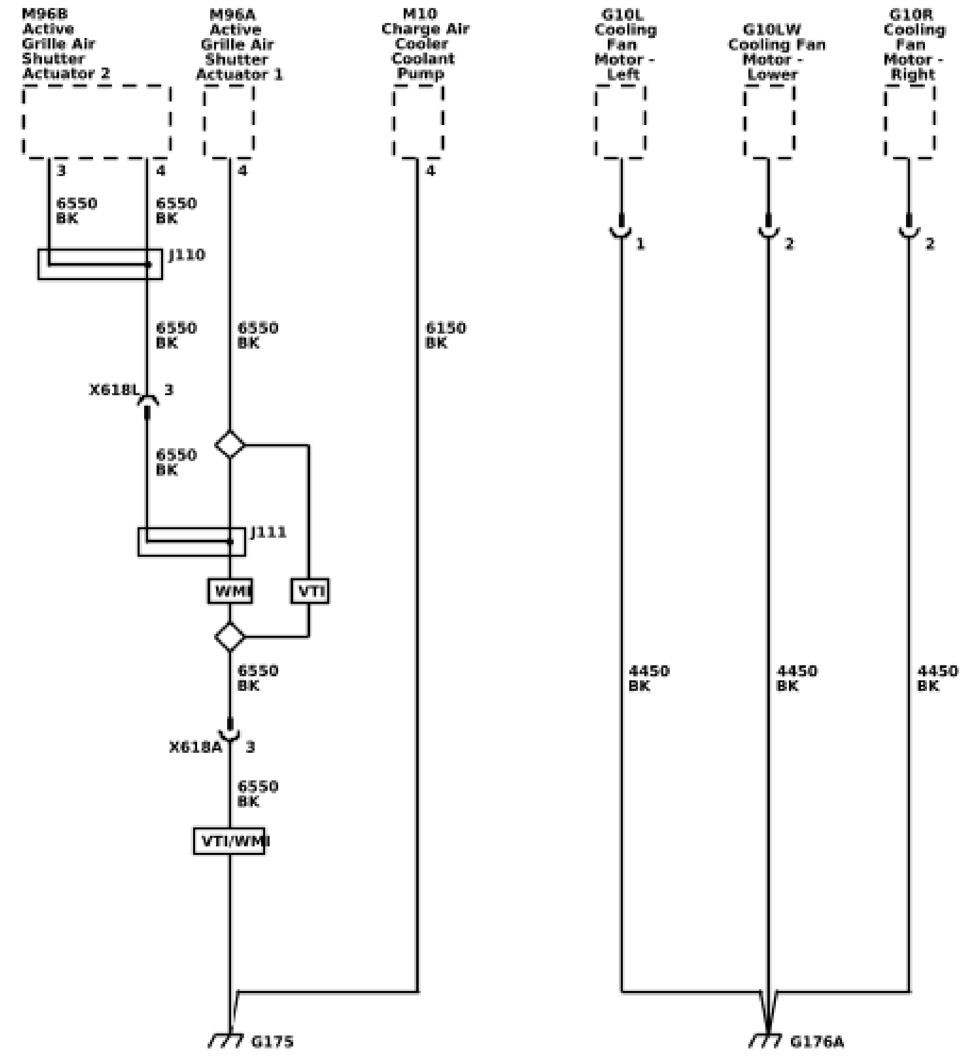
6847086

Ground Distribution Schematics (G104 - 2 of 2)


B233LF
Short Range Radar Sensor - Left Front
B233RF
Short Range Radar Sensor - Right Front
B233B
Forward Range Radar Sensor - Long Range
1
2
3
1
8
651 BK/WH
X162
5
2
X165
5
2
J104
UKL
UGN-UKL
X150
9
UGN/UKL
G104

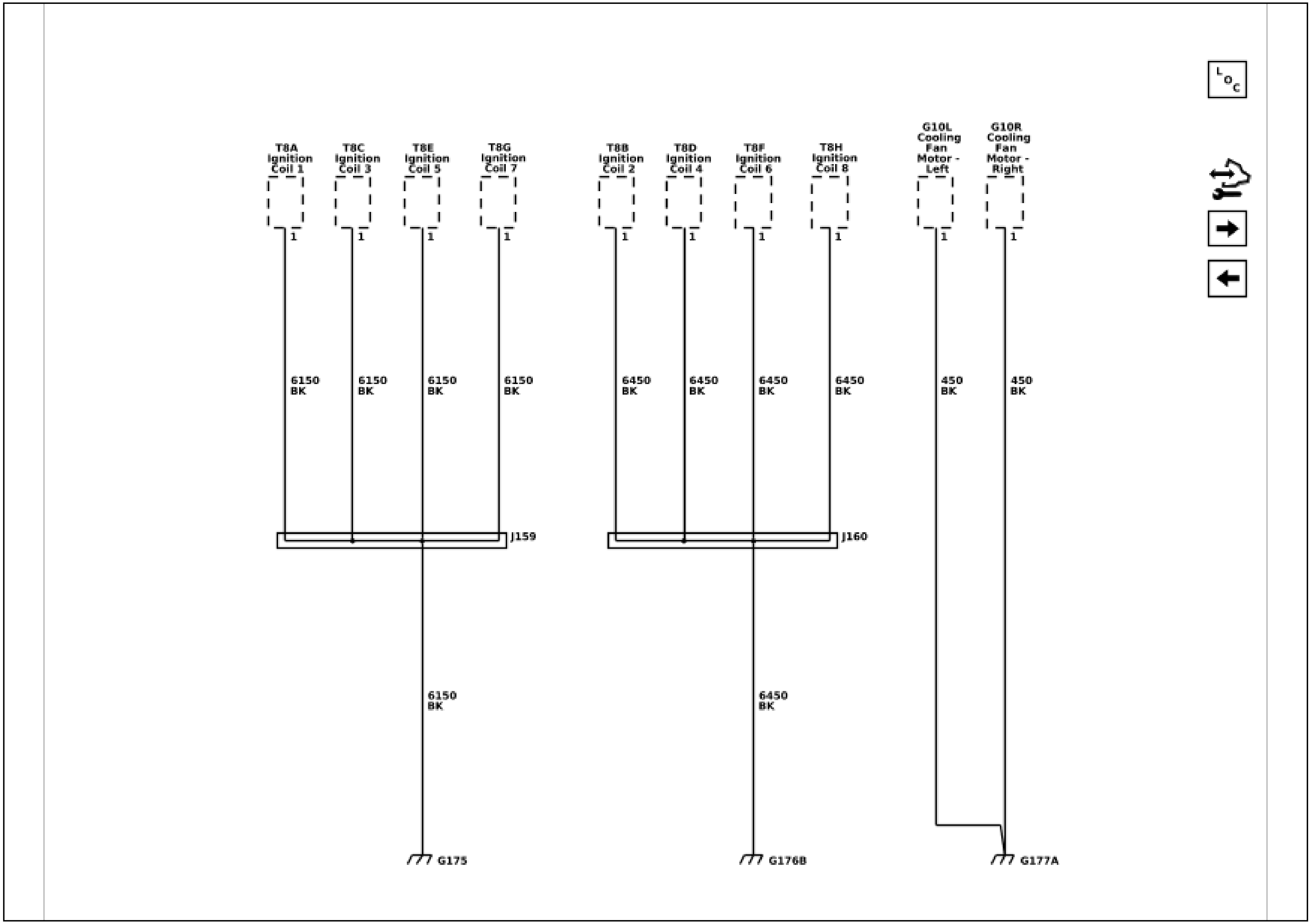
6847087

Ground Distribution Schematics (G175 and G176A (LZ0))


M96B Active Grille Air Shutter Actuator 2
M96A Active Grille Air Shutter Actuator 1
M10 Charge Air Cooler Coolant Pump
G10L Cooling Fan Motor - Left
G10LW Cooling Fan Motor - Lower
G10R Cooling Fan Motor - Right
3
4
4
4
6550 BK
6550 BK
J110
6550 BK
6550 BK
6150 BK
1
2
2
X618L
3
6550 BK
J111
WMI
VTI
6550 BK
X618A
3
6550 BK
VTI/WMI
4450 BK
4450 BK
4450 BK
G175
G176A

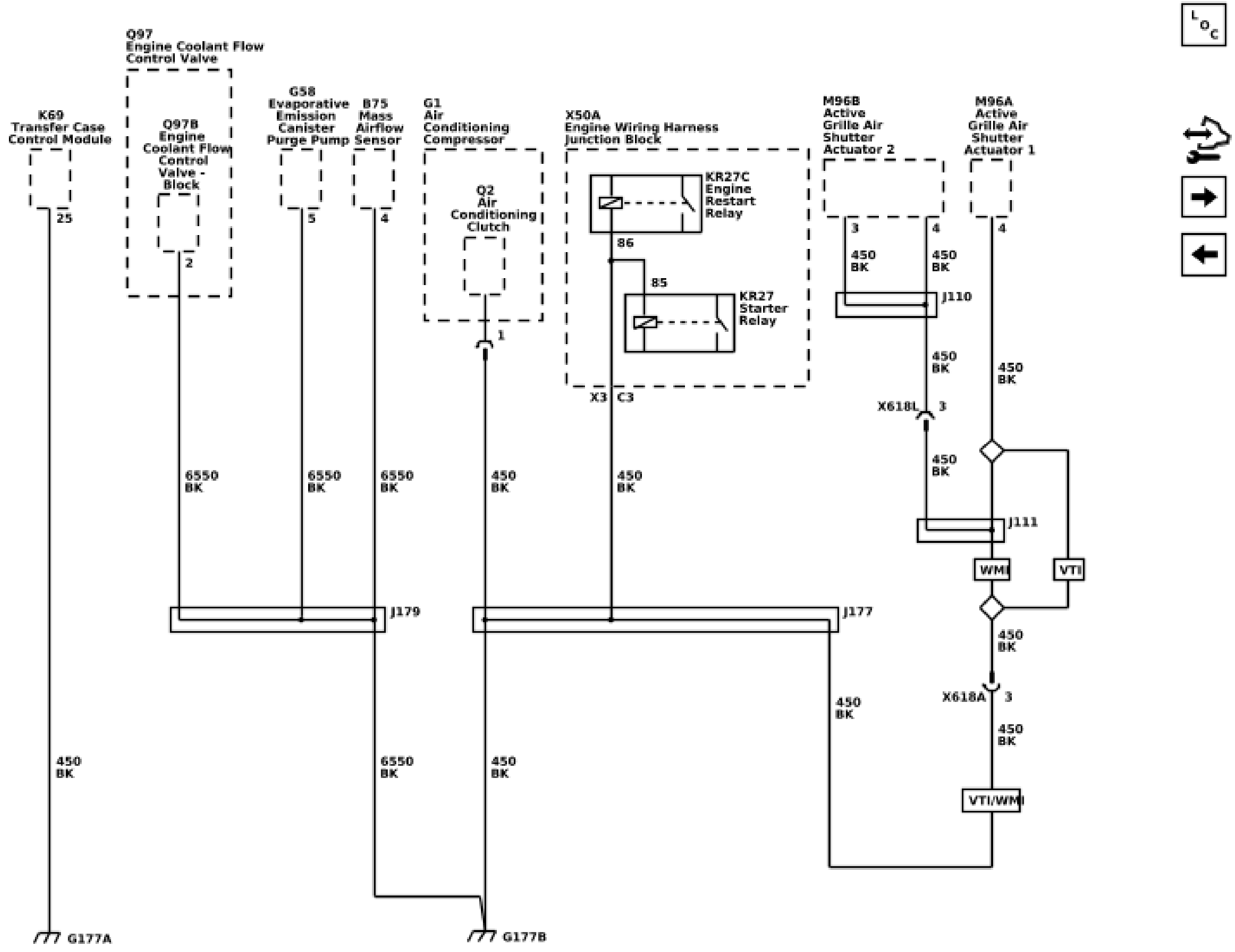
6847088

Ground Distribution Schematics (G175, G176B, and G177A (L84 / L87))


T8A Ignition Coil 1
T8C Ignition Coil 3
T8E Ignition Coil 5
T8G Ignition Coil 7
T8B Ignition Coil 2
T8D Ignition Coil 4
T8F Ignition Coil 6
T8H Ignition Coil 8
G10L Cooling Fan Motor - Left
G10R Cooling Fan Motor - Right
1
6150 BK
6450 BK
450 BK
J159
J160
G175
G176B
G177A

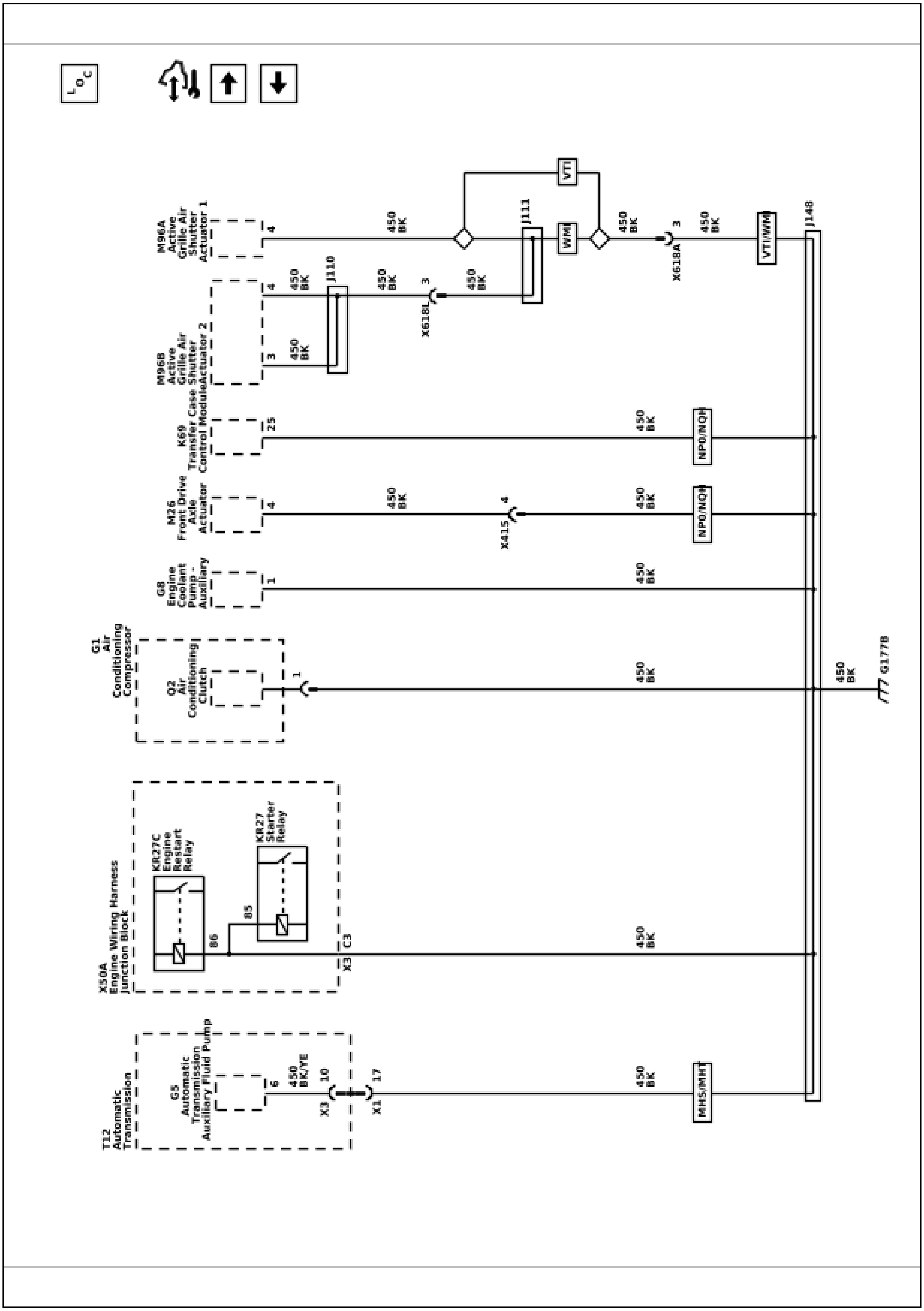
6847089

Ground Distribution Schematics (G177A and G177B (L3B))

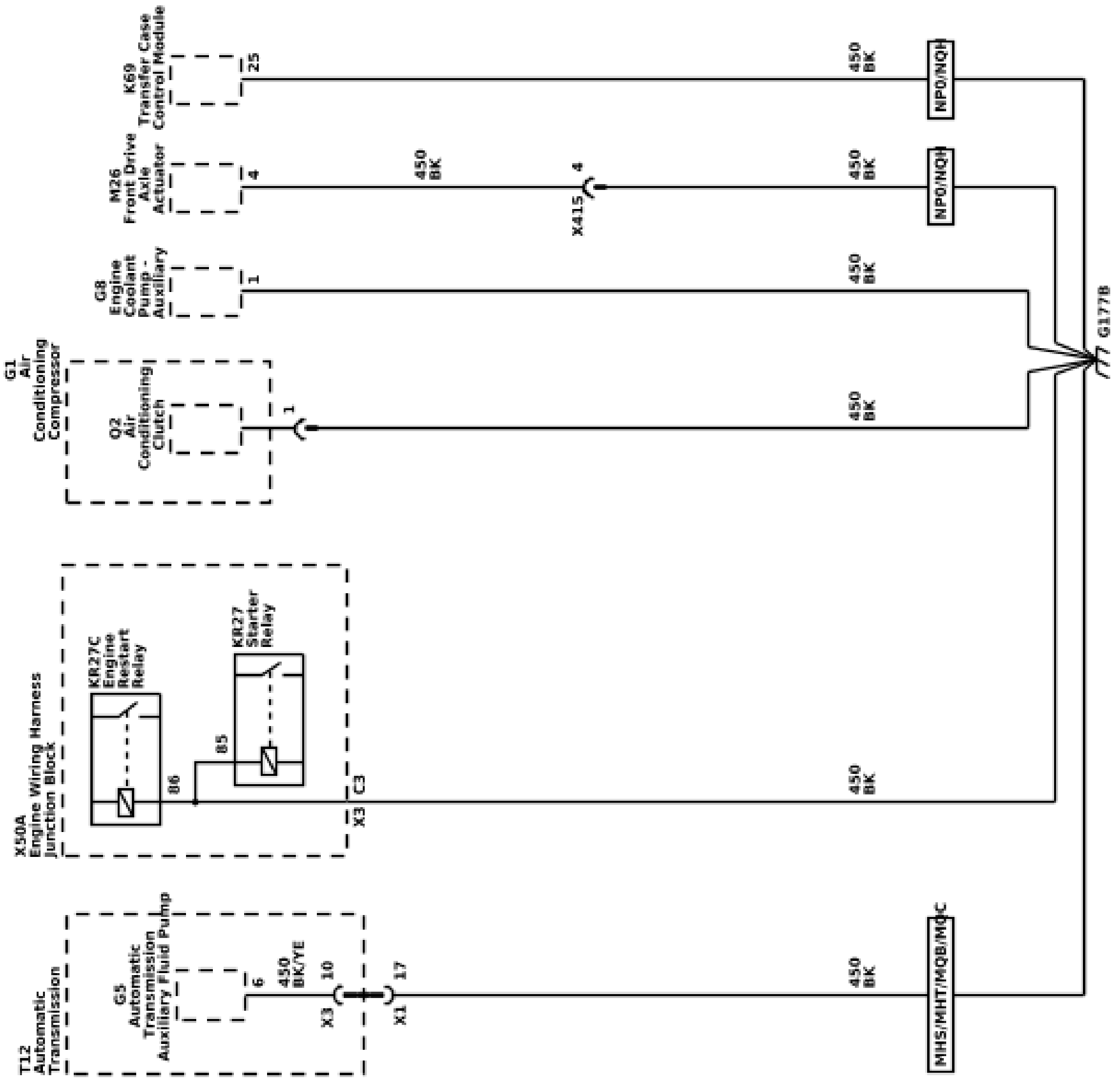

K69
Transfer Case
Control Module
25
450
BK
G177A
Q97
Engine Coolant Flow
Control Valve
Q97B
Engine
Coolant Flow
Control
Valve -
Block
2
6550
BK
G58
Evaporative
Emission
Canister
Purge Pump
5
6550
BK
B75
Mass
Airflow
Sensor
4
6550
BK
J179
6550
BK
G1
Air
Conditioning
Compressor
Q2
Air
Conditioning
Clutch
1
450
BK
450
BK
G177B
X50A
Engine Wiring Harness
Junction Block
KR27C
Engine
Restart
Relay
86
85
KR27
Starter
Relay
X3
C3
450
BK
J177
450
BK
M96B
Active
Grille Air
Shutter
Actuator 2
3
4
450
BK
450
BK
J110
450
BK
X618L
3
450
BK
J111
M96A
Active
Grille Air
Shutter
Actuator 1
4
450
BK
WMI
VTI
450
BK
X618A
3
450
BK
VTI/WMI

6847090

Ground Distribution Schematics (G177B (L84 / L87))

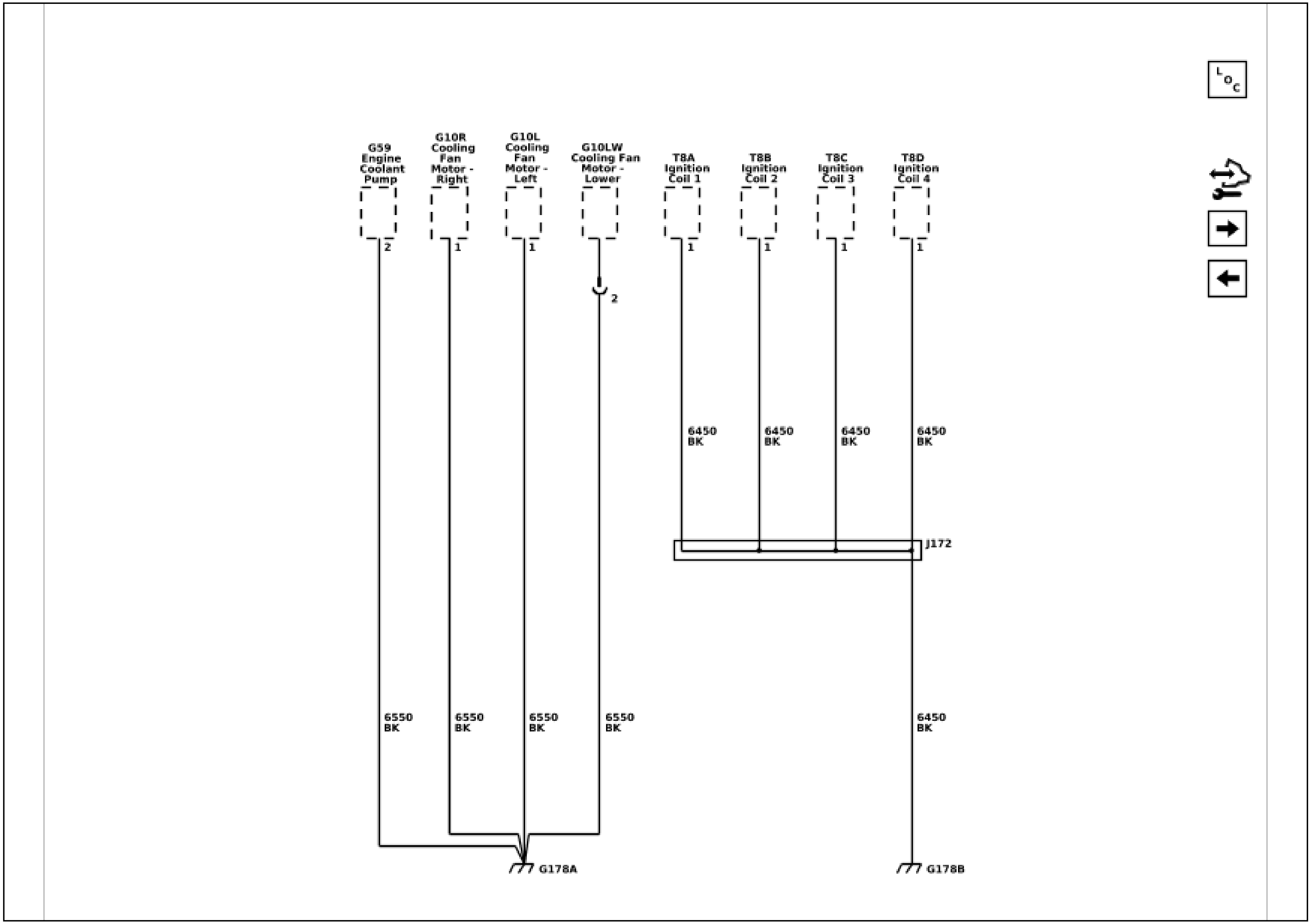

6847091
T12 Automatic Transmission
G5 Automatic Transmission Auxiliary Fluid Pump
6
450 BK/YE
10
X3
17
X1
450 BK
MH5/MHT
X50A Engine Wiring Harness Junction Block
KR27C Engine Restart Relay
86
85
KR27 Starter Relay
C3
X3
450 BK
G1 Air Conditioning Compressor
Q2 Air Conditioning Clutch
1
450 BK
450 BK
G177B
G8 Engine Coolant Pump - Auxiliary
1
450 BK
M26 Front Drive Axle Actuator
4
450 BK
4
X415
450 BK
NP0/NQH
K69 Transfer Case Control Module
25
450 BK
NP0/NQH
M96B Active Grille Air Shutter Actuator 2
3
450 BK
4
450 BK
J110
450 BK
3
X618L
450 BK
J111
M96A Active Grille Air Shutter Actuator 1
4
450 BK
VTI
WM
450 BK
3
X618A
450 BK
VTI/WM
J148

Ground Distribution Schematics (G177B (LZ0))


K69
Transfer Case
Control Module
25
M26
Front Drive
Axle
Actuator
4
G8
Engine
Coolant
Pump -
Auxiliary
1
G1
Air
Conditioning
Compressor
Q2
Air
Conditioning
Clutch
1
X50A
Engine Wiring Harness
Junction Block
KR27C
Engine
Restart
Relay
KR27
Starter
Relay
86
85
C3
X3
T12
Automatic
Transmission
G5
Automatic
Transmission
Auxiliary Fluid Pump
6
450
BK/YE
10
X3
17
X1
450
BK
X415
4
450
BK
450
BK
450
BK
450
BK
450
BK
450
BK
NP0/NQH
NP0/NQH
MHS/MHT/MQB/MQC
G177B

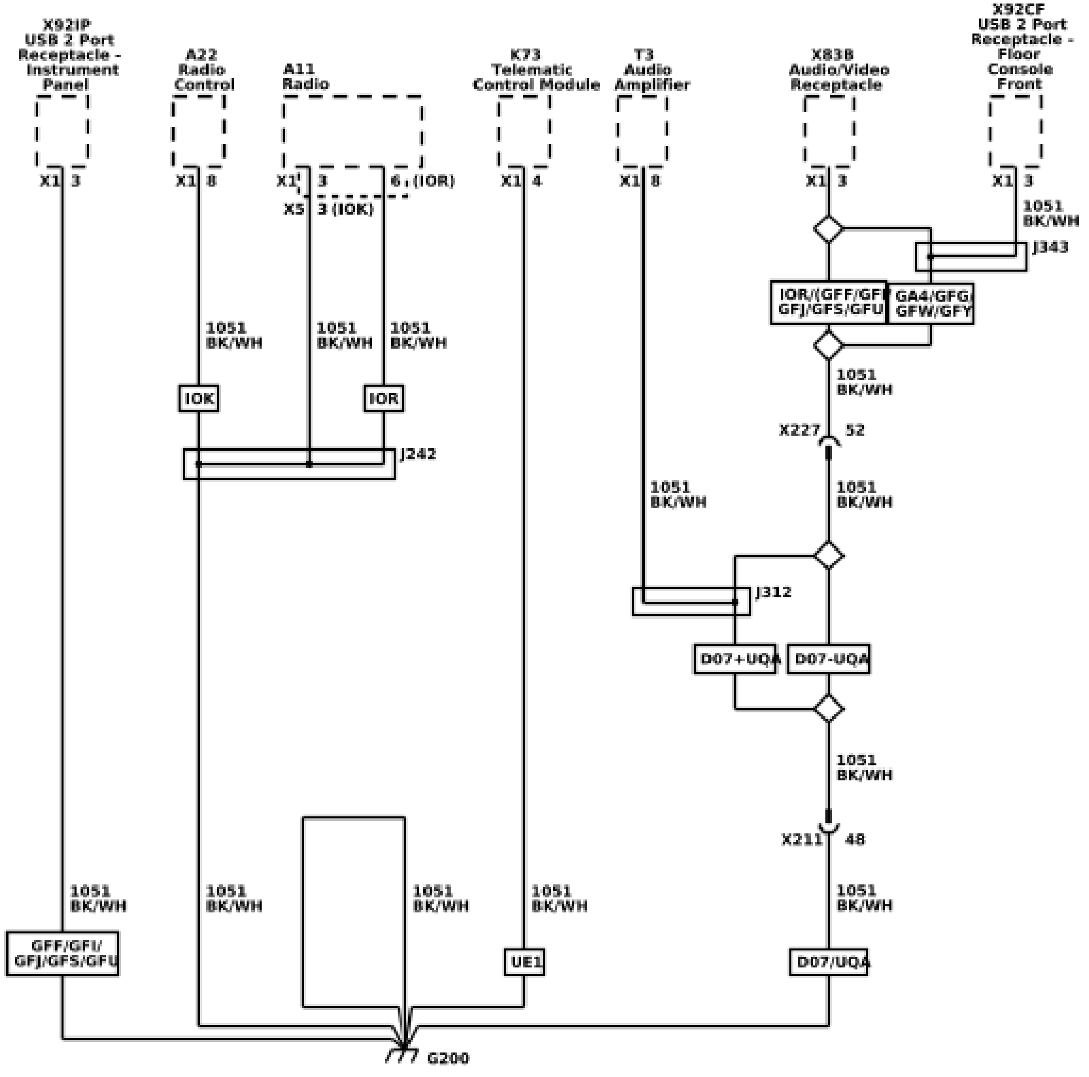
6847092

Ground Distribution Schematics (G178A and G178B (L3B))


G59
Engine
Coolant
Pump
G10R
Cooling
Fan
Motor -
Right
G10L
Cooling
Fan
Motor -
Left
G10LW
Cooling Fan
Motor -
Lower
T8A
Ignition
Coil 1
T8B
Ignition
Coil 2
T8C
Ignition
Coil 3
T8D
Ignition
Coil 4
2
1
1
1
2
1
1
1
1
6450
BK
6450
BK
6450
BK
6450
BK
J172
6550
BK
6550
BK
6550
BK
6550
BK
6450
BK
G178A
G178B

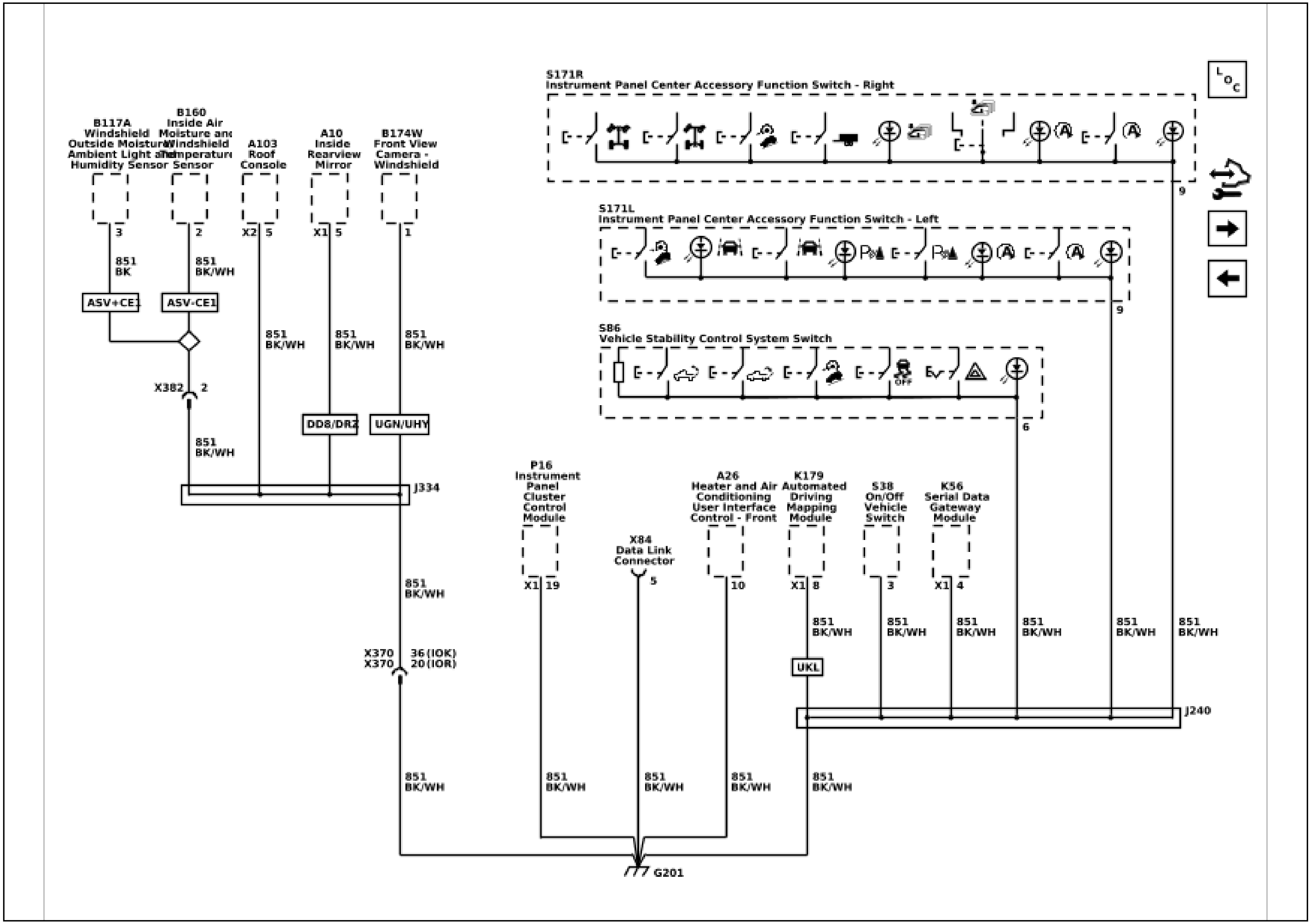
6847093

Ground Distribution Schematics (G200)


X92IP
USB 2 Port
Receptacle -
Instrument
Panel
X1 3
A22
Radio
Control
X1 8
A11
Radio
X1 3
6 (IOR)
X5 3 (IOK)
K73
Telematic
Control Module
X1 4
T3
Audio
Amplifier
X1 8
X83B
Audio/Video
Receptacle
X1 3
X92CF
USB 2 Port
Receptacle -
Floor
Console
Front
X1 3
1051
BK/WH
J343
IOR/(GFF/GFI
GFJ/GFS/GFU
GA4/GFG/
GFW/GFY
IOK
IOR
J242
X227 52
J312
D07+UQA
D07-UQA
X211 48
GFF/GFI/
GFJ/GFS/GFU
UE1
D07/UQA
G200

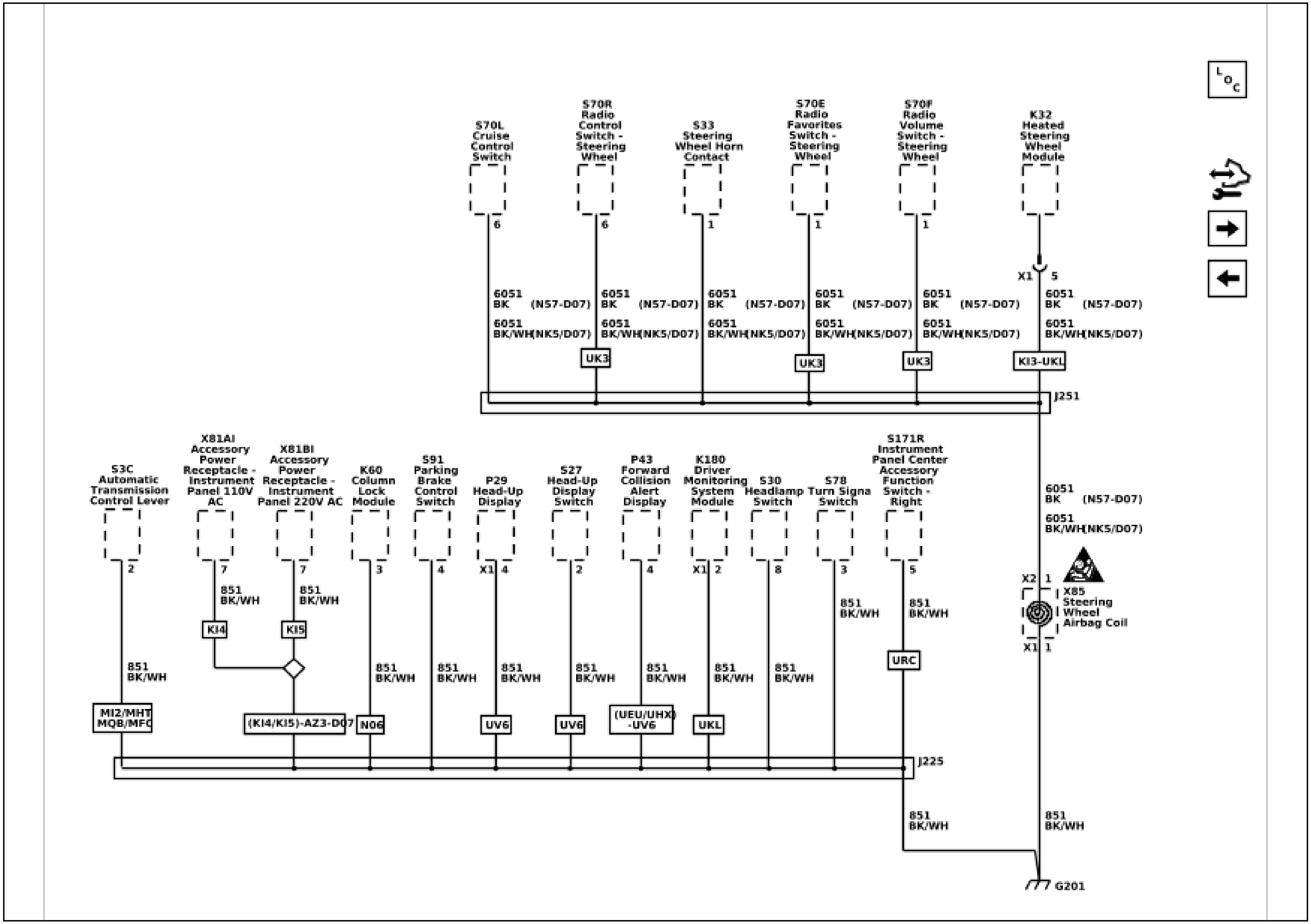
6847094

Ground Distribution Schematics (G201 - 1 of 2)


S171R
Instrument Panel Center Accessory Function Switch - Right
9
S171L
Instrument Panel Center Accessory Function Switch - Left
9
S86
Vehicle Stability Control System Switch
OFF
6
B117A
Windshield
Outside Moisture
Ambient Light and
Humidity Sensor
B160
Inside Air
Moisture and
Windshield
Temperature
Sensor
A103
Roof
Console
A10
Inside
Rearview
Mirror
B174W
Front View
Camera -
Windshield
3
2
X2 5
X1 5
1
851
BK
851
BK/WH
ASV+CE1
ASV-CE1
X382 2
DD8/DR2
UGN/UHY
J334
X370 36 (IOK)
X370 20 (IOR)
P16
Instrument
Panel
Cluster
Control
Module
X1 19
X84
Data Link
Connector
5
A26
Heater and Air
Conditioning
User Interface
Control - Front
10
K179
Automated
Driving
Mapping
Module
X1 8
UKL
S38
On/Off
Vehicle
Switch
3
K56
Serial Data
Gateway
Module
X1 4
J240
G201
851
BK/WH

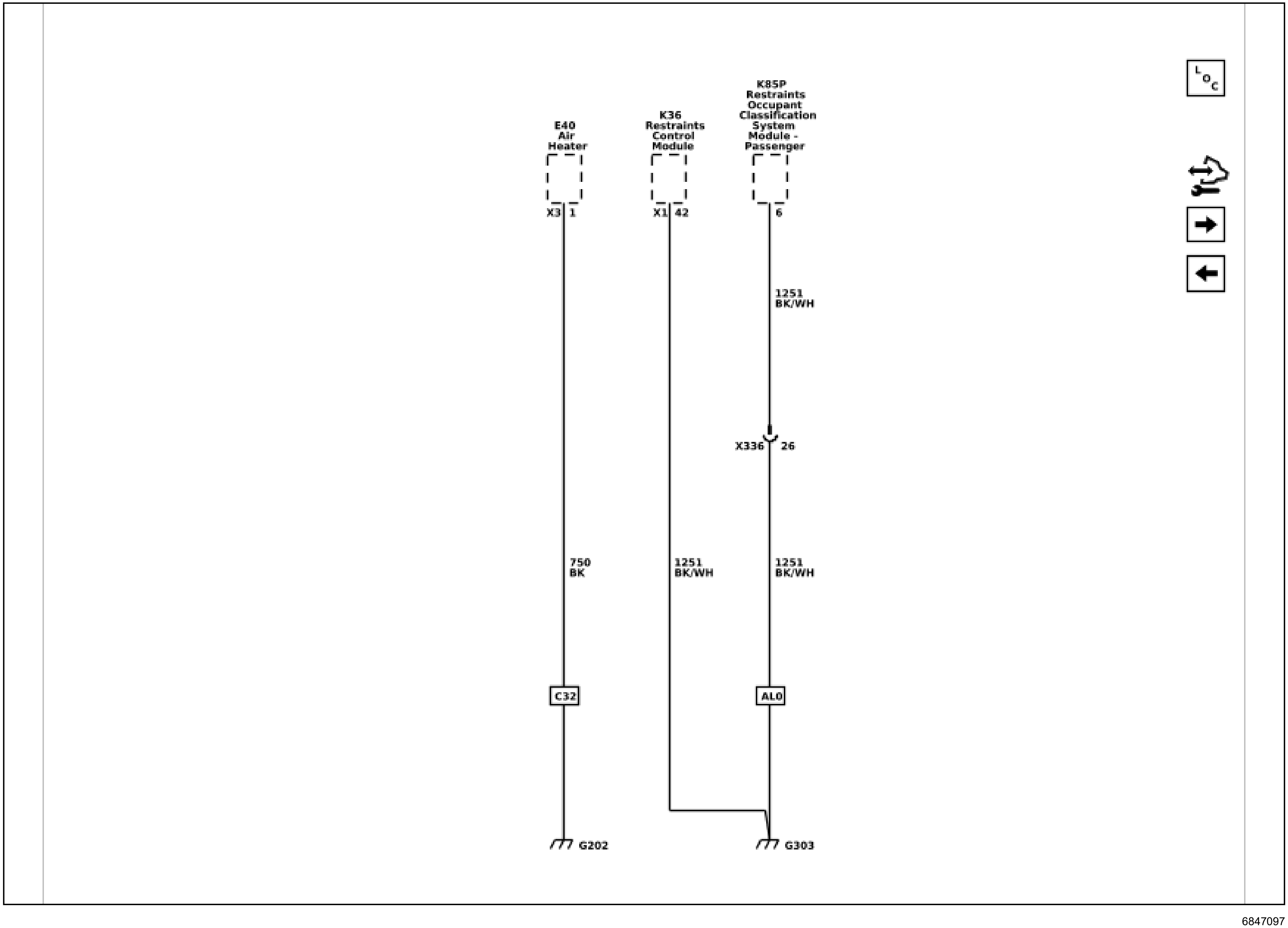
6847095

Ground Distribution Schematics (G201 - 2 of 2)

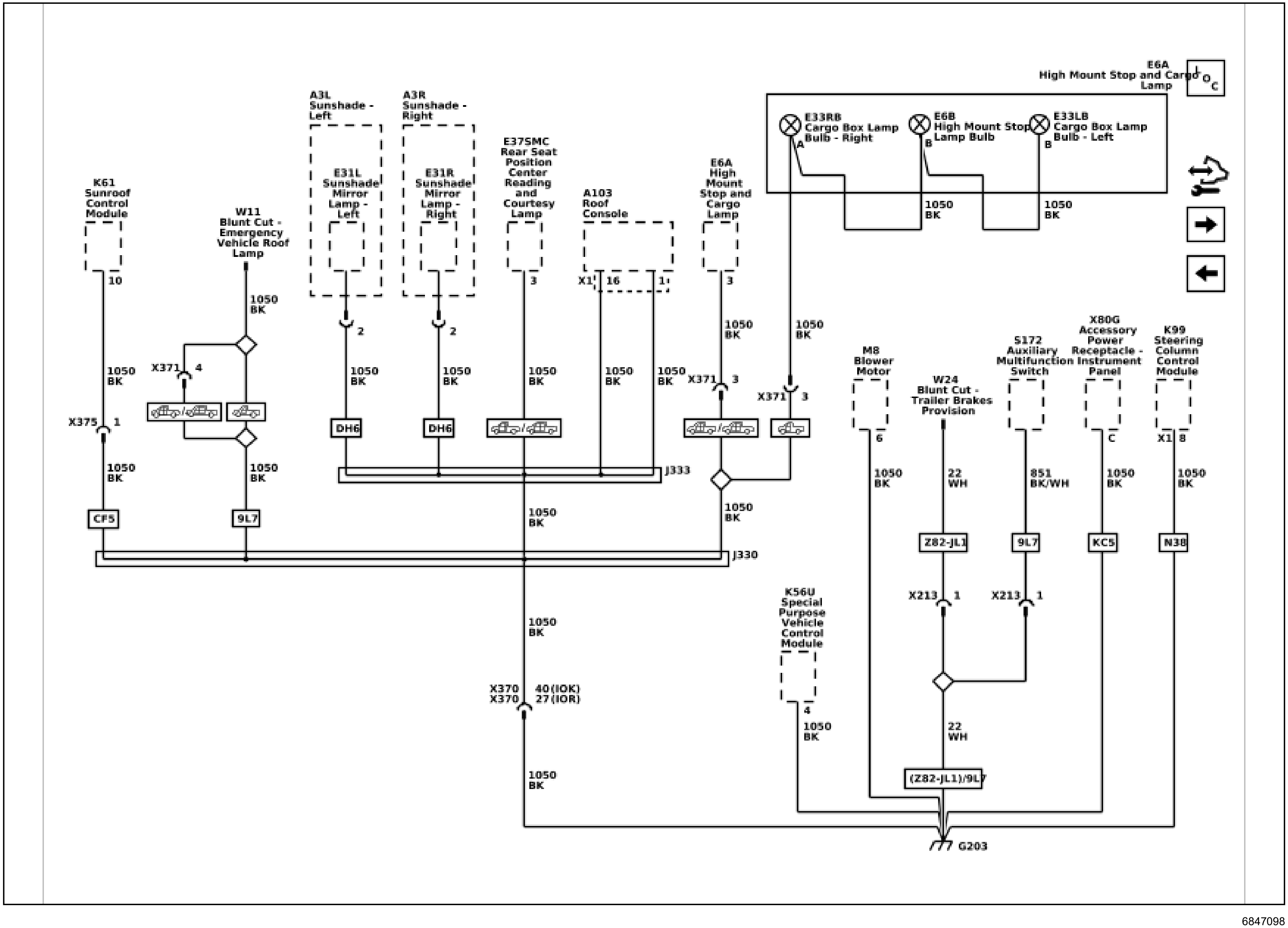

S70L Cruise Control Switch
6
S70R Radio Control Switch - Steering Wheel
6
S33 Steering Wheel Horn Contact
1
S70E Radio Favorites Switch - Steering Wheel
1
S70F Radio Volume Switch - Steering Wheel
1
K32 Heated Steering Wheel Module
X1 5
6051 BK (N57-D07)
6051 BK/WH (NK5/D07)
UK3
KI3-UKL
J251
6051 BK (N57-D07)
6051 BK/WH (NK5/D07)
X2 1
X85 Steering Wheel Airbag Coil
X1 1
S3C Automatic Transmission Control Lever
2
X81AI Accessory Power Receptacle - Instrument Panel 110V AC
7
X81BI Accessory Power Receptacle - Instrument Panel 220V AC
7
K60 Column Lock Module
3
S91 Parking Brake Control Switch
4
P29 Head-Up Display
X1 4
S27 Head-Up Display Switch
2
P43 Forward Collision Alert Display
4
K180 Driver Monitoring System Module
X1 2
S30 Headlamp Switch
8
S78 Turn Signa Switch
3
S171R Instrument Panel Center Accessory Function Switch - Right
5
851 BK/WH
KI4
KI5
MI2/MHT MQB/MFC
(KI4/KI5)-AZ3-D07
N06
UV6
(UEU/UHX) -UV6
UKL
URC
J225
851 BK/WH
G201

6847096

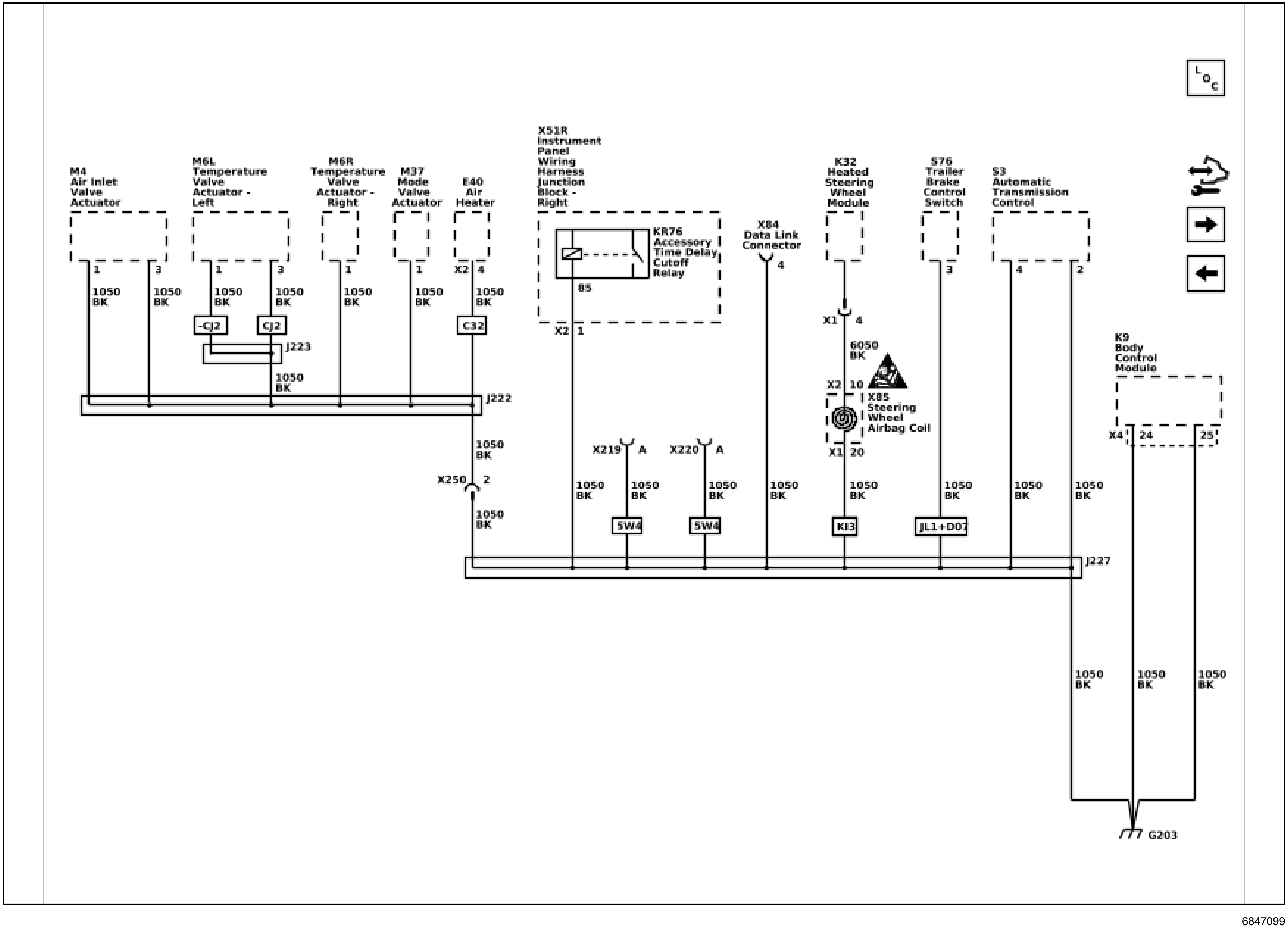
Ground Distribution Schematics (G202 and G303)


E40
Air
Heater
X3 1
750
BK
C32
G202
K36
Restraints
Control
Module
X1 42
1251
BK/WH
K85P
Restraints
Occupant
Classification
System
Module -
Passenger
6
1251
BK/WH
X336 26
1251
BK/WH
AL0
G303
6847097

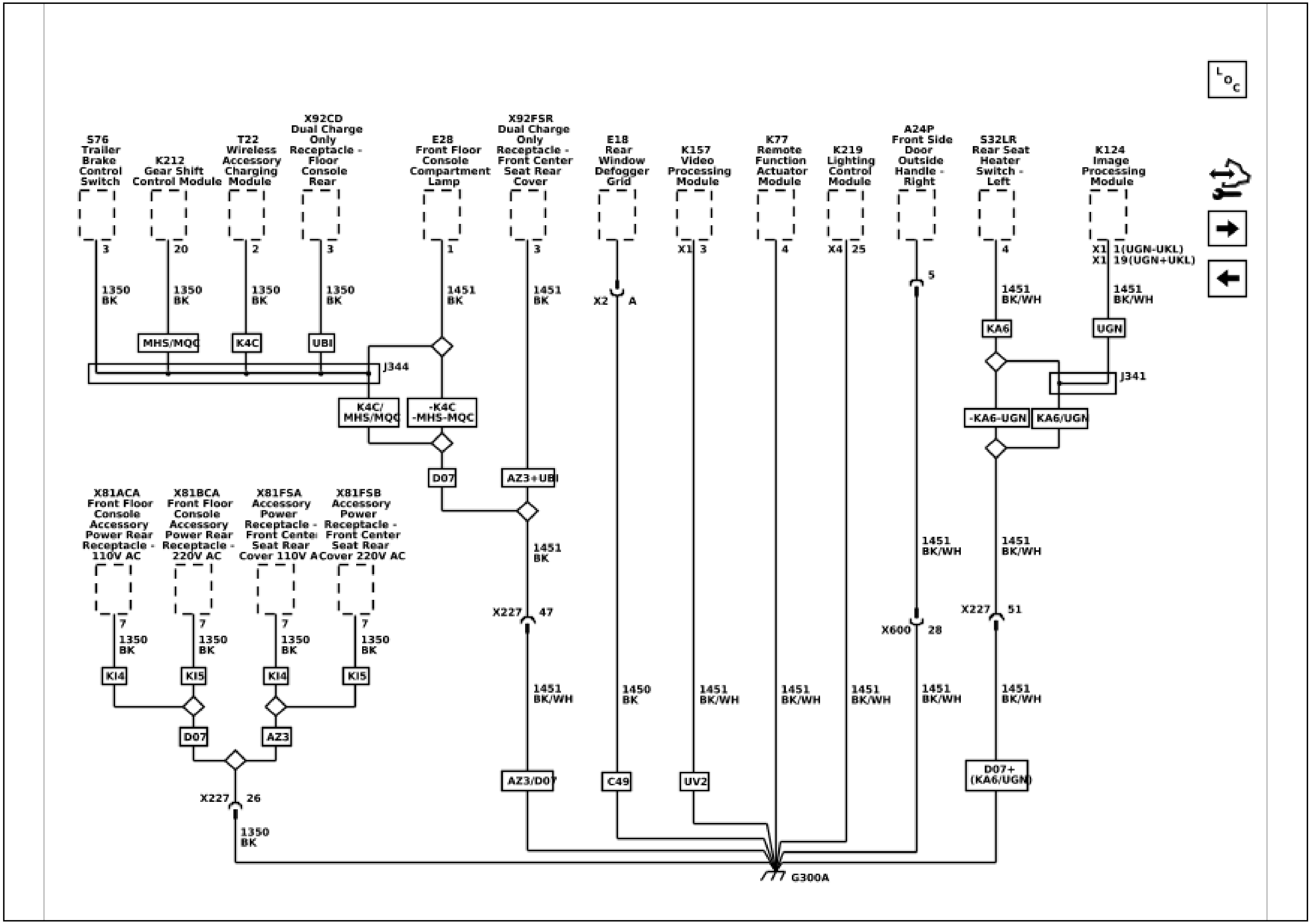
Ground Distribution Schematics (G203 - 1 of 2)


E6A
High Mount Stop and Cargo Lamp
E33RB
Cargo Box Lamp
Bulb - Right
E6B
High Mount Stop
Lamp Bulb
E33LB
Cargo Box Lamp
Bulb - Left
A
B
B
1050
BK
1050
BK
K61
Sunroof
Control
Module
10
1050
BK
X375
1
1050
BK
CF5
W11
Blunt Cut -
Emergency
Vehicle Roof
Lamp
1050
BK
X371
4
1050
BK
9L7
A3L
Sunshade -
Left
E31L
Sunshade
Mirror
Lamp -
Left
2
1050
BK
DH6
A3R
Sunshade -
Right
E31R
Sunshade
Mirror
Lamp -
Right
2
1050
BK
DH6
E37SMC
Rear Seat
Position
Center
Reading
and
Courtesy
Lamp
3
1050
BK
A103
Roof
Console
X1
16
1
1050
BK
1050
BK
J333
E6A
High
Mount
Stop and
Cargo
Lamp
3
1050
BK
X371
3
1050
BK
X371
3
1050
BK
J330
1050
BK
X370
X370
40(IOK)
27(IOR)
1050
BK
M8
Blower
Motor
6
1050
BK
W24
Blunt Cut -
Trailer Brakes
Provision
22
WH
Z82-JL1
X213
1
22
WH
(Z82-JL1)/9L7
S172
Auxiliary
Multifunction
Switch
851
BK/WH
9L7
X213
1
X80G
Accessory
Power
Receptacle -
Instrument
Panel
C
1050
BK
KC5
K99
Steering
Column
Control
Module
X1
8
1050
BK
N38
K56U
Special
Purpose
Vehicle
Control
Module
4
1050
BK
G203
6847098

Ground Distribution Schematics (G203 - 2 of 2)

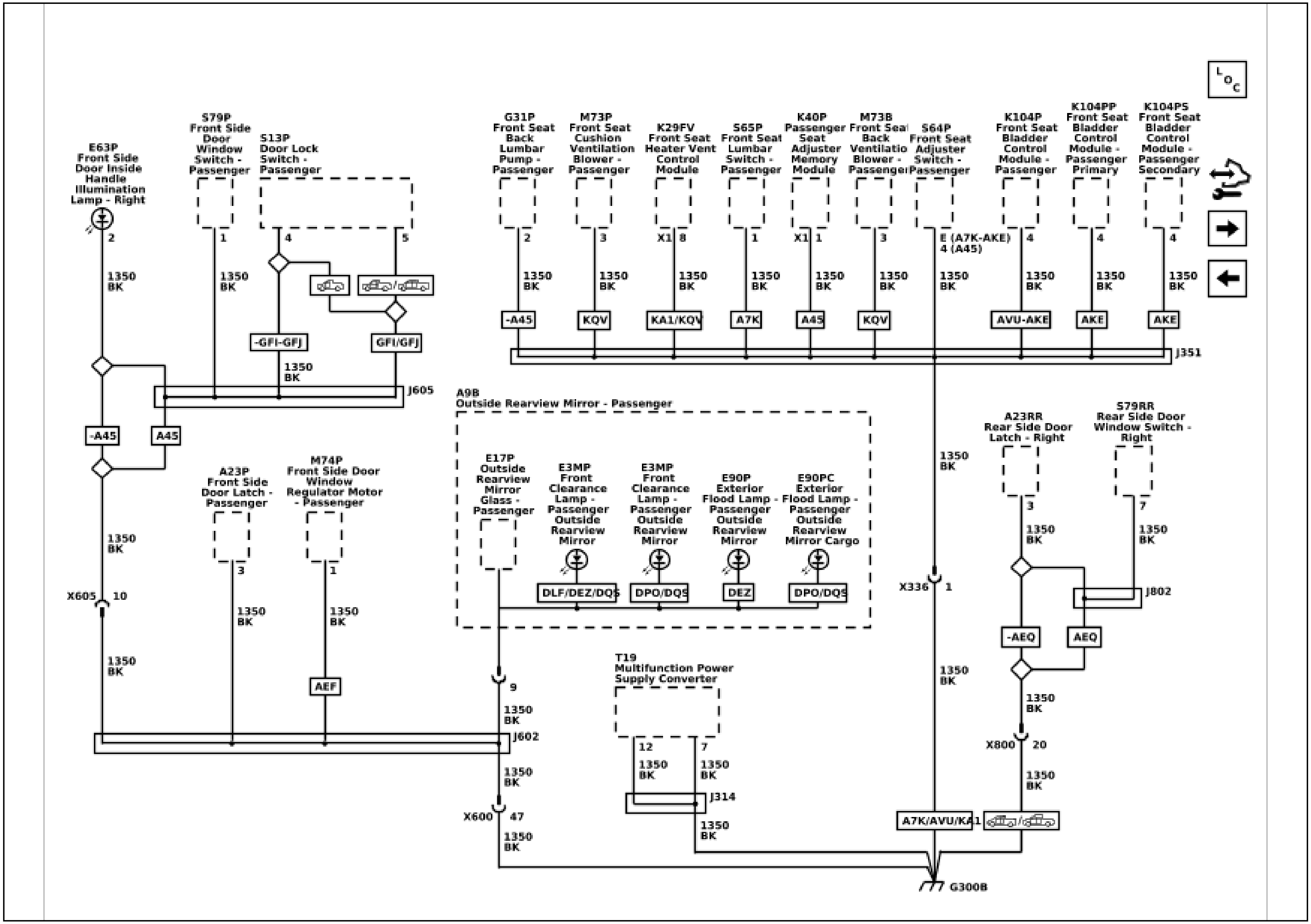

M4 Air Inlet Valve Actuator
M6L Temperature Valve Actuator - Left
M6R Temperature Valve Actuator - Right
M37 Mode Valve Actuator
E40 Air Heater
X51R Instrument Panel Wiring Harness Junction Block - Right
KR76 Accessory Time Delay Cutoff Relay
85
X2 1
X84 Data Link Connector
4
K32 Heated Steering Wheel Module
S76 Trailer Brake Control Switch
S3 Automatic Transmission Control
K9 Body Control Module
X4 24
25
1
3
X2 4
1050 BK
6050 BK
-CJ2
CJ2
C32
J223
J222
J227
X250 2
X219 A
X220 A
5W4
KI3
JL1+D07
X1 4
X2 10
X85 Steering Wheel Airbag Coil
X1 20
G203
6847099

Ground Distribution Schematics (G300A)


S76 Trailer Brake Control Switch
K212 Gear Shift Control Module
T22 Wireless Accessory Charging Module
X92CD Dual Charge Only Receptacle - Floor Console Rear
E28 Front Floor Console Compartment Lamp
X92FSR Dual Charge Only Receptacle - Front Center Seat Rear Cover
E18 Rear Window Defogger Grid
K157 Video Processing Module
K77 Remote Function Actuator Module
K219 Lighting Control Module
A24P Front Side Door Outside Handle - Right
S32LR Rear Seat Heater Switch - Left
K124 Image Processing Module
X1 1(UGN-UKL)
X1 19(UGN+UKL)
1350 BK
1451 BK
1451 BK/WH
1450 BK
MHS/MQC
K4C
UBI
J344
K4C/ MHS/MQC
-K4C -MHS-MQC
D07
AZ3+UBI
X2 A
X1 3
X4 25
5
KA6
UGN
J341
-KA6-UGN
KA6/UGN
X227 47
X600 28
X227 51
AZ3/D07
C49
UV2
D07+ (KA6/UGN)
X81ACA Front Floor Console Accessory Power Rear Receptacle - 110V AC
X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC
X81FSA Accessory Power Receptacle - Front Center Seat Rear Cover 110V AC
X81FSB Accessory Power Receptacle - Front Center Seat Rear Cover 220V AC
7
KI4
KI5
D07
AZ3
X227 26
G300A

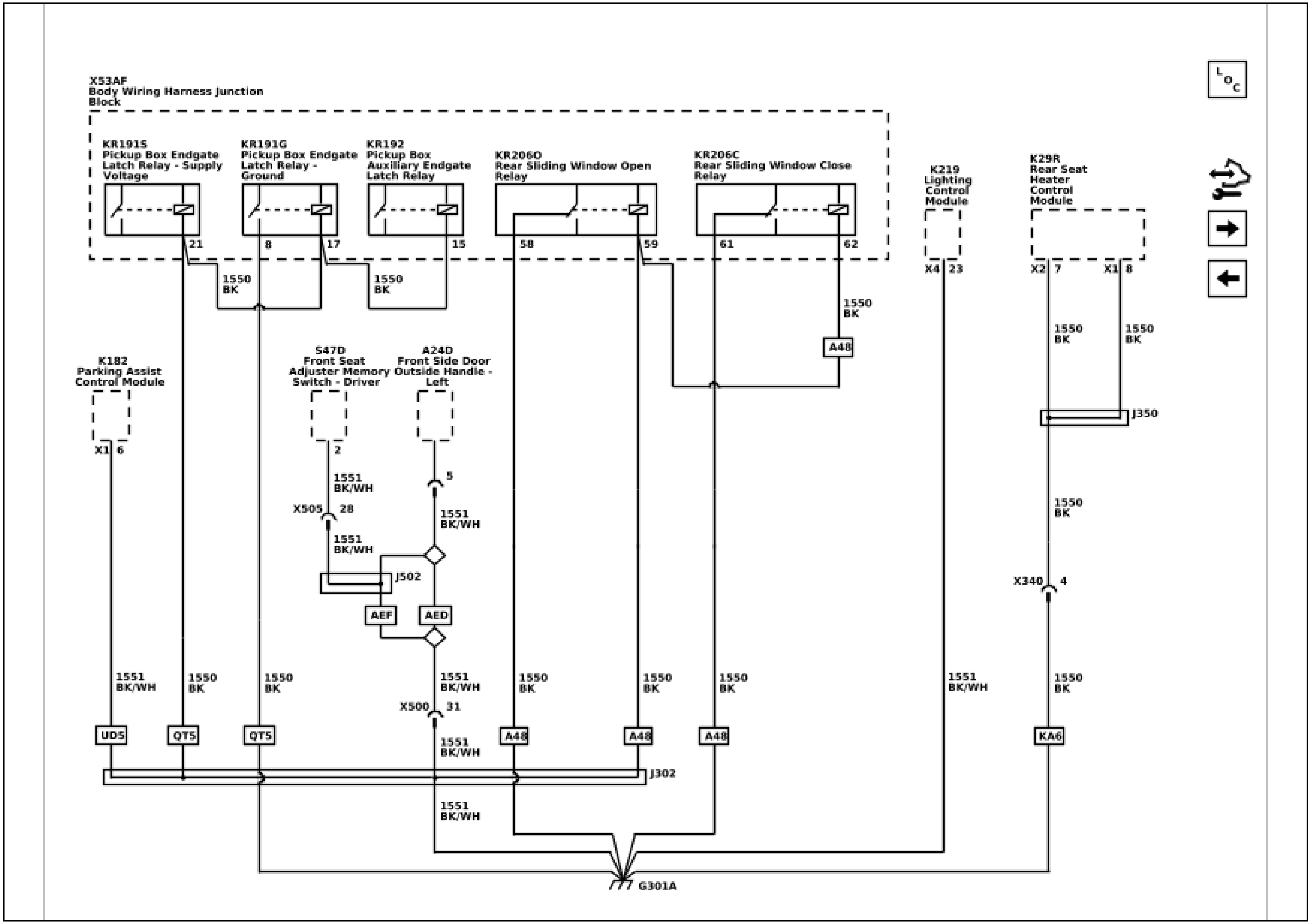
6847100

Ground Distribution Schematics (G300B)


E63P Front Side Door Inside Handle Illumination Lamp - Right
S79P Front Side Door Window Switch - Passenger
S13P Door Lock Switch - Passenger
G31P Front Seat Back Lumbar Pump - Passenger
M73P Front Seat Cushion Ventilation Blower - Passenger
K29FV Front Seat Heater Vent Control Module
S65P Front Seat Lumbar Switch - Passenger
K40P Passenger Seat Adjuster Memory Module
M73B Front Seat Back Ventilation Blower - Passenger
S64P Front Seat Adjuster Switch - Passenger
K104P Front Seat Bladder Control Module - Passenger
K104PP Front Seat Bladder Control Module - Passenger Primary
K104PS Front Seat Bladder Control Module - Passenger Secondary
2
1
4
5
X1 8
X1 1
3
E (A7K-AKE)
4 (A45)
1350 BK
-A45
KQV
KA1/KQV
A7K
A45
AVU-AKE
AKE
-GFI-GFJ
GFI/GFJ
J351
J605
A9B Outside Rearview Mirror - Passenger
E17P Outside Rearview Mirror Glass - Passenger
E3MP Front Clearance Lamp - Passenger Outside Rearview Mirror
E90P Exterior Flood Lamp - Passenger Outside Rearview Mirror
E90PC Exterior Flood Lamp - Passenger Outside Rearview Mirror Cargo
DLF/DEZ/DQS
DPO/DQS
DEZ
A23P Front Side Door Latch - Passenger
M74P Front Side Door Window Regulator Motor - Passenger
AEF
A23RR Rear Side Door Latch - Right
S79RR Rear Side Door Window Switch - Right
J802
-AEQ
AEQ
X605 10
X336 1
X800 20
9
J602
X600 47
T19 Multifunction Power Supply Converter
12
7
J314
A7K/AVU/KA1
G300B

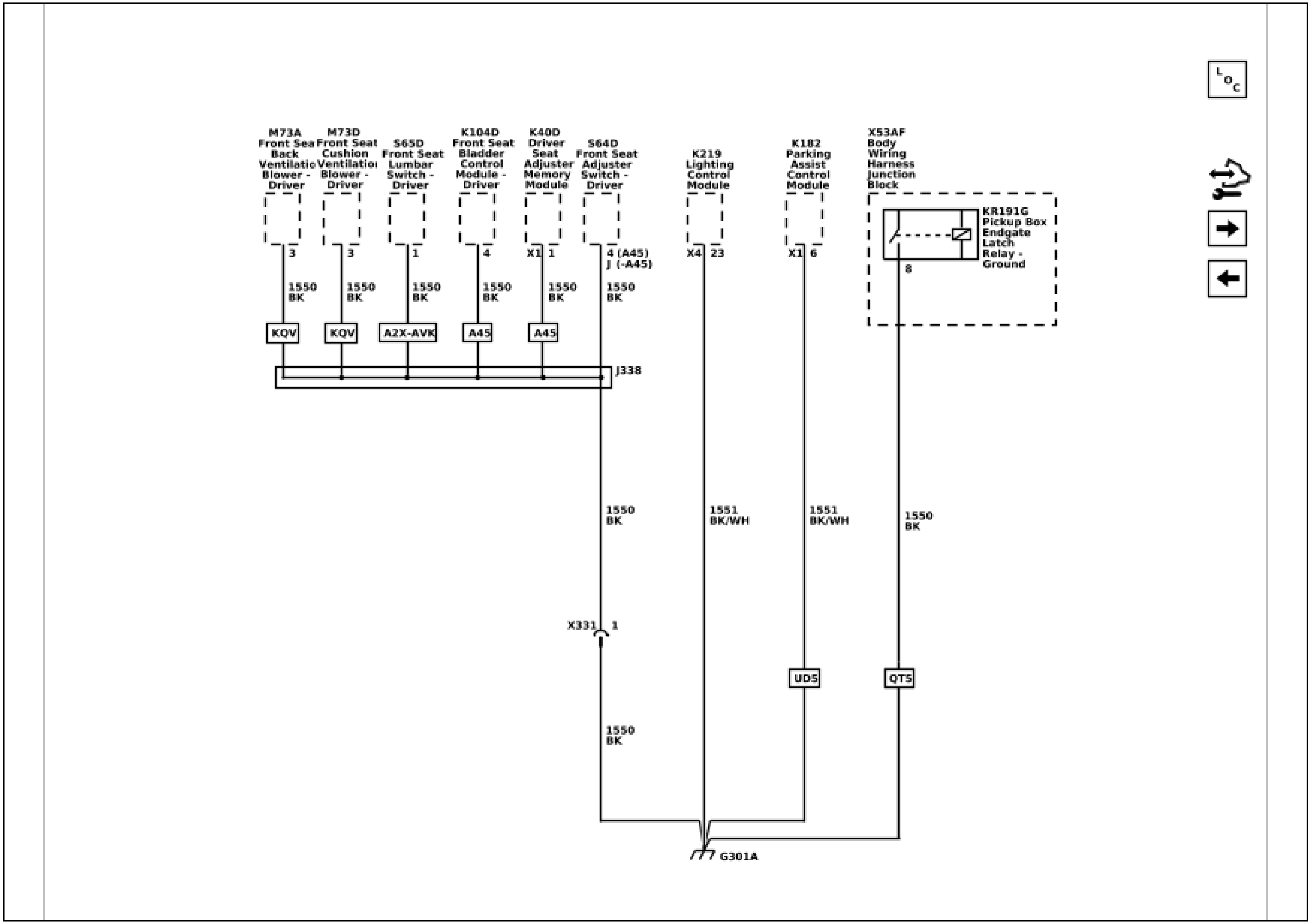
6847101

Ground Distribution Schematics (G301A - Double Cab/Crew Cab)

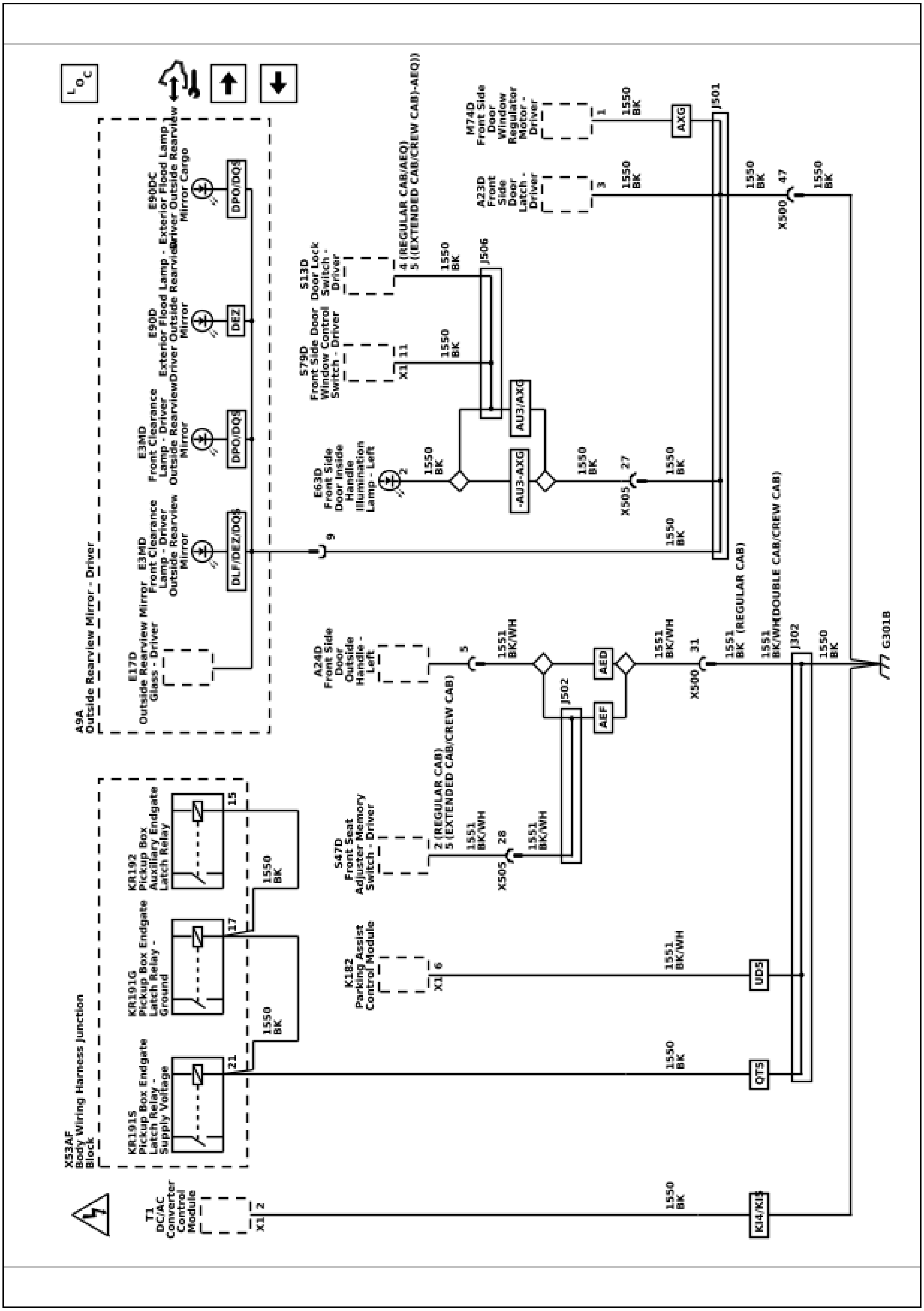

X53AF
Body Wiring Harness Junction Block
KR191S
Pickup Box Endgate Latch Relay - Supply Voltage
KR191G
Pickup Box Endgate Latch Relay - Ground
KR192
Pickup Box Auxiliary Endgate Latch Relay
KR206O
Rear Sliding Window Open Relay
KR206C
Rear Sliding Window Close Relay
K219
Lighting Control Module
K29R
Rear Seat Heater Control Module
21
8
17
15
58
59
61
62
X4 23
X2 7
X1 8
1550 BK
1550 BK
1550 BK
A48
1550 BK
1550 BK
J350
K182
Parking Assist Control Module
X1 6
S47D
Front Seat Adjuster Memory Switch - Driver
2
A24D
Front Side Door Outside Handle - Left
5
1551 BK/WH
X505 28
1551 BK/WH
1551 BK/WH
J502
AEF
AED
1550 BK
X340 4
1551 BK/WH
1550 BK
1550 BK
1551 BK/WH
X500 31
1550 BK
1550 BK
1550 BK
1551 BK/WH
1550 BK
UD5
QT5
QT5
1551 BK/WH
A48
A48
A48
KA6
J302
1551 BK/WH
G301A

6847102

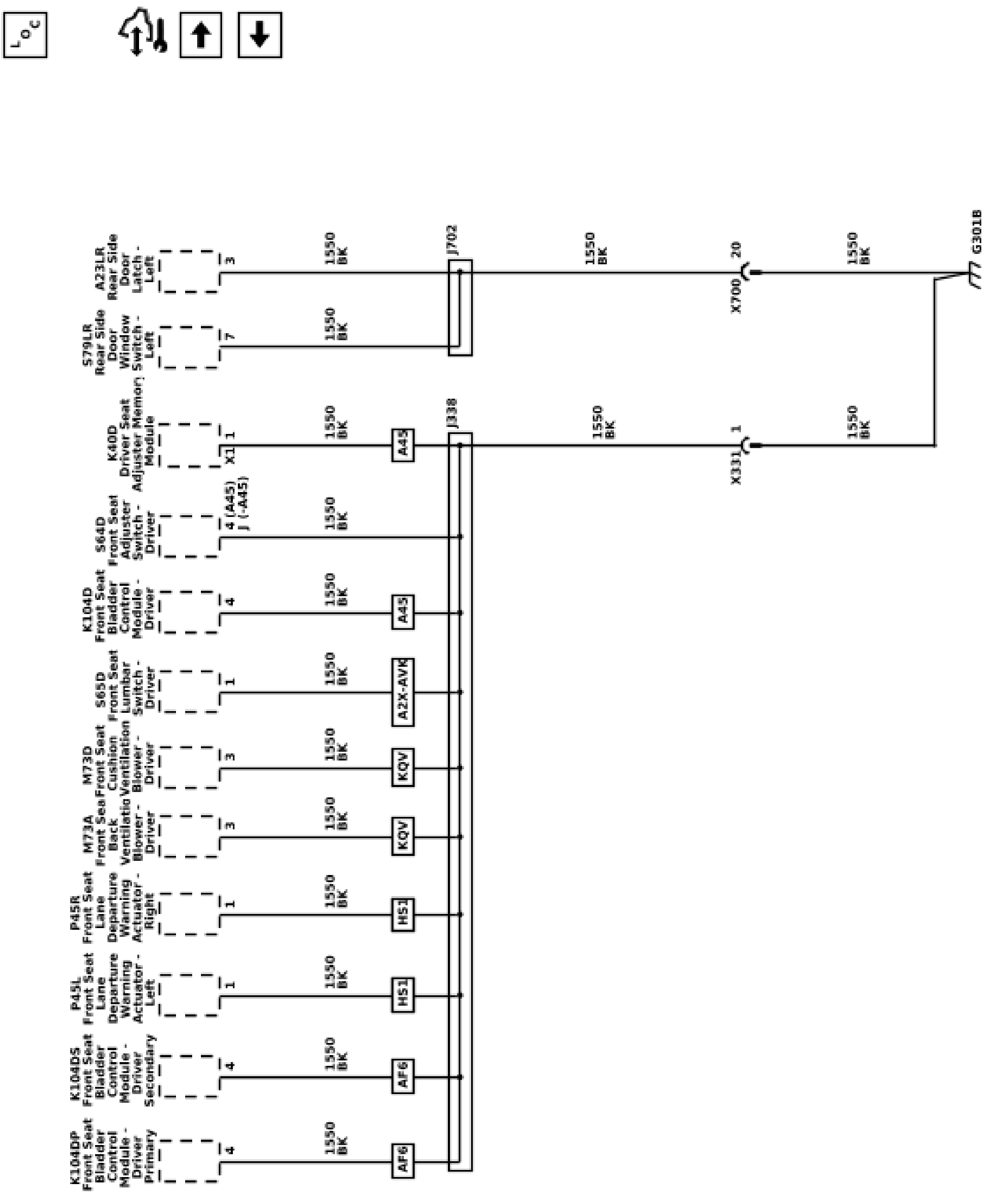
Ground Distribution Schematics (G301A - Regular Cab)


M73A Front Sea Back Ventilatio Blower - Driver
M73D Front Seat Cushion Ventilatio Blower - Driver
S65D Front Seat Lumbar Switch - Driver
K104D Front Seat Bladder Control Module - Driver
K40D Driver Seat Adjuster Memory Module
S64D Front Seat Adjuster Switch - Driver
K219 Lighting Control Module
K182 Parking Assist Control Module
X53AF Body Wiring Harness Junction Block
KR191G Pickup Box Endgate Latch Relay - Ground
3
3
1
4
X1 1
4 (A45)
J (-A45)
X4 23
X1 6
8
1550 BK
KQV
KQV
A2X-AVK
A45
A45
J338
1551 BK/WH
X331 1
UD5
QT5
G301A
6847103

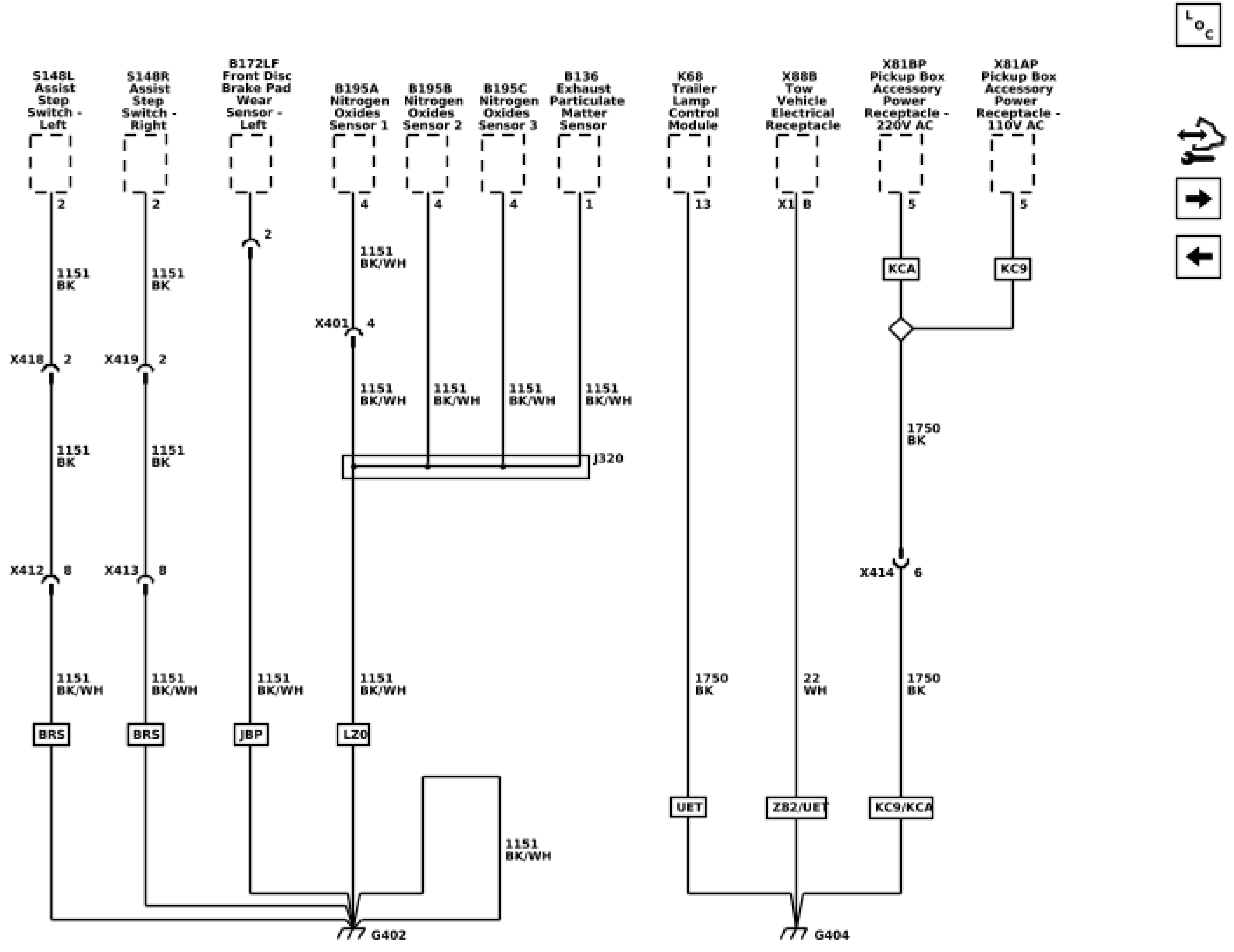
Ground Distribution Schematics (G301B - 1 of 2)


6847104
A9A Outside Rearview Mirror - Driver
E17D Outside Rearview Mirror Glass - Driver
E3MD Front Clearance Lamp - Driver Outside Rearview Mirror
E3MD Front Clearance Lamp - Driver Outside Rearview Mirror
E90D Exterior Flood Lamp - Driver Outside Rearview Mirror
E90DC Exterior Flood Lamp - Driver Outside Rearview Mirror Cargo
DLF/DEZ/DQS
DPO/DQS
DEZ
DPO/DQS
A24D Front Side Door Outside Handle - Left
E63D Front Side Door Inside Handle Illumination Lamp - Left
S79D Front Side Door Window Control Switch - Driver
S13D Door Lock Switch - Driver
A23D Front Side Door Latch - Driver
M74D Front Side Door Window Regulator Motor - Driver
4 (REGULAR CAB/AEQ)
5 ((EXTENDED CAB/CREW CAB)-AEQ))
X1 11
1550 BK
J506
AU3/AXG
-AU3-AXG
X505 27
9
5
1551 BK/WH
AED
AEF
J502
X500 31
1551 BK (REGULAR CAB)
1551 BK/WH (DOUBLE CAB/CREW CAB)
J302
J501
AXG
X500 47
3
1
G301B
X53AF Body Wiring Harness Junction Block
KR191S Pickup Box Endgate Latch Relay - Supply Voltage
KR191G Pickup Box Endgate Latch Relay - Ground
KR192 Pickup Box Auxiliary Endgate Latch Relay
21
17
15
S47D Front Seat Adjuster Memory Switch - Driver
2 (REGULAR CAB)
5 (EXTENDED CAB/CREW CAB)
X505 28
K182 Parking Assist Control Module
X1 6
UD5
QT5
T1 DC/AC Converter Control Module
X1 2
KI4/KI5

Ground Distribution Schematics (G301B - 2 of 2 - Double Cab/Crew Cab)

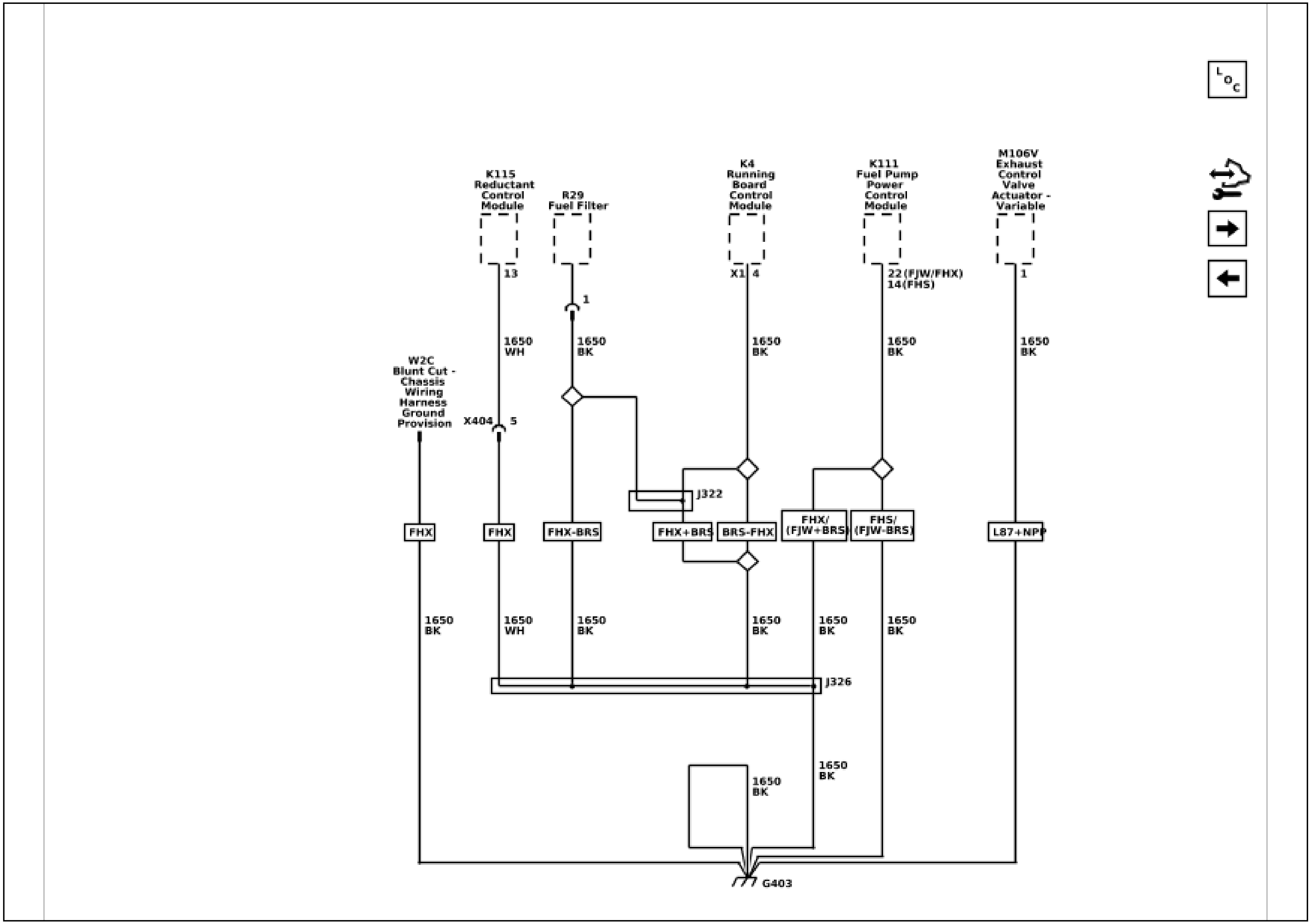

6847105
K104DP Front Seat Bladder Control Module - Driver Primary
4
1550 BK
AF6
K104DS Front Seat Bladder Control Module - Driver Secondary
4
1550 BK
AF6
P45L Front Seat Lane Departure Warning Actuator - Left
1
1550 BK
HS1
P45R Front Seat Lane Departure Warning Actuator - Right
1
1550 BK
HS1
M73A Front Seat Back Ventilation Blower - Driver
3
1550 BK
KQV
M73D Front Seat Cushion Ventilation Blower - Driver
3
1550 BK
KQV
S65D Front Seat Lumbar Switch - Driver
1
1550 BK
A2X-AVK
K104D Front Seat Bladder Control Module - Driver
4
1550 BK
A45
S64D Front Seat Adjuster Switch - Driver
4 (A45)
J (-A45)
1550 BK
K40D Driver Seat Adjuster Memory Module
X1 1
1550 BK
A45
J338
1550 BK
X331 1
1550 BK
S79LR Rear Side Door Window Switch - Left
7
1550 BK
A23LR Rear Side Door Latch - Left
3
1550 BK
J702
1550 BK
X700 20
1550 BK
G301B

Ground Distribution Schematics (G402 and G404)

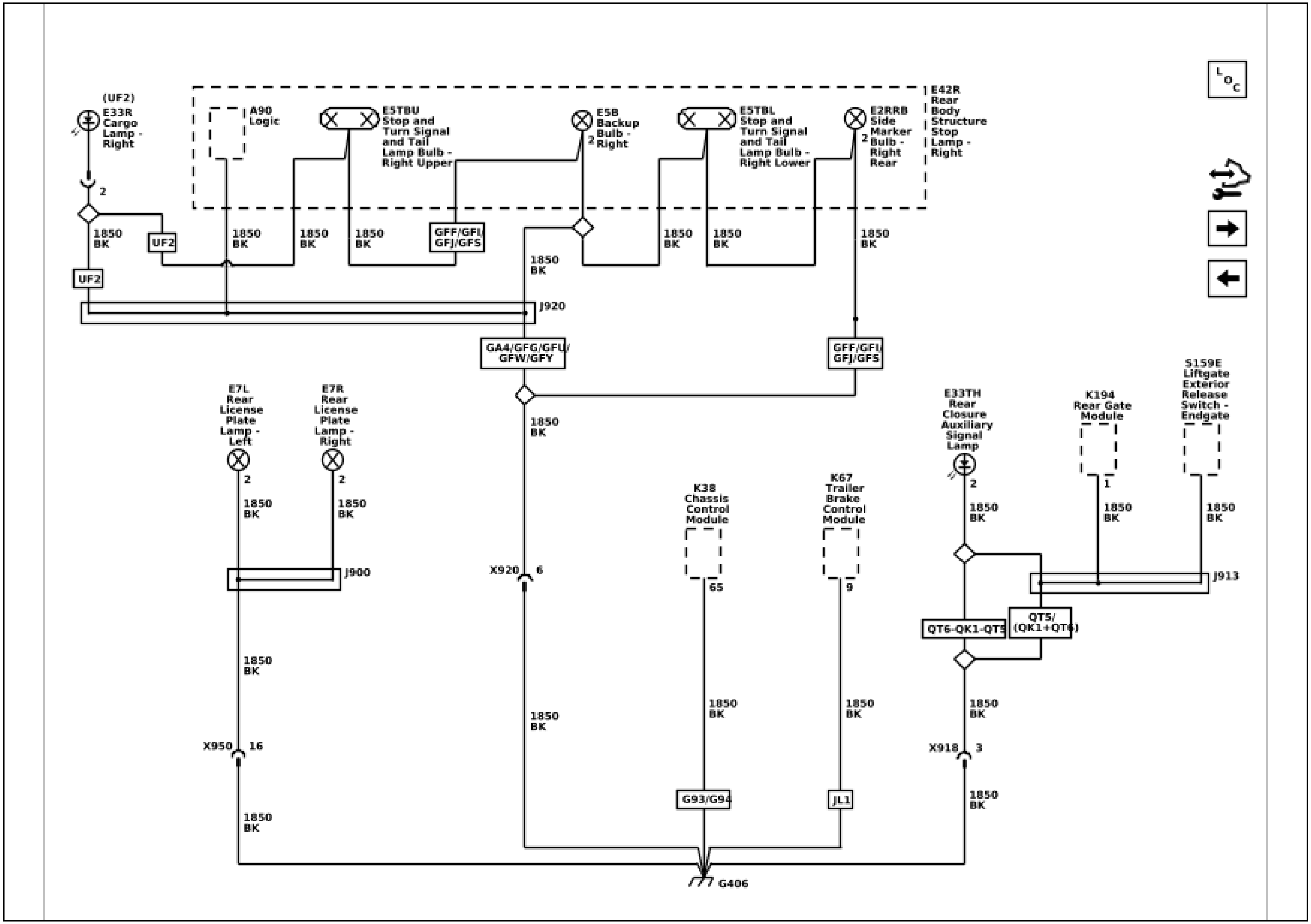

S148L Assist Step Switch - Left
S148R Assist Step Switch - Right
B172LF Front Disc Brake Pad Wear Sensor - Left
B195A Nitrogen Oxides Sensor 1
B195B Nitrogen Oxides Sensor 2
B195C Nitrogen Oxides Sensor 3
B136 Exhaust Particulate Matter Sensor
K68 Trailer Lamp Control Module
X88B Tow Vehicle Electrical Receptacle
X81BP Pickup Box Accessory Power Receptacle - 220V AC
X81AP Pickup Box Accessory Power Receptacle - 110V AC
2
2
2
4
4
4
1
13
X1 B
5
5
1151 BK
1151 BK/WH
KCA
KC9
X401 4
X418 2
X419 2
1151 BK
1151 BK/WH
1750 BK
J320
X412 8
X413 8
X414 6
22 WH
BRS
BRS
JBP
LZ0
UET
Z82/UET
KC9/KCA
G402
G404

6847106

Ground Distribution Schematics (G403)

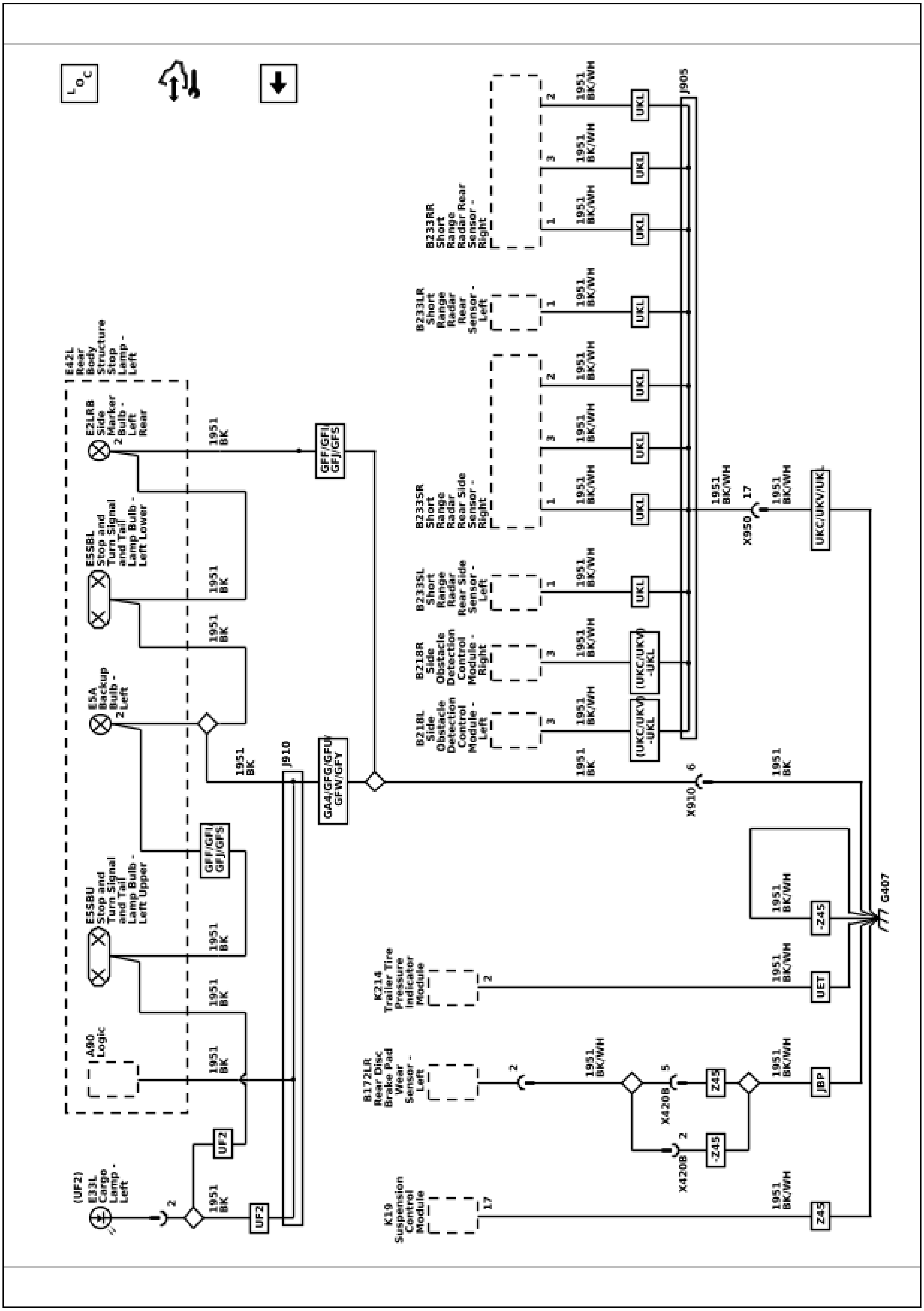

M106V Exhaust Control Valve Actuator - Variable
1
K111 Fuel Pump Power Control Module
22 (FJW/FHX)
14(FHS)
K4 Running Board Control Module
X1 4
R29 Fuel Filter
1
K115 Reductant Control Module
13
W2C Blunt Cut - Chassis Wiring Harness Ground Provision
X404 5
1650 BK
1650 WH
L87+NPP
FHS/ (FJW-BRS)
FHX/ (FJW+BRS)
BRS-FHX
FHX+BRS
FHX-BRS
FHX
FHX
J322
J326
G403
6847107

Ground Distribution Schematics (G406)

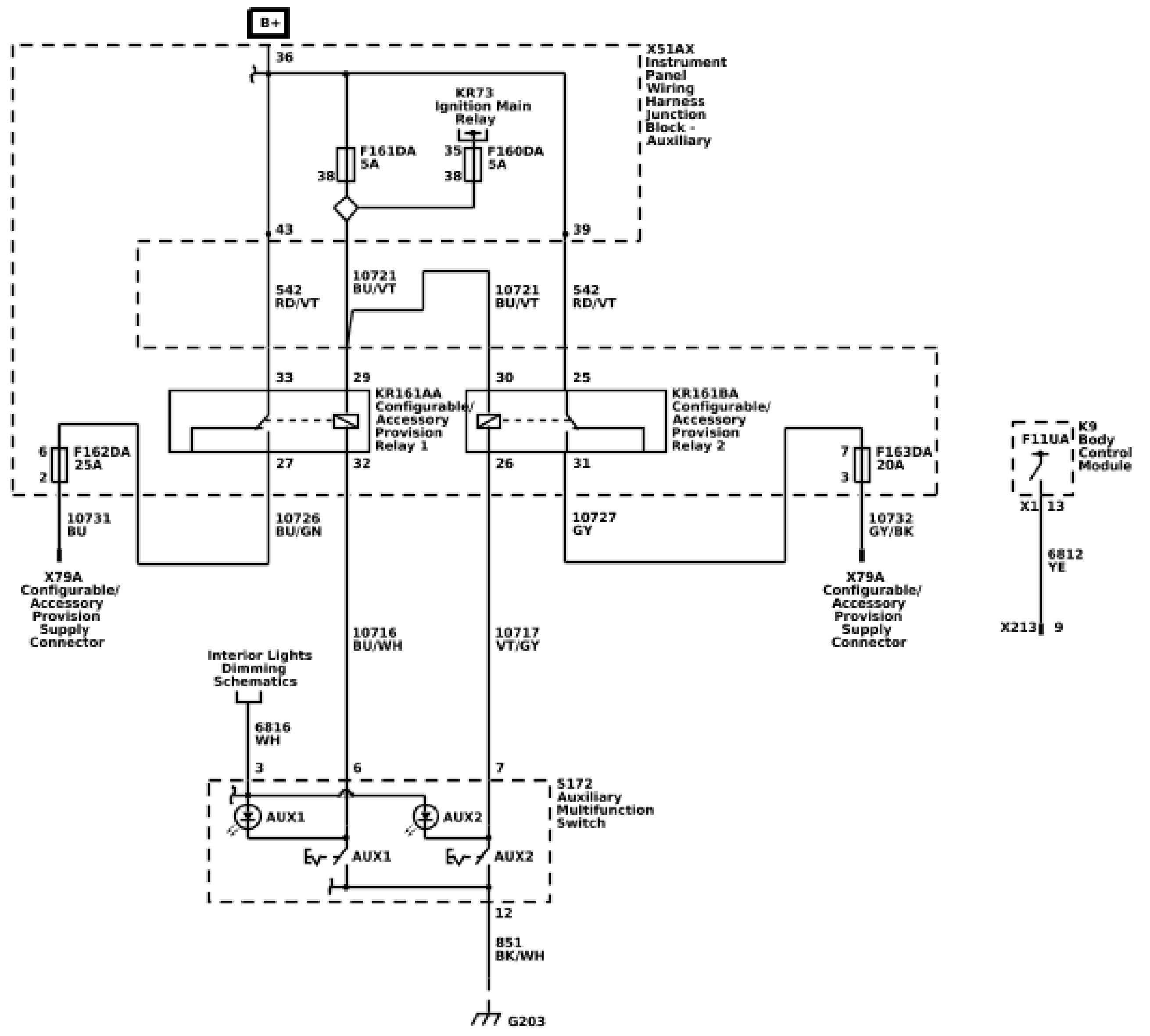

(UF2)
E33R
Cargo
Lamp -
Right
2
1850
BK
UF2
UF2
A90
Logic
E5TBU
Stop and
Turn Signal
and Tail
Lamp Bulb -
Right Upper
GFF/GFI/
GFJ/GFS
E5B
Backup
Bulb -
Right
2
E5TBL
Stop and
Turn Signal
and Tail
Lamp Bulb -
Right Lower
E2RRB
Side
Marker
Bulb -
Right
Rear
2
E42R
Rear
Body
Structure
Stop
Lamp -
Right
1850
BK
J920
GA4/GFG/GFU/
GFW/GFY
GFF/GFI/
GFJ/GFS
E7L
Rear
License
Plate
Lamp -
Left
E7R
Rear
License
Plate
Lamp -
Right
2
2
J900
X920
6
X950
16
K38
Chassis
Control
Module
65
G93/G94
K67
Trailer
Brake
Control
Module
9
JL1
E33TH
Rear
Closure
Auxiliary
Signal
Lamp
2
K194
Rear Gate
Module
1
S159E
Liftgate
Exterior
Release
Switch -
Endgate
J913
QT6-QK1-QT5
QT5/
(QK1+QT6)
X918
3
G406
L
O
C

6847108

Ground Distribution Schematics (G407)

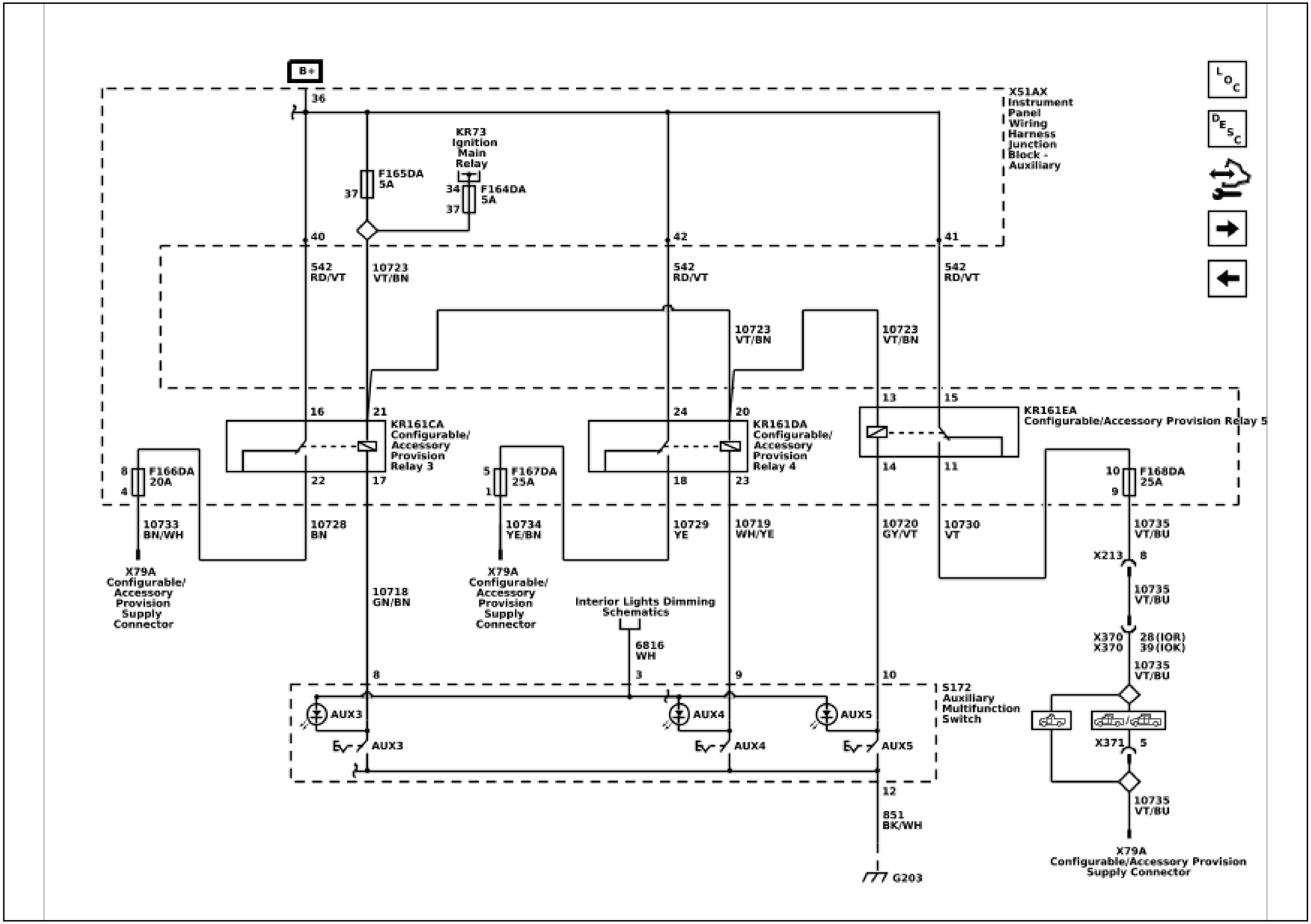

6847109
(UF2) E33L Cargo Lamp - Left
A90 Logic
E55BU Stop and Turn Signal and Tail Lamp Bulb - Left Upper
E5A Backup Bulb - Left
E55BL Stop and Turn Signal and Tail Lamp Bulb - Left Lower
E2LRB Side Marker Bulb - Left Rear
E42L Rear Body Structure Stop Lamp - Left
1951 BK
UF2
GFF/GFI GFJ/GFS
J910
GA4/GFG/GFU GFW/GFY
K19 Suspension Control Module
B172LR Rear Disc Brake Pad Wear Sensor - Left
K214 Trailer Tire Pressure Indicator Module
B218L Side Obstacle Detection Control Module - Left
B218R Side Obstacle Detection Control Module - Right
B233SL Short Range Radar Rear Side Sensor - Left
B233SR Short Range Radar Rear Side Sensor - Right
B233LR Short Range Radar Rear Sensor - Left
B233RR Short Range Radar Rear Sensor - Right
1951 BK/WH
UKL
(UKC/UKV) -UKL
J905
X950 17
UKC/UKV/UKL
X910 6
X420B 5
X420B 2
Z45
-Z45
JBP
UET
G407

Upfitter Provision Schematics (Configurable/Accessory Provision - 1 of 2 (9L7))

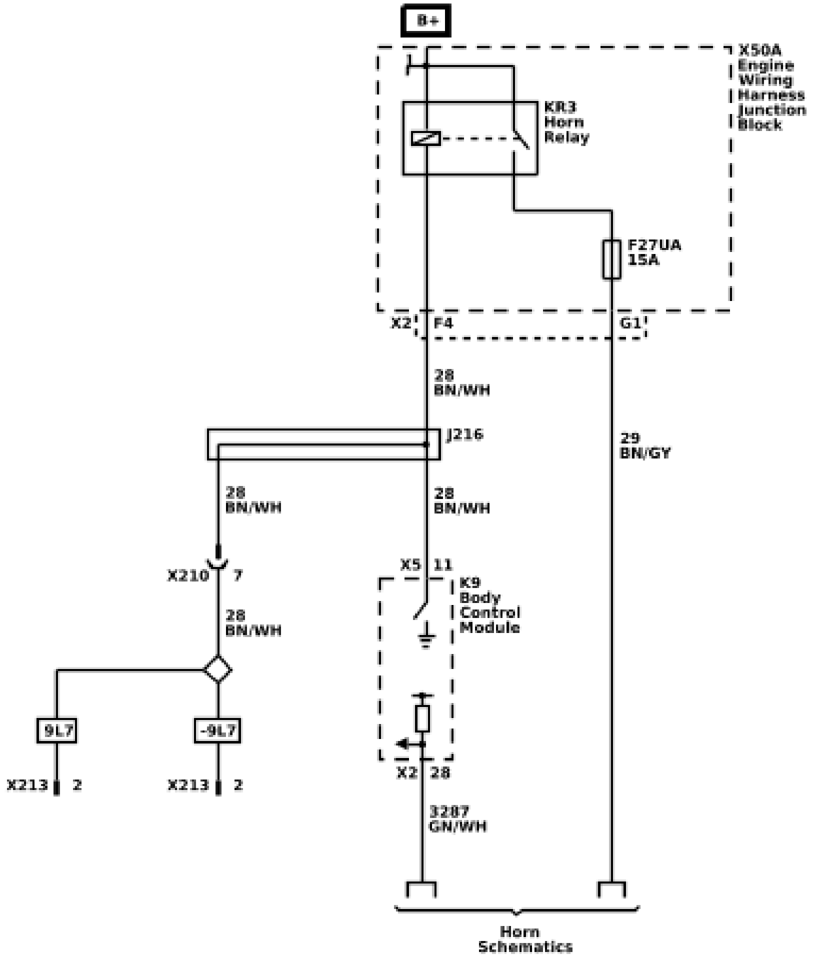

B+
36
X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary
KR73 Ignition Main Relay
F161DA 5A
38
35
F160DA 5A
38
43
39
542 RD/VT
10721 BU/VT
10721 BU/VT
542 RD/VT
33
29
30
25
KR161AA Configurable/ Accessory Provision Relay 1
KR161BA Configurable/ Accessory Provision Relay 2
6
2
F162DA 25A
27
32
26
31
7
3
F163DA 20A
F11UA
K9 Body Control Module
X1
13
10731 BU
10726 BU/GN
10727 GY
10732 GY/BK
6812 YE
X79A Configurable/ Accessory Provision Supply Connector
X79A Configurable/ Accessory Provision Supply Connector
X213
9
10716 BU/WH
10717 VT/GY
Interior Lights Dimming Schematics
6816 WH
3
6
7
S172 Auxiliary Multifunction Switch
AUX1
AUX2
AUX1
AUX2
12
851 BK/WH
G203

6847110

Upfitter Provision Schematics (Configurable/Accessory Provision - 2 of 2 (9L7))

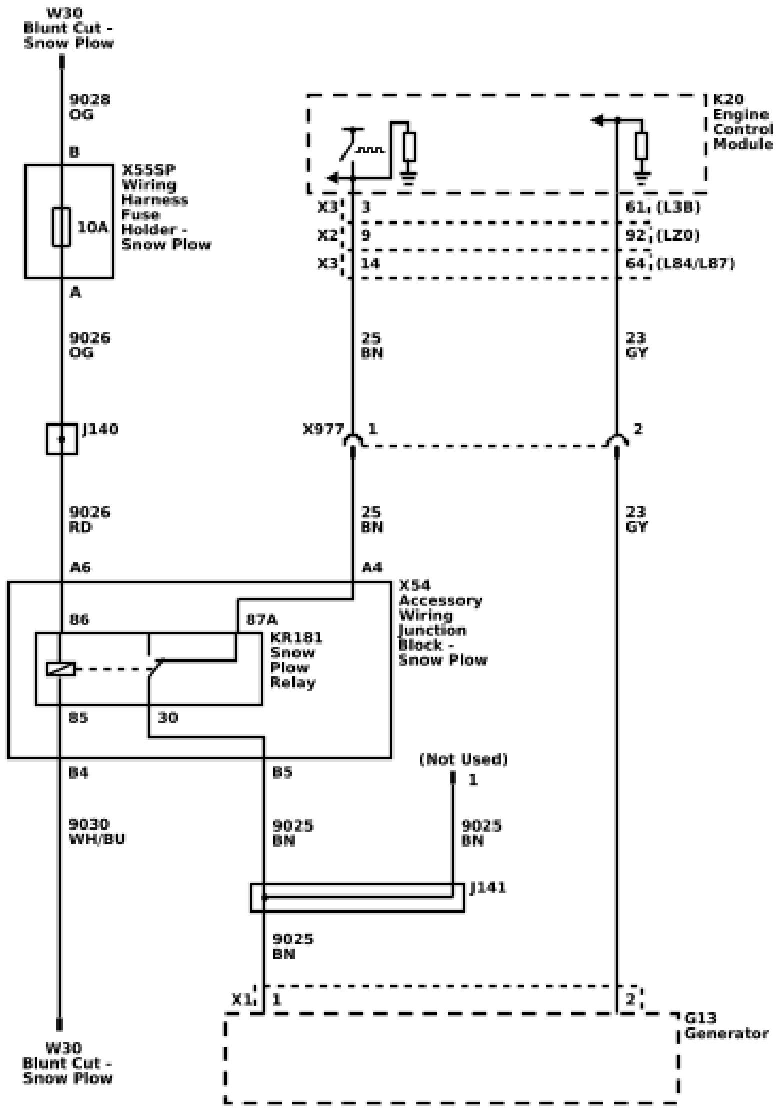

B+
36
X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary
KR73 Ignition Main Relay
F165DA 5A
37
34
F164DA 5A
37
40
42
41
542 RD/VT
10723 VT/BN
542 RD/VT
542 RD/VT
10723 VT/BN
10723 VT/BN
16
21
KR161CA Configurable/ Accessory Provision Relay 3
22
17
24
20
KR161DA Configurable/ Accessory Provision Relay 4
18
23
13
15
KR161EA Configurable/Accessory Provision Relay 5
14
11
8
4
F166DA 20A
5
1
F167DA 25A
10
9
F168DA 25A
10733 BN/WH
10728 BN
10734 YE/BN
10729 YE
10719 WH/YE
10720 GY/VT
10730 VT
10735 VT/BU
X79A Configurable/ Accessory Provision Supply Connector
X79A Configurable/ Accessory Provision Supply Connector
10718 GN/BN
Interior Lights Dimming Schematics
6816 WH
X213 8
10735 VT/BU
X370 28 (IOR)
X370 39 (IOK)
10735 VT/BU
8
3
9
10
S172 Auxiliary Multifunction Switch
AUX3
AUX3
AUX4
AUX4
AUX5
AUX5
X371 5
12
851 BK/WH
10735 VT/BU
X79A Configurable/Accessory Provision Supply Connector
G203
6847111

Upfitter Provision Schematics (Horn Provision (5W4))


B+
KR3
Horn
Relay
X50A
Engine
Wiring
Harness
Junction
Block
F27UA
15A
X2
F4
G1
28
BN/WH
J216
29
BN/GY
28
BN/WH
28
BN/WH
X5
11
K9
Body
Control
Module
X210
7
28
BN/WH
9L7
-9L7
X213
2
X213
2
X2
28
3287
GN/WH
Horn
Schematics

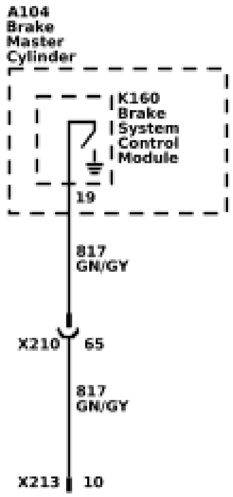
6847112

Upfitter Provision Schematics (Snow Plow Provision (VYU))


W30
Blunt Cut -
Snow Plow
9028
OG
B
X55SP
Wiring
Harness
Fuse
Holder -
Snow Plow
10A
A
9026
OG
J140
9026
RD
A6
K20
Engine
Control
Module
X3 3 61 (L3B)
X2 9 92 (LZ0)
X3 14 64 (L84/L87)
25
BN
23
GY
X977 1
2
25
BN
23
GY
A4
X54
Accessory
Wiring
Junction
Block -
Snow Plow
86
87A
KR181
Snow
Plow
Relay
85
30
B4
B5
(Not Used)
1
9030
WH/BU
9025
BN
9025
BN
J141
9025
BN
X1 1
2
G13
Generator
W30
Blunt Cut -
Snow Plow

6847113

Upfitter Provision Schematics (Vehicle Speed Signal)


A104
Brake
Master
Cylinder
K160
Brake
System
Control
Module
19
817
GN/GY
X210
65
817
GN/GY
X213
10

6847114

Component Locator

Master Electrical Component List

Master Electrical Component List

Code	Name	Option	Location	Locator View	Connector End View
A3L	Sunshade - Left	—	In the passenger compartment, at the front of the headliner, left side	• •	
A3R	Sunshade - Right	—	In the passenger compartment, at the front of the headliner, right side	• •	
A7	Fuel Tank Fuel Pump Module	—	Under the vehicle, left side, in front of rear axle, mounted to the top of the fuel tank		
A9A	Outside Rearview Mirror - Driver	—	Outside the vehicle, at the front of the driver door		
A9B	Outside Rearview Mirror - Passenger	—	Outside the vehicle, at the front of the passenger door		
A10	Inside Rearview Mirror	—	In the passenger compartment, at the top center of the windshield	• •	• •
A11	Radio	—	In the passenger compartment, right front, below passenger a-pillar, between the instrument panel and bulkhead		• • • • • • • • • • • • • • • • •
A16	Transfer Case Four Wheel Drive Actuator	NP0 / NQH	Under the vehicle, mounted to the rear of the transfer case	• •	
A22	Radio Control	IOK	In the passenger compartment, at the center of the Instrument Panel		• •
A23D	Front Side Door Latch - Driver	—	In the driver door, at the rear center		
A23LR	Rear Side Door Latch - Left	Double Cab / Crew Cab	In the left rear door, at the rear center	• •	
A23P	Front Side Door Latch - Passenger	—	In the passenger door, at the rear center		

Code	Name	Option	Location	Locator View	Connector End View
A23RR	Rear Side Door Latch - Right	Double Cab / Crew Cab	In the right rear door, at the rear center	• •	
A24D	Front Side Door Outside Handle - Left	—	Outside of the vehicle, at the rear of the driver door		
A24P	Front Side Door Outside Handle - Right	—	Outside of the vehicle, at the rear of the passenger door		
A26	Heater and Air Conditioning User Interface Control - Front	—	In the passenger compartment, at the center of the instrument panel, beneath A22 Radio Control or P53 Driver Information Display	• •	
A38	Reductant Tank Fluid Supply Pump Module	LZ0	Under the vehicle, right side, rearward of engine compartment bulkhead, mounted in the bottom of the reductant tank		—
A99L	Pickup Box Endgate Latch - Left	QK2+QT5	At the rear of the vehicle, within endgate, on the left side		
A99R	Pickup Box Endgate Latch - Right	QK2+QT5	At the rear of the vehicle, within endgate, on the right side		
A100L	Pickup Box Auxiliary Endgate Latch - Left	QK2	At the rear of the vehicle, within endgate, on the left side		
A100R	Pickup Box Auxiliary Endgate Latch - Right	QK2	At the rear of the vehicle, within endgate, on the right side		
A103	Roof Console	—	In the passenger compartment, front center, mounted to the front center of the headliner	• •	• • • •
A104	Brake Master Cylinder	—	In the engine compartment, left rear, bolted to the bulkhead	—	—
B1	Air Conditioning Refrigerant Pressure Sensor	—	In the engine compartment, left front, mounted to A/C high pressure line, near G1 A/C Compressor	• •	• •
B5LF	Front Wheel Speed Sensor - Left	—	Outside the vehicle, part of the left front wheel hub assembly		
B5LR	Rear Wheel Speed Sensor - Left	—	Outside the vehicle, mounted to the outboard end of the left axle tube		
B5RF	Front Wheel Speed Sensor - Right	—	Outside the vehicle, part of the right front wheel hub assembly		
B5RR	Rear Wheel Speed Sensor - Right	—	Outside the vehicle, mounted to the outboard end of the right axle tube		
B9	Ambient Air Temperature Sensor	—	Outside of the vehicle, at the bottom of A9B Outside Rearview Mirror - Passenger	—	—

Code	Name	Option	Location	Locator View	Connector End View
B10D	Sun Load and Ambient Light and Security Indicator Sensor	—	In the passenger compartment, front center, in instrument panel, mounted to the instrument panel extension	• •	
B11RF	Front Suspension 4 Corner Leveling System Position Sensor - Right	—	In the right front wheel well, forward of strut assembly, mounted to right front outboard frame		
B12B	Automatic Transmission Fluid Pressure Sensor	—	Under the vehicle, inside the T12 Automatic Transmission	—	
B13	Automatic Transmission Fluid Temperature Sensor	—	Under the vehicle, inside the T12 Automatic Transmission	• •	• •
B14A	Automatic Transmission Output Speed Sensor	—	Under the vehicle, inside the T12 Automatic Transmission	• •	
B14C	Automatic Transmission Input Speed Sensor	—	Under the vehicle, inside the T12 Automatic Transmission	• •	
B14D	Automatic Transmission Intermediate Speed Sensor	—	Under the vehicle, inside the T12 Automatic Transmission		—
B14DA	Automatic Transmission Intermediate Speed Sensor 1	—	Under the vehicle, inside the T12 Automatic Transmission		
B14DB	Automatic Transmission Intermediate Speed Sensor 2	—	Under the vehicle, inside the T12 Automatic Transmission		
B20A	Brake Fluid Level Indicator Switch	—	In the engine compartment, left rear, mounted in the brake fluid reservoir		
B22	Brake Pedal Position Sensor	—	In the passenger compartment, in the driver side foot well, under the instrument panel		
B23	Camshaft Position Sensor	L84 / L87 / LZ0	• (L84 / L87) In the engine compartment, front center, mounted to timing chain cover, above crankshaft harmonic balancer • (LZ0) In the engine compartment, rear center, mounted to the right rear side of the engine block, above transmission bellhousing	• •	• •
B23E	Camshaft Position Sensor - Exhaust	L3B	In the engine compartment, at the rear of the engine, mounted to the right rear of the camshaft carrier		
B23F	Camshaft Position Sensor - Intake	L3B	In the engine compartment, at the rear of the engine, mounted to the left rear of the camshaft carrier		

Code	Name	Option	Location	Locator View	Connector End View
B24LF	Mobile Telephone Microphone - Left Front	—	In the passenger compartment, left front, attached to the headliner	• •	
B24RF	Mobile Telephone Microphone - Right Front	IOK	In the passenger compartment, right front, attached to the headliner	• •	
B26	Crankshaft Position Sensor	—	• (L3B) In the engine compartment, left rear, mounted to rear of engine block. Below M64 Starter Motor • (L84 / L87) In the engine compartment, right rear, mounted to right rear side of engine block, behind M64 Starter Motor	• • •	• • •
B27LF	Front Side Door Outside Handle Switch - Left	—	Outside of the vehicle, at the rear of the driver door, within A24D Front Side Door Outside Handle - Left	—	—
B27RF	Front Side Door Outside Handle Switch - Right	—	Outside of the vehicle, at the rear of the driver door, within A24P Front Side Door Outside Handle - Right	—	—
B34	Engine Coolant Temperature Sensor	L84 / L87 / LZ0	• (L3B/L87) In the engine compartment, front center, mounted to water pump • (LZ0) In the engine compartment, attached to the left front side of the engine block, beneath air cleaner outlet front duct	• •	• •
B34A	Engine Coolant Temperature Sensor 1	L3B	In the engine compartment, left side of engine block, attached to the front of Q97 Engine Coolant Flow Control Valve		
B34B	Engine Coolant Temperature Sensor 2	L3B / LZ0	• (L3B) In the engine compartment, right front, attached to the coolant pipe above the G59 Engine Coolant Pump • (LZ0) In the engine compartment, right front, mounted to water pump inlet pipe	• •	• •
B34E	Engine Coolant Temperature Sensor 5	L3B	In the engine compartment, right side, mounted above exhaust manifold, to the right off the camshaft carrier		
B34F	Engine Coolant Temperature Sensor 6	L3B	In the engine compartment, attached to the left side of the engine block, in front of Q97 Engine Coolant Flow Control Valve	—	
B34K	Charge Air Cooler Coolant Temperature Sensor - Inlet	LZ0	In the engine compartment, right front, mounted to charge air cooler coolant hose		

Code	Name	Option	Location	Locator View	Connector End View
B35	Engine Oil Level Indicator Switch	L84 / L87	In the engine compartment, mounted to the right side of the engine oil pan		
B36	Engine Oil Temperature Sensor	L3B / LZ0	• (L3B) In the engine compartment, left side, mounted to the engine oil filter housing • (LZ0) In the engine compartment, right rear, mounted to the right rear side of the lower crank case, forward of B37B Engine Oil Pressure Sensor	• •	• •
B37B	Engine Oil Pressure Sensor	—	• (L3B) In the engine compartment, front center, mounted to the right side of the engine block, near the accessory belt drive • (L84 / L87) In the engine compartment, left side of engine, mounted above the engine oil filter • (LZ0) In the engine compartment, right rear, mounted to the right rear side of the lower crank case, rear of B36 Engine Oil Temperature Sensor	• •	• • •
B39	Air Conditioning Evaporator Air Temperature Sensor	—	In the passenger compartment, behind the instrument panel, mounted in the HVAC housing		
B46	Fuel Level Sensor	—	Under the vehicle, inside the fuel tank, part of the fuel pump and level sensor assembly	—	—
B47	Fuel Pressure Sensor	—	• (L3B / L84 / L87) Under the vehicle, left side, in front of rear axle, mounted to the top of the fuel tank • (LZ0) Under the vehicle, right middle, mounted to the right inboard side frame rail, rearward of R29 Fuel Filter	• •	• •
B47B	Fuel Rail Pressure Sensor	—	In the engine compartment, at the top of the engine, mounted to the fuel rail	• •	
B52A	Heated Oxygen Sensor 1	L3B	In the engine compartment, right rear, mounted to the catalytic converter		
B52B	Heated Oxygen Sensor 2	L3B	In the engine compartment, right rear, mounted to the exhaust, rearward of catalytic converter	—	
B52C	Heated Oxygen Sensor - Bank 1 Sensor 1	L84 / L87	Under the vehicle, mounted in the bank 1 exhaust, upstream of the catalytic converter	—	• •

Code	Name	Option	Location	Locator View	Connector End View
B52D	Heated Oxygen Sensor - Bank 1 Sensor 2	L84 / L87	Under the vehicle, mounted in the bank 1 exhaust, downstream of the catalytic converter	—	
B52E	Heated Oxygen Sensor - Bank 2 Sensor 1	L84 / L87	Under the vehicle, mounted in the bank 2 exhaust, upstream of the catalytic converter	—	• •
B52F	Heated Oxygen Sensor - Bank 2 Sensor 2	L84 / L87	Under the vehicle, mounted in the bank 2 exhaust, downstream of the catalytic converter	—	• •
B55	Engine Compartment Cover Switch	—	Outside the vehicle, at the front center of the hood, part of the hood latch assembly		
B58L	Airbag Front End Discriminating Sensor - Left	—	In the engine compartment, left front, at the bottom of the radiator core support		
B58R	Airbag Front End Discriminating Sensor - Right	—	In the engine compartment, right front, at the bottom of the radiator core support		
B61P	Seat Belt Tension Sensor - Passenger	—	In the passenger compartment, at the base of the B-pillar, part of the passenger seat belt retractor pretensioner	• •	
B63LF	Airbag Side Impact Sensor - Left Front Door	—	At the left front of the passenger compartment, mounted inside the left front door, at the bottom		
B63LR	Airbag Side Impact Rear Sensor - Left Door	Double Cab / Crew Cab	At the left rear of the passenger compartment, mounted inside the left rear door, at the bottom	• •	
B63RF	Airbag Side Impact Sensor - Right Front Door	—	At the right front of the passenger compartment, mounted inside the right front door, at the bottom		
B63RR	Airbag Side Impact Rear Sensor - Right Door	Double Cab / Crew Cab	At the right rear of the passenger compartment, mounted inside the right rear door, at the bottom	• • •	
B65	Manifold Absolute Pressure and Intake Air Temperature Sensor	LZ0	In the engine compartment, left side of engine, mounted to the intake manifold, near Q18A Fuel Pressure Regulator 1	• •	• •
B68A	Knock Sensor 1	L3B / L84 / L87	• (L3B) In the engine compartment, left side of engine, mounted to the front of the engine block, below Q17A Fuel Injector 1 and Q17B Fuel Injector 2 • (L84 / L87) In the engine compartment, left side of engine, mounted to the rear of the engine block, below exhaust manifold	• •	

Code	Name	Option	Location	Locator View	Connector End View
B68B	Knock Sensor 2	L3B / L84 / L87	• (L3B) In the engine compartment, left side of engine, mounted to the front of the block, below Q17C Fuel Injector 3and Q17D Fuel Injector 4 • (L84 / L87) In the engine compartment, right rear, mounted to right rear side of engine block, behind M64 Starter Motor	• •	
B74	Manifold Absolute Pressure Sensor	L84 / L87	In the engine compartment, front center, mounted to intake manifold, to the left of Q38 Throttle Body		
B75	Mass Airflow Sensor	—	In the engine compartment, left front, mounted to the air cleaner lid		• • •
B77	Radio Volume Compensator Interior Noise Microphone	UQS	In the passenger compartment, front center, mounted to the headliner, rearward of A103 Roof Console	—	
B80	Parking Brake Switch	—	In the passenger compartment, at the left lower side of the instrument panel	—	—
B81B	Automatic Transmission Control Park Position Switch	—	In the passenger compartment, right side of the steering wheel, part of M7 Automatic Transmission Shift Lock Control Solenoid	—	—
B87	Rearview Driver Information Camera	UVB / UVC / UV2 / UVI	Outside the vehicle, at the top middle of the tailgate, mounted in the tailgate handle	• • •	• •
B87CA	Auxiliary Rearview Camera - Cargo Area	UVN	Outside of the vehicle, at the rear of the cab, back of roof, within E6 Center High Mounted Stop Lamp		
B88D	Seat Belt Switch - Driver	—	In the passenger compartment, at the inboard side of the driver seat, part of the seat belt buckle		
B88DB	Seat Belt Sensor - Driver	—	In the passenger compartment, at the inboard side of the driver seat, part of the seat belt buckle	—	
B88LR	Seat Belt Switch - Left Rear	—	In the passenger compartment at the Left of the second row seat	—	
B88MR	Seat Belt Switch - Rear Middle	—	In the passenger compartment, at the middle of the second row seat	—	• •
B88P	Seat Belt Switch - Passenger	—	In the passenger compartment, at the inboard side of the passenger seat, part of the seat belt buckle		
B88RR	Seat Belt Switch - Right Rear	—	In the passenger compartment at the right of the second row seat	—	• •

Code	Name	Option	Location	Locator View	Connector End View
B96	Cylinder Head Temperature Sensor	LZ0	In the engine compartment, front center, mounted to the front of the cylinder head, above the belt drive		
B107	Accelerator Pedal Position Sensor	—	In the passenger compartment, in the driver side foot well, under the instrument panel		
B110	Battery Monitor Module	—	In the engine compartment, right side, near C1 Battery negative cable		• • •
B111	Turbocharger/ Supercharger Boost Pressure Sensor	L3B	In the engine compartment, left front, mounted to the top left side of the intercooler	—	
B117A	Windshield Outside Moisture/ Ambient Light and Humidity Sensor	—	In the passenger compartment, at the top center of the windshield, forward of windshield multifunction sensor mount bracket cover insert	• •	
B118	Windshield Washer Solvent Container Level Sensor	—	At the left front corner of vehicle, forward of the front wheelhouse liner, at the bottom of the washer fluid reservoir		
B130C	Exhaust Gas Recirculation Temperature Sensor 3	LZ0	In the engine compartment, right rear, attached to exhaust gas recirculation cooler		
B136	Exhaust Particulate Matter Sensor	LZ0	On the underbody, mounted to the inboard side of the right frame rail, forward of the right rear shock		
B137B	Power Steering Shaft Torque/ Position Sensor	—	Under the vehicle, in the engine compartment, left front, behind the left side of the power steering rack.	—	—
B139	Transfer Case Two/Four Wheel Drive Actuator Position Sensor	NP0 / NQH	Under the vehicle, mounted to the transfer case	• •	
B150	Fuel Tank Pressure Sensor	L3B / L84 / L87	Under the vehicle, at the top of the fuel tank		
B152LF	Front Suspension Automatic Forward Lighting Position Sensor - Left	—	In the left front wheel well, forward of strut assembly, mounted to left front outboard frame (was B11LF)		
B152R	Rear Suspension Automatic Forward Lighting Leveling Position Sensor	—	In the left rear wheel well, forward of rear axle, mounted to left outer frame rail (was B11LR)		
B153D	Front Seat Belt Buckle - Driver	—	In the passenger compartment, at the inboard side of the drive seat	—	—
B153LR	Rear Seat Belt Buckle - Left	—	In the passenger compartment, at the left side of left second row seat	—	—

Code	Name	Option	Location	Locator View	Connector End View
B153P	Front Seat Belt Buckle - Passenger	—	In the passenger compartment, at the inboard side of the passenger seat	—	—
B153RR	Rear Seat Belt Buckle - Right	—	In the passenger compartment at the right of the second row seat	—	—
B160	Inside Air Moisture and Windshield Temperature Sensor	—	In the passenger compartment, front center, mounted to top of windshield	• •	
B165	Content Theft Deterrent Sensor	—	In the passenger compartment, front center, mounted to rear of A103 Roof Console	—	—
B172LF	Front Disc Brake Pad Wear Sensor - Left	—	Under the vehicle, at left front caliper		
B172LR	Rear Disc Brake Pad Wear Sensor - Left	—	Under the vehicle, at left rear caliper		
B174G	Front View Driver Information Camera - Grille	UVS	At the front of the vehicle, front center, near the grille		
B174W	Front View Camera - Windshield	ASV	In the passenger compartment, at the top middle of the windshield	—	
B193A	Charge Air Cooler Air Temperature Sensor - Inlet	LZ0	In the engine compartment, mounted to the left side of the air charge cooler		
B193B	Charge Air Cooler Air Temperature Sensor - Outlet	LZ0	In the engine compartment, mounted to the front of the air charge cooler		
B194	Reductant Pressure Sensor	LZ0	Under the vehicle, right side, forward of rear axle, within reductant tank, part of A38 Reductant Tank Fluid Supply Pump Module	—	—
B195A	Nitrogen Oxides Sensor 1	LZ0	In the engine compartment, attached to the exhaust pipe, on the top left rear side of the engine		
B195B	Nitrogen Oxides Sensor 2	LZ0	Under the vehicle, attached to the exhaust pipe, at the middle of the diesel particulate filter		
B195C	Nitrogen Oxides Sensor 3	LZ0	Under the vehicle, attached to the exhaust pipe		
B198	Fuel Composition Sensor	FHS	Under the vehicle, left side, mounted to fuel feed lines, forward of fuel tank	—	
B203	Radiator Coolant Temperature Sensor	L3B / LZ0	In the engine compartment, right front, attached to the right side of the radiator		• •
B212	Reductant Tank Fluid Sensor	LZ0	Under the vehicle, right side, attached to reductant tank		—

Code	Name	Option	Location	Locator View	Connector End View
B214	Reductant Tank Temperature Sensor	LZ0	Under the vehicle, right side, forward of rear axle, within reductant tank, part of A38 Reductant Tank Fluid Supply Pump Module	—	—
B218L	Side Obstacle Detection Control Module - Left	UKC	Outside of the vehicle, left rear corner, mounted to the inside of the rear bumper		
B218R	Side Obstacle Detection Control Module - Right	UKC	Outside of the vehicle, right rear corner, mounted to the inside of the rear bumper		
B225L	Side View Driver Information Camera - Left	UVI / UV2	Outside of vehicle, left side, within A9A Outside Rearview Mirror - Driver	—	—
B225R	Side View Driver Information Camera - Right	UVI / UV2	Outside of vehicle, right side, within A9B Outside Rearview Mirror - Passenger	—	—
B233B	Forward Range Radar Sensor - Long Range	UGN / UKL	At the front of the vehicle, behind front bumper, right of center		
B233LF	Short Range Radar Sensor - Left Front	UKL	At the front of the vehicle, mounted to the inside of the front bumper, left side		
B233LR	Short Range Radar Rear Sensor - Left	UKL	At the rear of the vehicle, mounted to the inside of the rear bumper, left side		
B233RF	Short Range Radar Sensor - Right Front	UKL	At the front of the vehicle, mounted to the inside of the front bumper, right side		
B233RR	Short Range Radar Rear Sensor - Right	UKL	At the rear of the vehicle, mounted to the inside of the rear bumper, right side		
B233SL	Short Range Radar Rear Side Sensor - Left	UKL	At the rear of the vehicle, mounted to the inside of the rear bumper, left side		
B233SR	Short Range Radar Rear Side Sensor - Right	UKL	At the rear of the vehicle, mounted to the inside of the rear bumper, right side		
B280	Transmission Fluid Pressure Accumulator Solenoid Valve	MFC	Under the vehicle, inside T12 Automatic Transmission		
B284	Vehicle Dynamics Sensor	UKL	In the passenger compartment, front center, mounted beneath the floor console or center seat	• • •	
B292	Driver Monitoring Camera	UKL	In the passenger compartment, left front, forward of the steering wheel, mounted to the top of the steering column cowl		
B303	Transmission Range Sensor	—	Underneath the vehicle, inside of the T12 Automatic Transmission	• •	• •
B306A	Parking Assist Alarm Sensor - Front Left Outer	UD5	At the front of the vehicle, left side, mounted in the front bumper		

Code	Name	Option	Location	Locator View	Connector End View
B306B	Parking Assist Alarm Sensor - Front Left Middle	UD5	At the front of the vehicle, left of center, mounted in the front bumper		
B306C	Parking Assist Alarm Sensor - Front Right Middle	UD5	At the front of the vehicle, right of center, mounted in the front bumper		
B306D	Parking Assist Alarm Sensor - Front Right Outer	UD5	At the front of the vehicle, right side, mounted in the front bumper		
B306E	Parking Assist Alarm Sensor - Rear Left Outer	UD5 / UD7	At the rear of the vehicle, left side, mounted in the rear bumper		
B306F	Parking Assist Alarm Sensor - Rear Left Middle	UD5 / UD7	At the rear of the vehicle, left of center, mounted in the rear bumper		
B306G	Parking Assist Alarm Sensor - Rear Right Middle	UD5 / UD7	At the rear of the vehicle, right of middle, mounted in the rear bumper		
B306H	Parking Assist Alarm Sensor - Rear Right Outer	UD5 / UD7	At the rear of the vehicle, right side, in the rear bumper		
B307	Steering Wheel Touch Sensor	UKL	In the passenger compartment, left front, internal to the steering wheel	—	—
B310	Fuel Pressure and Temperature Sensor	—	In the engine compartment, at the top of the engine, mounted to the fuel rail	—	
B315A	Transmission Range Control Valve 1 Position Switch	MHS / MQC	Under the vehicle, inside T12 Automatic Transmission	—	—
B316	Transmission Park Valve Position Switch	MHS / MQC	Under the vehicle, inside T12 Automatic Transmission	—	—
B321	Crankcase Pressure Sensor	LZ0	In the engine compartment, rear center, mounted to the right rear side of the valve cover		• •
B338A	Intake Camshaft Profile Sleeve Position Sensor 1	L3B	In the engine compartment, center, mounted to camshaft carrier, left of M129A Intake Camshaft Profile Actuator 1	• •	
B338B	Intake Camshaft Profile Sleeve Position Sensor 2	L3B	In the engine compartment, center, mounted to camshaft carrier, left of M129D Intake Camshaft Profile Actuator 4	• •	
B339A	Exhaust Camshaft Profile Sleeve Position Sensor 1	L3B	In the engine compartment, center, mounted to the right side of the camshaft carrier	—	
B339B	Exhaust Camshaft Profile Sleeve Position Sensor 2	L3B	In the engine compartment, center, mounted to the right side of the camshaft carrier	—	
B345P	Exhaust Pressure Differential Sensor - Particulate Filter	LZ0	Under the vehicle, right side, near transmission cross member, mounted to the exhaust particulate filter		

Code	Name	Option	Location	Locator View	Connector End View
B345R	Exhaust Pressure Differential Sensor - Exhaust Gas Recirculation	LZ0	Mounted to the exhaust		
B352	Video Display Inside Rearview Mirror Camera	DRZ	Outside the vehicle, at the top center of the rear window bridge, within E6 Center High Mounted Stop Lamp		
B359	Exhaust Gas Temperature Sensor Module	LZ0	In the engine compartment, right rear, mounted to exhaust, just above the Q61B Reductant Fluid Injector 2		
B359B	Exhaust Gas Temperature Sensor Module 2	LZ0	In the engine compartment, right rear, beneath the plenum front panel outer reinforcement		
C1	Battery	—	In the engine compartment, right rear, under X50D Fuse Block - Battery	—	—
E2LRB	Side Marker Bulb - Left Rear	GFF / GFI / GFJ / GFS	At the left rear of the vehicle, within E42L Rear Body Structure Stop Lamp - Left		
E2RRB	Side Marker Bulb - Right Rear	GFF / GFI / GFJ / GFS	At the right rear of the vehicle, within E42R Rear Body Structure Stop Lamp - Right		
E3MD	Front Clearance Lamp - Driver Outside Rearview Mirror	—	Outside of vehicle, left side, within A9A Outside Rearview Mirror - Driver	—	—
E3MP	Front Clearance Lamp - Passenger Outside Rearview Mirror	—	Outside of vehicle, right side, within A9B Outside Rearview Mirror - Passenger	—	—
E5A	Backup Bulb - Left	—	At the rear of vehicle, left rear corner, within E42L Rear Body Structure Stop Lamp - Left		
E5B	Backup Bulb - Right	—	At the rear of vehicle, right rear corner, within E42R Rear Body Structure Stop Lamp - Right		—
E5SBL	Stop and Turn Signal and Tail Lamp Bulb - Left Lower	—	Outside of the vehicle, at the left rear corner of the cargo box, within E42L Rear Body Structure Stop Lamp - Left		—
E5SBU	Stop and Turn Signal and Tail Lamp Bulb - Left Upper	—	Outside of the vehicle, at the left rear corner of the cargo box, within E42L Rear Body Structure Stop Lamp - Left		
E5TBL	Stop and Turn Signal and Tail Lamp Bulb - Right Lower	—	Outside of the vehicle, at the right rear corner of the cargo box, within E42R Rear Body Structure Stop Lamp - Right		—

Code	Name	Option	Location	Locator View	Connector End View
E5TBU	Stop and Turn Signal and Tail Lamp Bulb - Right Upper	—	Outside of the vehicle, at the right rear corner of the cargo box, within E42R Rear Body Structure Stop Lamp - Right		—
E6A	High Mount Stop and Cargo Lamp	—	Outside the vehicle, at the top center of the rear window bridge		
E6B	High Mount Stop Lamp Bulb	—	Outside the vehicle, at the top center of the rear window bridge, within E6A High Mount Stop and Cargo Lamp	—	
E7L	Rear License Plate Lamp - Left	E63	Outside the vehicle, mounted in the middle of the rear bumper		
E7R	Rear License Plate Lamp - Right	E63	Outside the vehicle, mounted in the middle of the rear bumper		
E12A	Glow Plug 1	LZ0	In the engine compartment, In the cylinder head at cylinder 1	—	
E12B	Glow Plug 2	LZ0	In the engine compartment, In the cylinder head at cylinder 2	—	
E12C	Glow Plug 3	LZ0	In the engine compartment, In the cylinder head at cylinder 3	—	
E12D	Glow Plug 4	LZ0	In the engine compartment, In the cylinder head at cylinder 4	—	
E12E	Glow Plug 5	LZ0	In the engine compartment, In the cylinder head at cylinder 5	—	
E12F	Glow Plug 6	LZ0	In the engine compartment, In the cylinder head at cylinder 6	—	
E13LA	Front Headlamp - Left	—	Outside the vehicle, at the left front corner		
E13RA	Front Headlamp - Right	—	Outside the vehicle, at the right front corner		
E14A	Front Seat Back Heater - Driver	KA1 / KQV	In the passenger compartment, in the driver seat back		
E14B	Front Seat Cushion Heater - Driver	KA1 / KQV	In the passenger compartment, in the driver seat cushion		
E14C	Front Seat Back Heater - Passenger	KA1 / KQV	In the passenger compartment, in the passenger seat back		
E14D	Front Seat Cushion Heater - Passenger	KA1 / KQV	In the passenger compartment, in the passenger seat cushion		
E14F	Rear Seat Cushion Heater - Left Rear	KA6	In the passenger compartment, in the left rear seat cushion		
E14H	Rear Seat Cushion Heater - Right Rear	KA6	In the passenger compartment, in the right rear seat cushion		

Code	Name	Option	Location	Locator View	Connector End View
E15	Steering Wheel Heater	KI3	In the passenger compartment, left front, part of the steering wheel	—	—
E17D	Outside Rearview Mirror Glass - Driver	—	Outside the vehicle, at the front of the driver door, part of A9A Outside Rearview Mirror - Driver	—	—
E17P	Outside Rearview Mirror Glass - Passenger	—	Outside the vehicle, at the front of the passenger door, part of A9B Outside Rearview Mirror - Passenger	—	—
E18	Rear Window Defogger Grid	—	At the rear of the passenger compartment, part of the rear window glass	• •	• •
E28	Front Floor Console Compartment Lamp	D07	In the passenger compartment, between the front seats, inside the floor console storage bin		
E29LF	Front Fog Lamp - Left	T3U	Outside the vehicle, at the left front corner, in the front bumper, below E13LA Front Headlamp - Left		• •
E29RF	Front Fog Lamp - Right	T3U	Outside the vehicle, at the right front corner, in the front bumper, below E13RA Front Headlamp - Right		• •
E31L	Sunshade Mirror Lamp - Left	DH6	In the passenger compartment, at the left front of the headliner, part of A3L Sunshade - Left	—	—
E31R	Sunshade Mirror Lamp - Right	DH6	In the passenger compartment, at the right front of the headliner, part of A3R Sunshade - Right	—	—
E33L	Cargo Lamp - Left	UF2	In the rear cargo box, left rear corner	—	
E33LB	Cargo Box Lamp Bulb - Left	Regular Cab	Outside the vehicle, at the top center of the rear window bridge, within E6A High Mount Stop and Cargo Lamp		
E33R	Cargo Lamp - Right	UF2	In the rear cargo box, right rear corner	—	
E33RB	Cargo Box Lamp Bulb - Right	Regular Cab	Outside the vehicle, at the top center of the rear window bridge, within E6A High Mount Stop and Cargo Lamp		
E33TH	Rear Closure Auxiliary Signal Lamp	—	At the rear of the vehicle, in the center of the endgate	• • •	
E37SMC	Rear Seat Position Center Reading and Courtesy Lamp	Double Cab / Crew Cab	In the passenger compartment, rear center, mounted to headliner		
E40	Air Heater	C32	In the passenger compartment, at the top of the HVAC box		

Code	Name	Option	Location	Locator View	Connector End View
E42L	Rear Body Structure Stop Lamp - Left	—	Outside the vehicle, at the left rear corner of the cargo box		—
E42R	Rear Body Structure Stop Lamp - Right	—	Outside the vehicle, at the right rear corner of the cargo box		
E52	Reductant Heater 2 - Injector Supply Pipe	LZ0	Under the vehicle, right side, forward of rear axle, attached to reductant line, near reductant tank		—
E53A	Reductant Heater 1 - Tank	LZ0	Under the vehicle, right side, forward of rear axle, within reductant tank, part of A38 Reductant Tank Fluid Supply Pump Module	—	—
E53C	Reductant Heater 3 - Tank	LZ0	Under the vehicle, right side, forward of rear axle, within reductant tank, part of A38 Reductant Tank Fluid Supply Pump Module	—	—
E63D	Front Side Door Inside Handle Illumination Lamp - Left	—	In the passenger compartment, in the driver door handle trim panel		
E63P	Front Side Door Inside Handle Illumination Lamp - Right	—	In the passenger compartment, in the passenger door handle trim panel		
E90D	Exterior Flood Lamp - Driver Outside Rearview Mirror	DEZ	Outside of vehicle, left side, mounted to the bottom of A9A Outside Rearview Mirror - Driver	—	—
E90DC	Exterior Flood Lamp - Driver Outside Rearview Mirror Cargo	DPO / DQS	Outside of the vehicle, left side, at the front of A9A Outside Rearview Mirror - Driver	—	—
E90P	Exterior Flood Lamp - Passenger Outside Rearview Mirror	DEZ	Outside of vehicle, right side, mounted to the bottom of A9B Outside Rearview Mirror - Passenger	—	—
E90PC	Exterior Flood Lamp - Passenger Outside Rearview Mirror Cargo	DPO / DQS	Outside of the vehicle, right side, at the front of A9B Outside Rearview Mirror - Passenger	—	—
F101	Instrument Panel Airbag	—	In the passenger compartment, behind the instrument panel upper glove box		—
F105LF	Front Row Roof Rail Airbag - Left	—	In the passenger compartment, along the left side of the headliner	• • •	
F105RF	Front Row Roof Rail Airbag - Right	—	In the passenger compartment, along the right side of the headliner	• •	
F106D	Front Seat Outboard Seat Back Airbag - Driver	—	In the passenger compartment, in the outboard side of the driver seat back		

Code	Name	Option	Location	Locator View	Connector End View
F106P	Front Seat Outboard Seat Back Airbag - Passenger	—	In the passenger compartment, in the outboard side of the passenger seat back		
F107	Steering Wheel Airbag	—	In the passenger compartment, mounted to the middle of the steering wheel		• • • • • •
F112D	Front Seat Belt Retractor - Driver	—	In the passenger compartment, at the base of the driver side B-pillar	• • •	
F112P	Front Seat Belt Retractor - Passenger	—	In the passenger compartment, at the base of the passenger side B-pillar	• •	
F113D	Front Seat Belt Anchor Plate Tensioner - Driver	—	In the passenger compartment, mounted to the outboard driver seat track	• • •	
F113P	Front Seat Belt Anchor Plate Tensioner - Passenger	—	In the passenger compartment, mounted to the outboard passenger seat track	• •	
G1	Air Conditioning Compressor	—	(LZ0) In the engine compartment, left front, mounted to the left lower side of the engine	• •	—
G5	Automatic Transmission Auxiliary Fluid Pump	MHS / MHT / MQB / MQC	Under the vehicle, inside of the T12 Automatic Transmission		• •
G8	Engine Coolant Pump - Auxiliary	LZ0 / L84 / L87	In the engine compartment, front center, mounted to the right front side of the engine		• •
G10L	Cooling Fan Motor - Left	—	In the engine compartment, in the radiator shroud, left side	• •	• • •
G10LW	Cooling Fan Motor - Lower	L3B / LZ0	In the engine compartment, in the radiator shroud, beneath the left and right cooling fan motors		• •
G10R	Cooling Fan Motor - Right	—	In the engine compartment, in the radiator shroud, right side	• •	• • •
G12	Fuel Pump	—	Under the vehicle, within the fuel tank, part of A7 Fuel Tank Fuel Pump Module	—	—

Code	Name	Option	Location	Locator View	Connector End View
G13	Generator	—	(LZ0) In the engine compartment, left front, mounted to the left upper side of the engine	• • •	• • • • • • •
G18	Fuel Pump - High Pressure	—	• (L3B) In the engine compartment, rear center, mounted on top of the rear of the camshaft carrier • (L84 / L87) In the engine compartment, rear center, beneath the rear of the intake manifold • (LZ0) In the engine compartment, left rear, mounted near the left side of the transmission bellhousing	• •	• •
G24	Windshield Washer Pump	—	In the engine compartment, attached to the washer fluid reservoir, behind E13LA Front Headlamp - Left		
G31D	Front Seat Back Lumbar Pump - Driver	—	In the passenger compartment, left front, within in the driver seat back	• •	• •
G31P	Front Seat Back Lumbar Pump - Passenger	—	In the passenger compartment, right front, within in the passenger seat back		• •
G33	Reductant Pump	LZ0	Under the vehicle, right side, forward of rear axle, within reductant tank, part of A38 Reductant Tank Fluid Supply Pump Module	—	—
G58	Evaporative Emission Canister Purge Pump	L3B	In the engine compartment, center, mounted above the intake manifold, to the left of the camshaft carrier		
G59	Engine Coolant Pump	L3B	In the engine compartment, right front, beneath turbocharger		
K4	Running Board Control Module	—	Underneath the vehicle, along the outside of the left frame rail, near the driver door		• • •

Code	Name	Option	Location	Locator View	Connector End View
K9	Body Control Module	—	In the passenger compartment, behind the driver side of the instrument panel, outboard of the steering column		• • • • • • • •
K19	Suspension Control Module	—	Under the vehicle, mounted to the bracket above the spare tire	—	
K20	Engine Control Module	—	In the engine compartment, left front, behind E13LA Front Headlamp - Left		• • • • • • • •
K29FV	Front Seat Heater Vent Control Module	KA1 / KQV	In the passenger compartment, right front, under the passenger seat cushion		• •
K29R	Rear Seat Heater Control Module	KA6	In the passenger compartment, rear center, underneath the front of the rear seat cushion		• •
K32	Heated Steering Wheel Module	KI3	In the passenger compartment, in the steering wheel, behind the driver air bag	—	• •
K36	Restraints Control Module	—	In the passenger compartment, bolted to the floor between the front seats or under console if equipped	• • • • •	• •
K38	Chassis Control Module	—	Under the vehicle, mounted to the bracket above the spare tire		
K40D	Driver Seat Adjuster Memory Module	A45	In the passenger compartment, left front, mounted to the driver seat, beneath the front of the driver seat cushion		• • •
K40P	Passenger Seat Adjuster Memory Module	A45	In the passenger compartment, right front, mounted to the passenger seat, beneath the front of the passenger seat cushion		• • •
K43	Power Steering Control Module	—	Under the vehicle, part of the steering gear assembly	—	—

Code	Name	Option	Location	Locator View	Connector End View
K56	Serial Data Gateway Module	—	In the passenger compartment, left front, between the instrument panel and bulkhead		• • •
K56U	Special Purpose Vehicle Control Module	KGU	K56U Special Purpose Vehicle Control Module	—	
K60	Column Lock Module	BTM	In the passenger compartment, left front, mounted on top of the steering column, underneath instrument panel		
K61	Sunroof Control Module	CF5	In the passenger compartment, front center, above headliner, rear of A103 Roof Console, forward of sunroof		
K67	Trailer Brake Control Module	JL1	Under the rear of the vehicle, right side, under the cargo box, above the right side of the spare tire		
K68	Trailer Lamp Control Module	U1D	Under the rear of the vehicle, near spare tire		
K69	Transfer Case Control Module	NP0 / NQH	In the engine compartment, left rear, left of K160 Brake System Control Module		
K71	Transmission Control Module	—	In the engine compartment, left front, forward of driver side wheel house liner		• • •
K73	Telematic Control Module	UE1	In the passenger compartment, left front, between the instrument panel and bulkhead		• • •
K77	Remote Function Actuator Module	—	In the passenger compartment, left rear corner, below headliner	• •	
K85P	Restraints Occupant Classification System Module - Passenger	—	In the passenger compartment, right front, mounted to the passenger seat, beneath the front of the right front seat cushion		
K99	Steering Column Control Module	—	In the passenger compartment, left front, within the instrument panel, mounted to the left side of the steering column		• •
K104D	Front Seat Bladder Control Module - Driver	—	In the passenger compartment, left front, under the driver seat cushion		
K104DP	Front Seat Bladder Control Module - Driver Primary	AF6	In the passenger compartment, left front, within driver seat back	—	
K104DS	Front Seat Bladder Control Module - Driver Secondary	AF6	In the passenger compartment, left front, within driver seat back	—	

Code	Name	Option	Location	Locator View	Connector End View
K104P	Front Seat Bladder Control Module - Passenger	A45 / AVU	In the passenger compartment, right front, mounted in the passenger seat back		
K104PP	Front Seat Bladder Control Module - Passenger Primary	AKE	In the passenger compartment, right front, within passenger seat back		
K104PS	Front Seat Bladder Control Module - Passenger Secondary	AKE	In the passenger compartment, right front, within passenger seat back		
K111	Fuel Pump Power Control Module	—	Under the vehicle, mounted above the driveshaft, inboard of the fuel tank		• •
K115	Reductant Control Module	LZ0	Under the vehicle, right side, in front of rear axle, mounted to the right side of reductant tank		
K124	Image Processing Module	UGN / UKL	In the passenger compartment, center, mounted to the inside of the front floor console rear trim panel		• • • •
K157	Video Processing Module	UVI / UV2	In the passenger compartment, right rear, mounted behind the rear seat, below the rear window		• • • • • •
K160	Brake System Control Module	—	In the engine compartment, left rear corner, near brake master cylinder		
K179	Automated Driving Mapping Module	UKL	In the passenger compartment, within the instrument panel, left of center, mounted in a bracket to the right of K56 Serial Data Gateway Module		• • •
K180	Driver Monitoring System Module	UKL	In the passenger compartment, within the instrument panel, left side, mounted in bracket above K9 Body Control Module and K219 Exterior Lighting Control Module		• •
K180S	Driver Monitoring System Module - Steering Wheel	UKL	In the passenger compartment, left front, within steering wheel	—	—
K182	Parking Assist Control Module	UD5 / UD7	In the passenger compartment, mounted to the driver side of the rear wall	• •	• • •
K194	Rear Gate Module	QT6	At the rear of the vehicle, inside of the endgate, behind trim panel, lower left side		

Code	Name	Option	Location	Locator View	Connector End View
K212	Gear Shift Control Module	MHS / MQC	In the passenger compartment, front center, in the floor console, forward of floor console bin		
K214	Trailer Tire Pressure Indicator Module	UET	At the rear of the vehicle, mounted to the center of the rear bumper, near X88B Tow Vehicle Electrical Receptacle		
K219	Lighting Control Module	—	In the passenger compartment, within the instrument panel, left side, mounted in bracket to the left of K9 Body Control Module		• • • • •
K221L	Headlamp LED Driver Module - Left	—	At the left front of the vehicle, mounted to the rear of E13LA Front Headlamp - Left	• •	—
K221R	Headlamp LED Driver Module - Right	—	At the right front of the vehicle, mounted to the rear of E13RA Front Headlamp - Right	• •	—
M4	Air Inlet Valve Actuator	—	In the passenger compartment, behind the instrument panel glove box		
M6L	Temperature Valve Actuator - Left	—	In the passenger compartment, within instrument Panel, left center of instrument panel harness (was M6PL)		
M6R	Temperature Valve Actuator - Right	—	In the passenger compartment, within instrument Panel, right center of instrument panel harness (was M6PR)		
M7	Automatic Transmission Shift Lock Control Solenoid	—	In the passenger compartment, right side of the steering wheel, attached to automatic transmission control	—	—
M8	Blower Motor	—	In the passenger compartment, under the right side of the instrument panel, above the hush panel		
M10	Charge Air Cooler Coolant Pump	LZ0	In the engine compartment, left front, attached to bracket near the front of the left lower control arm		
M14A	Pickup Box Endgate Lock Actuator	—	At the rear of the vehicle, within the pickup box endgate, top center of endgate		
M26	Front Drive Axle Actuator	NP0 / NQH	Under the vehicle, mounted to the front axle	—	
M37	Mode Valve Actuator	—	In the passenger compartment, right front, within instrument panel, attached to HVAC assembly		

Code	Name	Option	Location	Locator View	Connector End View
M38	Power Steering Assist Motor	—	Under the vehicle, part of the steering gear assembly	—	—
M50D	Front Seat Tilt Adjuster Actuator - Driver	—	In the passenger compartment, under the driver seat		• •
M50P	Front Seat Tilt Adjuster Actuator - Passenger	—	In the passenger compartment, under the passenger seat		• •
M51D	Front Seat Adjuster Actuator - Driver	—	In the passenger compartment, under the driver seat		
M51P	Front Seat Adjuster Actuator - Passenger	—	In the passenger compartment, under the passenger seat		
M53D	Front Seat Back Lumbar Motor - Driver	—	In the passenger compartment, in the center of the driver seat back		
M53P	Front Seat Back Lumbar Motor - Passenger	—	In the passenger compartment, right front, mounted inside of the passenger seat back		
M55D	Front Seat Vertical Adjuster Actuator - Driver	—	In the passenger compartment, under the driver seat		
M55P	Front Seat Vertical Adjuster Actuator - Passenger	—	In the passenger compartment, under the passenger seat		
M56D	Front Seat Recliner Actuator - Driver	—	In the passenger compartment, in the driver seat back		
M56P	Front Seat Recliner Actuator - Passenger	—	In the passenger compartment, in the passenger seat back		
M63	Rear Sliding Window Motor	A48	In the passenger compartment, mounted to the passenger side of the rear wall, behind the rear seat		
M64	Starter	—	(L3B) In the engine compartment, left rear, mounted to rear of engine block	• • •	• • • • • •
M65	Steering Column Telescope Actuator	N38	In the passenger compartment, left front, within the instrument panel, mounted to the left side of the steering column		
M68	Steering Column Tilt Wheel Actuator	N38	In the passenger compartment, left front, within the instrument panel, mounted to the right side of the steering column		
M73A	Front Seat Back Ventilation Blower - Driver	KQV	In the passenger compartment, in the driver seat back		

Code	Name	Option	Location	Locator View	Connector End View
M73B	Front Seat Back Ventilation Blower - Passenger	KQV	In the passenger compartment, in the passenger seat back		
M73D	Front Seat Cushion Ventilation Blower - Driver	KQV	In the passenger compartment, in the passenger seat cushion		
M73P	Front Seat Cushion Ventilation Blower - Passenger	KQV	In the passenger compartment, right front, mounted in the passenger seat cushion		
M74D	Front Side Door Window Regulator Motor - Driver	—	In the passenger compartment, in the driver door		
M74LR	Rear Side Door Window Regulator Motor - Left	Double Cab / Crew Cab	In the passenger compartment, in the left rear door	• •	
M74P	Front Side Door Window Regulator Motor - Passenger	—	In the passenger compartment, in the passenger door		• •
M74RR	Rear Side Door Window Regulator Motor - Right	Double Cab / Crew Cab	In the passenger compartment, in the right rear door		
M75	Windshield Wiper Motor	—	Outside the vehicle, at the left rear of the engine compartment, below the left lower corner of the windshield		
M77D	Outside Rearview Mirror Actuator - Driver	—	Outside the vehicle, at the front of the driver door, within the A9A Outside Rearview Mirror - Driver	—	—
M77P	Outside Rearview Mirror Actuator - Passenger	—	Outside the vehicle, at the front of the passenger door, within the A9B Outside Rearview Mirror - Passenger	—	—
M78D	Outside Rearview Mirror Folding Actuator - Driver	A45	Outside the vehicle, at the front of the driver door, within the A9A Outside Rearview Mirror - Driver	—	—
M78P	Outside Rearview Mirror Folding Actuator - Passenger	A45	Outside the vehicle, at the front of the passenger door, within the A9B Outside Rearview Mirror - Passenger	—	—
M95L	Assist Step Motor - Left	BRS	Under the vehicle, along the left frame rail, under the driver door	—	—
M95R	Assist Step Motor - Right	BRS	Under the vehicle, along the right frame rail, under the passenger door	—	—
M96A	Active Grille Air Shutter Actuator 1	VTI / WMI	At the front of the vehicle, center, attached to the inside of the front grille	—	—
M96B	Active Grille Air Shutter Actuator 2	WMI	At the front of the vehicle, center, attached to the inside of the front grille	—	—
M103	Turbocharger Vane Position Actuator	LZ0	In the engine compartment, right side, mounted to turbocharger		

Code	Name	Option	Location	Locator View	Connector End View
M104L	Parking Brake Actuator - Left	—	Under the vehicle, left rear, attached to the left rear brake caliper		
M104R	Parking Brake Actuator - Right	—	Under the vehicle, right rear, attached to the right rear brake caliper		
M106V	Exhaust Control Valve Actuator - Variable	—	M106V Exhaust Control Valve Actuator - Variable	—	
M122	Exhaust Pressure Regulator Valve	LZ0	In the engine compartment, right rear, mounted to the exhaust, near the lower right side of the transmission bellhousing	—	
M123	Transmission Park Valve Lock Solenoid Actuator	MHS / MQC	Under the vehicle, inside of the T12 Automatic Transmission	—	—
M125	Pickup Box Endgate Power Assist Actuator	QT6	Outside of the vehicle, within the endgate, lower right corner		
M128	Turbocharger Wastegate Actuator	L3B	In the engine compartment, right side of engine, mounted to the front of the turbocharger compressor		
M129A	Intake Camshaft Profile Actuator 1	L3B	In the engine compartment, center, left of T8A Ignition Coil 1	• •	
M129B	Intake Camshaft Profile Actuator 2	L3B	In the engine compartment, center, left of T8B Ignition Coil 2	• •	
M129C	Intake Camshaft Profile Actuator 3	L3B	In the engine compartment, center, left of T8C Ignition Coil 3	• •	
M129D	Intake Camshaft Profile Actuator 4	L3B	In the engine compartment, center, left of T8D Ignition Coil 4	• •	
M130B	Exhaust Camshaft Profile Actuator 2	L3B	In the engine compartment, center, right of T8B Ignition Coil 2	• •	
M130C	Exhaust Camshaft Profile Actuator 3	L3B	In the engine compartment, center, right of T8C Ignition Coil 3	• •	
M151L	Pickup Box Endgate Cinch Latch Actuator - Left	QT6	At the rear of the vehicle, within endgate, on the left side		
M151R	Pickup Box Endgate Cinch Latch Actuator - Right	QT6	At the rear of the vehicle, within endgate, on the right side		
P13	Horn	—	At the front of the vehicle, right side, mounted to the right front of the radiator core support		
P16	Instrument Panel Cluster Control Module	—	In the passenger compartment, in the driver side of the instrument panel	• •	• •
P19AFC	Front Floor Speaker - Console	UQA / UQS	In the passenger compartment, center, beneath floor console		

Code	Name	Option	Location	Locator View	Connector End View
P19AG	Radio Front Side Door Speaker - Left	—	In the passenger compartment, in the driver door		
P19AH	Radio Front Side Door Speaker - Right	—	In the passenger compartment, in the passenger door		
P19AL	Radio Rear Side Door Speaker - Left	—	In the passenger compartment, in the left rear door	• •	
P19ALU	Radio Rear Side Door Upper Speaker - Left	UQS	Attached to the left rear door trim panel, towards the front, at the top	—	
P19AM	Radio Rear Side Door Speaker - Right	—	In the passenger compartment, in the right rear door	• •	
P19AMU	Radio Rear Side Door Upper Speaker - Right	UQS	Attached to the right rear door trim panel, towards the front, at the top	—	
P19B	Radio Front Center Speaker	UQS	In the passenger compartment, front center, in the center of the instrument panel, beneath the radio front center speaker grille		
P19H	Radio Windshield Side Garnish Molding Speaker - Left Front	UQS	In the passenger compartment, left front, at a-pillar, behind left front window garnish molding	—	
P19J	Radio Front Speaker - Instrument Panel Left	—	In the passenger compartment, in the top of the left side of the instrument panel	• •	• •
P19V	Radio Windshield Side Garnish Molding Speaker - Right Front	UQS	In the passenger compartment, right front, at a-pillar, behind right front window garnish molding	—	
P19W	Radio Front Speaker - Instrument Panel Right	—	In the passenger compartment, in the top of the right side of the instrument panel	• •	• •
P29	Head-Up Display	UV6	In the passenger compartment, at the left side of the instrument panel, near the windshield		• •
P34D	Side Object Detection Indicator - Driver	UKC	Outside of the vehicle, left side, part of E17D Outside Rearview Mirror Glass - Driver, within A9A Outside Rearview Mirror - Driver	—	—
P34P	Side Object Detection Indicator - Passenger	UKC	Outside of the vehicle, left side, part of E17P Outside Rearview Mirror Glass - Passenger, within A9B Outside Rearview Mirror - Passenger	—	—
P43	Forward Collision Alert Display	(UHX / UEU) - UV6	In the passenger compartment, in the top of the instrument panel, near the windshield, in front of the driver	• •	

Code	Name	Option	Location	Locator View	Connector End View
P45L	Front Seat Lane Departure Warning Actuator - Left	HS1	In the passenger compartment, in the left side of the driver seat cushion		
P45R	Front Seat Lane Departure Warning Actuator - Right	HS1	In the passenger compartment, in the right side of the driver seat cushion		
P51	Steering Wheel LED Display	UKL	In the passenger compartment, left front, at the top of the steering wheel	—	—
P53	Driver Information Display	IOR	In the passenger compartment, at the center of the instrument panel, above S192 Radio Function Switch		• •
Q2	Air Conditioning Clutch	—	In the engine compartment, left front, part of G1 A/C Compressor	• • •	• • •
Q6	Camshaft Position Actuator Solenoid Valve	L84 / L87	In the engine compartment, front center, mounted to timing chain cover, above crankshaft harmonic balancer		
Q6E	Camshaft Position Actuator Solenoid Valve - Exhaust	L3B	In the engine compartment, front center, in front of exhaust camshaft		
Q6F	Camshaft Position Actuator Solenoid Valve - Intake	L3B	In the engine compartment, front center, in front of intake camshaft		
Q9F	Differential Locking Actuator - Front	G93	In the engine compartment, mounted to the front differential	—	—
Q9R	Differential Locking Actuator - Rear	G94	Under the vehicle, rear center, mounted to the top left side of the rear differential carrier		
Q12	Evaporative Emission Canister Purge Solenoid Valve	L3B / L84 / L87	(L84 / L87) In the engine compartment, front center, mounted to intake manifold, to the left of Q38 Throttle Body		• •
Q13	Evaporative Emission Canister Vent Solenoid Valve	—	On the underbody, at the top left side of the fuel tank		
Q14A	Exhaust Gas Recirculation Valve 1	LZ0	In the engine compartment, right rear, mounted to the exhaust, near the top right side of the engine		
Q14B	Exhaust Gas Recirculation Valve 2	LZ0	In the engine compartment, right rear lower, in the exhaust between the turbocharger and nitrogen oxides catalytic converter		

Code	Name	Option	Location	Locator View	Connector End View
Q17A	Fuel Injector 1	—	• (L3B) In the engine compartment, left side of engine, mounted to cylinder head below intake manifold, near cylinder 1 • (L84 / L87) In the engine compartment, underneath intake manifold, next to cylinder 1 intake port on the cylinder head • (LZ0) In the engine compartment, center, mounted to valve cover above cylinder 1	• •	• •
Q17B	Fuel Injector 2	—	• (L3B) In the engine compartment, left side of engine, mounted to cylinder head below intake manifold, near cylinder 2 • (L84 / L87) In the engine compartment, underneath intake manifold, next to cylinder 2 intake port on the cylinder head • (LZ0) In the engine compartment, center, mounted to valve cover above cylinder 2	• •	• •
Q17C	Fuel Injector 3	—	• (L3B) In the engine compartment, left side of engine, mounted to cylinder head below intake manifold, near cylinder 3 • (L84 / L87) In the engine compartment, underneath intake manifold, next to cylinder 3 intake port on the cylinder head • (LZ0) In the engine compartment, center, mounted to valve cover above cylinder 3	• •	• •
Q17D	Fuel Injector 4	—	• (L3B) In the engine compartment, left side of engine, mounted to cylinder head below intake manifold, near cylinder 4 • (L84 / L87) In the engine compartment, underneath intake manifold, next to cylinder 4 intake port on the cylinder head • (LZ0) In the engine compartment, center, mounted to valve cover above cylinder 4	• •	• •

Code	Name	Option	Location	Locator View	Connector End View
Q17E	Fuel Injector 5	LZ0 / L84 / L87	• (L84 / L87) In the engine compartment, underneath intake manifold, next to cylinder 5 intake port on the cylinder head • (LZ0) In the engine compartment, center, mounted to valve cover above cylinder 5		• •
Q17F	Fuel Injector 6	LZ0 / L84 / L87	• (L84 / L87) In the engine compartment, underneath intake manifold, next to cylinder 6 intake port on the cylinder head • (LZ0) In the engine compartment, center, mounted to valve cover above cylinder 6		• •
Q17G	Fuel Injector 7	L84 / L87	In the engine compartment, underneath intake manifold, next to cylinder 7 intake port on the cylinder head		
Q17H	Fuel Injector 8	L84 / L87	In the engine compartment, underneath intake manifold, next to cylinder 8 intake port on the cylinder head		
Q18A	Fuel Pressure Regulator 1	LZ0	In the engine compartment, left rear side of engine, below Q18C Fuel Pressure Regulator 3, attached to G18 High Pressure Fuel Pump		
Q18B	Fuel Pressure Regulator 2	LZ0	In the engine compartment, left side of engine, mounted to the left rear side of the valve cover		
Q18C	Fuel Pressure Regulator 3	LZ0	In the engine compartment, left rear side of engine, above Q18A Fuel Pressure Regulator 1, attached to G18 High Pressure Fuel Pump		
Q20	Intake Airflow Control Valve	LZ0	In the engine compartment, center, left side of engine, at the rear of the Charge Air Cooler Outlet Air Hose		
Q22	Intake Manifold Tuning Solenoid Valve	LZ0	In the engine compartment, front center, attached to the front of the intake manifold		
Q37LFB	Front Shock Absorber Actuator - Left	Z45	In the left front wheel well, part of left front strut assembly		
Q37LRB	Rear Shock Absorber Actuator - Left	Z45	Under the vehicle, left rear, part of the left rear shock		
Q37RFB	Front Shock Absorber Actuator - Right	Z45	In the right front wheel well, part of right front strut assembly		
Q37RRB	Rear Shock Absorber Actuator - Right	Z45	Under the vehicle, right rear, part of the right rear shock		

Code	Name	Option	Location	Locator View	Connector End View
Q38	Throttle Body	-LC2	In the engine compartment, at the front of the engine, mounted to the intake manifold inlet	• •	
Q40	Turbocharger Bypass Valve Solenoid	L3B	In the engine compartment, right side, mounted to the turbocharger compressor, beneath turbocharger compressor inlet		
Q44	Engine Oil Pressure Control Solenoid Valve	L3B / L87 / LZ0	• (L3B) In the engine compartment, rear center, within lower oil pan, left of oil filter • (L87) In the engine compartment, front center, within oil pan, below the front cover • (LZ0) In the engine compartment, rear center, within lower oil pan, forward of oil filter	• •	• • •
Q46	Air Conditioning Compressor Solenoid Valve	—	In the engine compartment, left front, part of G1 A/C Compressor	• • •	• • •
Q61	Reductant Fluid Injector	LZ0	In the engine compartment, right front, mounted to the exhaust, in front of diesel particulate filter		
Q61B	Reductant Fluid Injector 2	LZ0	In the engine compartment, right rear, Just above the M122 Exhaust Pressure Regulator		
Q74	Engine Coolant Bypass Valve	L3B / LZ0	In the engine compartment, left rear, attached to the bottom rear of Q97 Engine Coolant Flow Control Valve	• •	• •
Q77A	Transmission Control Solenoid Valve 1	—	Under the vehicle, inside the T12 Automatic Transmission	• •	• •
Q77B	Transmission Control Solenoid Valve 2	—	Under the vehicle, inside the T12 Automatic Transmission	• •	• •
Q77C	Transmission Control Solenoid Valve 3	—	Under the vehicle, inside the T12 Automatic Transmission	• •	• •
Q77D	Transmission Control Solenoid Valve 4	—	Under the vehicle, inside the T12 Automatic Transmission	• •	• •
Q77E	Transmission Control Solenoid Valve 5	—	Under the vehicle, inside the T12 Automatic Transmission	• •	• •
Q77F	Transmission Control Solenoid Valve 6	—	Under the vehicle, inside the T12 Automatic Transmission	• •	• •
Q77G	Transmission Control Solenoid Valve 7	—	Under the vehicle, inside the T12 Automatic Transmission	• •	• •
Q77H	Transmission Control Solenoid Valve 8	—	Under the vehicle, inside the T12 Automatic Transmission	• •	• •

Code	Name	Option	Location	Locator View	Connector End View
Q77J	Transmission Control Solenoid Valve 9	—	Under the vehicle, inside the T12 Automatic Transmission	• •	• •
Q83AA	Valve Lifter Oil Solenoid Valve - Cylinder 1	L84 / L87	In the engine compartment, mounted to the engine, beneath the engine block valley cover, next to cylinder 1		
Q83AB	Valve Lifter Oil Solenoid Valve - Cylinder 2	L84 / L87	In the engine compartment, mounted to the engine, beneath the engine block valley cover, next to cylinder 2		
Q83AC	Valve Lifter Oil Solenoid Valve - Cylinder 3	L84 / L87	In the engine compartment, mounted to the engine, beneath the engine block valley cover, next to cylinder 3		
Q83AD	Valve Lifter Oil Solenoid Valve - Cylinder 4	L84 / L87	In the engine compartment, mounted to the engine, beneath the engine block valley cover, next to cylinder 4		
Q83AE	Valve Lifter Oil Solenoid Valve - Cylinder 5	L84 / L87	In the engine compartment, mounted to the engine, beneath the engine block valley cover, next to cylinder 5		
Q83AF	Valve Lifter Oil Solenoid Valve - Cylinder 6	L84 / L87	In the engine compartment, mounted to the engine, beneath the engine block valley cover, next to cylinder 6		
Q83AG	Valve Lifter Oil Solenoid Valve - Cylinder 7	L84 / L87	In the engine compartment, mounted to the engine, beneath the engine block valley cover, next to cylinder 7		
Q83AH	Valve Lifter Oil Solenoid Valve - Cylinder 8	L84 / L87	In the engine compartment, mounted to the engine, beneath the engine block valley cover, next to cylinder 8		
Q97	Engine Coolant Flow Control Valve	L3B	In the engine compartment, left, attached to the front of Q97 Engine Coolant Flow Control Valve	—	—
Q97B	Engine Coolant Flow Control Valve - Block	LZ0	In the engine compartment, left front, attached the front of Q97 Engine Coolant Flow Control Valve, at the top	—	
Q97M	Engine Coolant Flow Control Valve - Main	LZ0	In the engine compartment, left front, attached to the front of Q97 Engine Coolant Flow Control Valve, behind the G13 Generator		
R6A	Terminating Resistor - High Speed Bus	UKL / (- UKC / - UKV)	Underneath the rear of the vehicle, between the rear bumper and spare tire, right of center	—	

Code	Name	Option	Location	Locator View	Connector End View
R29	Fuel Filter	LZ0	Under the vehicle, right center, mounted to the right inboard side of the frame rail, forward of B47 Fuel Pressure Sensor		
S3	Automatic Transmission Control	—	In the passenger compartment, right side of steering wheel, mounted to the steering column	—	
S3C	Automatic Transmission Control Lever	MHT / MQB / MFC	In the passenger compartment, left front, on the steering column shifter		
S13D	Door Lock Switch - Driver	—	In the passenger compartment, in the driver door handle trim panel		• • •
S13P	Door Lock Switch - Passenger	—	In the passenger compartment, in the passenger door handle trim panel		• • •
S25	Garage Door Opener Transmitter	—	In the passenger compartment, front center, part of A103 Roof Console	—	—
S27	Head-Up Display Switch	UV6	In the passenger compartment, left front, left of the steering column, in the instrument panel		
S30	Headlamp Switch	—	In the passenger compartment, left of the steering column, in the instrument panel	• •	
S32LR	Rear Seat Heater Switch - Left	KA6	In the passenger compartment, center, on the rear of the floor console (was S32R)		
S33	Steering Wheel Horn Contact	—	In the passenger compartment, in the center of the steering wheel, behind the driver side air bag		• •
S38	On/Off Vehicle Switch	BTM	In the passenger compartment, right of the steering column, in the instrument panel	• •	
S47D	Front Seat Adjuster Memory Switch - Driver	—	In the passenger compartment, left front, on the driver door panel forward of the inside driver door handle	—	• •
S51	Communication Center Call Switch	UE1	In the passenger compartment, part of the inside rearview mirror	—	—
S64D	Front Seat Adjuster Switch - Driver	—	In the passenger compartment, mounted to the outboard side of the driver seat cushion		• •
S64P	Front Seat Adjuster Switch - Passenger	—	In the passenger compartment, mounted to the outboard side of the passenger seat cushion		• •

Code	Name	Option	Location	Locator View	Connector End View
S65D	Front Seat Lumbar Switch - Driver	A2X	In the passenger compartment, mounted to the outboard side of the driver seat cushion		• •
S65P	Front Seat Lumbar Switch - Passenger	A7K	In the passenger compartment, mounted to the outboard side of the passenger seat cushion		• • •
S70E	Radio Favorites Switch - Steering Wheel	—	In the passenger compartment, on the left rear side of the steering wheel		• •
S70F	Radio Volume Switch - Steering Wheel	—	In the passenger compartment, on the right rear side of the steering wheel		• •
S70L	Cruise Control Switch	—	In the passenger compartment, on the left side of the steering wheel		• • •
S70R	Radio Control Switch - Steering Wheel	—	In the passenger compartment, on the right side of the steering wheel		• •
S71	Steering Column Tilt Wheel and Telescope Switch	—	In the passenger compartment, left front, on the left side of the steering column cowl		
S76	Trailer Brake Control Switch	—	In the passenger compartment, center of the instrument panel, below S48C Multifunction Switch 1 - Instrument Panel	• •	• •
S78	Turn Signal Switch	—	In the passenger compartment, on the left side of the steering column	• • •	
S79D	Front Side Door Window Control Switch - Driver	—	In the passenger compartment, behind the driver door trim panel, center of the door		• •
S79LR	Rear Side Door Window Switch - Left	—	In the passenger compartment, at the center of the left rear door, on the door trim panel		
S79P	Front Side Door Window Switch - Passenger	—	In the passenger compartment, on the passenger door trim panel, center of the door		
S79RR	Rear Side Door Window Switch - Right	—	In the passenger compartment, on the right rear door trim panel, center of the door	• •	
S86	Vehicle Stability Control System Switch	—	In the passenger compartment, front center, attached to instrument panel, between S171L Instrument Panel Center Accessory Function Switch - Left and S171R Instrument Panel Center Accessory Function Switch - Right	• •	• •

Code	Name	Option	Location	Locator View	Connector End View
S91	Parking Brake Control Switch	—	In the passenger compartment, left front, mounted to the left side of the instrument panel bezel, left of S171R Instrument Panel Center Accessory Function Switch	• •	
S148L	Assist Step Switch - Left	BRS	Under the vehicle, along the left frame rail, under the driver door part of the power assist step	—	—
S148R	Assist Step Switch - Right	BRS	Under the vehicle, along the right frame rail, under the passenger door part of the power assist step	—	—
S158	Liftgate Exterior Release Switch - Auxiliary Endgate	—	At the rear of the vehicle, mounted to the rear of the pickup box endgate, top center of the endgate	• •	
S159E	Liftgate Exterior Release Switch - Endgate	QT6/QK2	Outside of the vehicle, at the rear of the vehicle, on the endgate	• •	• •
S171L	Instrument Panel Center Accessory Function Switch - Left	—	In the passenger compartment, mounted to the instrument panel, beneath A26 HVAC Controls, left switch bank	• •	
S171R	Instrument Panel Center Accessory Function Switch - Right	—	In the passenger compartment, mounted to the instrument panel, beneath A26 HVAC Controls, right switch bank	• •	• •
S172	Auxiliary Multifunction Switch	9L7	In the passenger compartment, mounted to the instrument panel	—	
S192	Radio Function Switch	IOR	In the passenger compartment, at the center of the instrument panel, below P53 Driver Information Display		
T1	DC/AC Converter Control Module	(KI4/KI5)-08R	In the passenger compartment, rear center, mounted to the rear wall	• •	• •
T3	Audio Amplifier	UQA / UQF / UQS	In the rear passenger compartment, mounted behind the rear seat, below the rear window		• • •
T4M	Radio Antenna	—	Outside the vehicle, at the right rear of the hood		• • •
T4P	High Frequency Antenna	—	Outside of the vehicle		• •
T4S	Wireless Communication Antenna - Bluetooth	—	Outside the vehicle, at the rear of the right front fender	—	—

Code	Name	Option	Location	Locator View	Connector End View
T4TA	Auxiliary Wireless Communication Interface Antenna	—	In the passenger compartment, front center, below instrument panel upper trim panel, behind HVAC vent		
T8A	Ignition Coil 1	L3B / L84 / L87	In the engine compartment, at the top of the engine, above cylinder 1	• • •	• •
T8B	Ignition Coil 2	L3B / L84 / L87	In the engine compartment, at the top of the engine, above cylinder 2	• • •	• •
T8C	Ignition Coil 3	L3B / L84 / L87	In the engine compartment, at the top of the engine, above cylinder 3	• • •	• •
T8D	Ignition Coil 4	L3B / L84 / L87	In the engine compartment, at the top of the engine, above cylinder 4	• • •	• •
T8E	Ignition Coil 5	L84 / L87	In the engine compartment, at the top of the engine, above cylinder 5		
T8F	Ignition Coil 6	L84 / L87	In the engine compartment, at the top of the engine, above cylinder 6		
T8G	Ignition Coil 7	L84 / L87	In the engine compartment, at the top of the engine, above cylinder 7		
T8H	Ignition Coil 8	L84 / L87	In the engine compartment, at the top of the engine, above cylinder 8		
T10G	Low Frequency Rear Bumper Antenna	—	At the rear of the vehicle, center, mounted to the inside of the rear bumper		
T10J	Low Frequency Instrument Panel Antenna	-D7	In the passenger compartment, front center, within instrument panel, forward of radio control		
T10KA	Low Frequency Console Number 2 Antenna	D07	In the passenger compartment, center, inside the floor console, beneath the cup holders at the rear	—	
T10M	Low Frequency Front Side Door Outside Handle Antenna - Left	—	Outside of the vehicle, left side, within A24D Front Side Door Outside Handle - Left	—	—
T10N	Low Frequency Front Side Door Outside Handle Antenna - Right	—	Outside of the vehicle, right side, within A24P Front Side Door Outside Handle - Right	—	—

Code	Name	Option	Location	Locator View	Connector End View
T10UA	Low Frequency Console Antenna	—	• (AZ3) In the passenger compartment, front center, mounted to the bottom of the front center seat • (D07) In the passenger compartment, front center, mounted beneath the front floor console, below the cup holders		• •
T12	Automatic Transmission	—	Under the vehicle, mounted to the rear of the engine		• • • • • •
T19	Multifunction Power Supply Converter	—	In the passenger compartment, right front, between the instrument panel and bulkhead	• •	
T22	Wireless Accessory Charging Module	K4C	In the passenger compartment, forward of center, in the floor console bin lid.		
W2C	Blunt Cut - Chassis Wiring Harness Ground Provision	FHX	Under the vehicle, right rear, rearward of forward leaf spring mount, attached to the front of the cargo box mount	—	—
W11	Blunt Cut - Emergency Vehicle Roof Lamp	9L7	In the passenger compartment, rear center, above headliner, near inline connector X371	—	—
W24	Blunt Cut - Trailer Brakes Provision	Z82-JL1	In the passenger compartment, under left side of the instrument panel	—	—
W30	Blunt Cut - Snow Plow	VYU	Accessory Package Component - Location on vehicle may vary per installation	—	—
X50A	Engine Wiring Harness Junction Block	—	In the engine compartment, right front, in front of C1 Battery	• •	*Electrical Center Identification Views 8-30*
X50B	Battery Distribution Engine Compartment Fuse Block	LZ0	In the engine compartment, right rear, on top of C1 Battery	• •	*Electrical Center Identification Views 8-30*
X51AX	Instrument Panel Wiring Harness Junction Block - Auxiliary	9L7	In the passenger compartment, left front, within instrument panel, forward of driver trim panel	—	*Electrical Center Identification Views 8-30*
X51R	Instrument Panel Wiring Harness Junction Block - Right	—	In the passenger compartment, right side of the instrument panel, behind side trim panel		*Electrical Center Identification Views 8-30*

Code	Name	Option	Location	Locator View	Connector End View
X53AF	Body Wiring Harness Junction Block	—	In the passenger compartment, left side of the instrument panel, behind the instrument panel fuse block access hole cover	• •	*Electrical Center Identification Views 8-30*
X54	Accessory Wiring Junction Block - Snow Plow	VYU	Accessory Package Component - Location on vehicle may vary per installation	—	*Electrical Center Identification Views 8-30*
X55SP	Wiring Harness Fuse Holder - Snow Plow	VYU	Accessory Package Component - Location on vehicle may vary per installation	—	*Electrical Center Identification Views 8-30*
X79A	Configurable/ Accessory Provision Supply Connector	9L7	In the passenger compartment, left front, within instrument panel, forward of driver trim panel, taped to Instrument Panel Wiring Harness Junction Block - Auxiliary harness	—	—
X80G	Accessory Power Receptacle - Instrument Panel	—	In the passenger compartment, front center, in the instrument panel, beneath A26 HVAC Controls		
X81ACA	Front Floor Console Accessory Power Rear Receptacle - 110V AC	KI4+D07	In the passenger compartment, center, mounted to the rear of the floor console	—	
X81AI	Accessory Power Receptacle - Instrument Panel 110V AC	KI4-AZ3-D07	In the passenger compartment, front center, in the instrument panel, beneath S171R Instrument Panel Center Accessory Function Switch - Right	—	
X81AP	Pickup Box Accessory Power Receptacle - 110V AC	KC9	Outside of the vehicle, right rear corner of the truck bed	—	
X81BCA	Front Floor Console Accessory Power Rear Receptacle - 220V AC	KI5+D07	In the passenger compartment, center, mounted to the rear of the floor console		
X81BI	Accessory Power Receptacle - Instrument Panel 220V AC	KI5-AZ3-D07	In the passenger compartment, front center, in the instrument panel, beneath S171R Instrument Panel Center Accessory Function Switch - Right	—	—
X81BP	Pickup Box Accessory Power Receptacle - 220V AC	KCA	Outside of the vehicle, right rear corner of the truck bed		
X81FSA	Accessory Power Receptacle - Front Center Seat Rear Cover 110V AC	AZ3+KI4	In the passenger compartment, center, mounted to the lower rear portion of the front center seat	• •	

Code	Name	Option	Location	Locator View	Connector End View
X81FSB	Accessory Power Receptacle - Front Center Seat Rear Cover 220V AC	AZ3+KI5	In the passenger compartment, center, mounted to the lower rear portion of the front center seat	—	
X83B	Audio/Video Receptacle	UBC	In the passenger compartment, front center, inside of the floor console bin, left front		• • •
X84	Data Link Connector	—	In the passenger compartment, at the bottom of the driver side of the instrument panel	• •	
X85	Steering Wheel Airbag Coil	—	In the passenger compartment, behind the steering wheel	• •	• • • • •
X88B	Tow Vehicle Electrical Receptacle	—	At the rear of the vehicle, forward of the rear bumper fascia trailer hitch cover, to the left of the hitch		• • •
X92CD	Dual Charge Only Receptacle - Floor Console Rear	D07+UBI	In the passenger compartment, center, mounted to the rear of the floor console		
X92CF	USB 2 Port Receptacle - Floor Console Front	—	In the passenger compartment, front center, in console, forward and to the left of the cup holders		• •
X92FSR	Dual Charge Only Receptacle - Front Center Seat Rear Cover	AZ3+UBI	In the passenger compartment, center, mounted to the lower rear portion of the front center seat		
X92IP	USB 2 Port Receptacle - Instrument Panel	—	In the passenger compartment, front center of instrument panel, mounted to the right side of the instrument panel accessory bezel		• • •
X122	Front View Camera Switch Wiring Harness to Body Wiring Harness	UV2	At the front of the vehicle, right side, between the right side of the radiator core support and E13RA Front Headlamp - Right		
X125	Engine Wiring Harness to Body Wiring Harness	—	In the engine compartment, left front, near air box	• • • • •	
X128	Engine Wiring Harness to Camshaft Position Sensor Wire	L84 / L87	In the engine compartment, left front, near the front of the bank 1 cylinder head	• •	

Code	Name	Option	Location	Locator View	Connector End View
X129	Engine Wiring Harness to Oil Pump Flow Control Solenoid Valve Harness	L3B / L87 / LZ0	Under the vehicle, in right front wheel well, near frame rail	• • •	• •
X150	Front Object Alarm Sensor Wiring Harness to Body Wiring Harness	Regular Cab / Double Cab / Crew Cab	At the front of the vehicle, right side, between the lower right side of the radiator core support and E13RA Front Headlamp - Right	• • •	• •
X160	Engine Wiring Harness to Fuel Injector Wiring Harness	—	• (LZ0) In the engine compartment, at the front of the engine, below harness channel • (L3B) In the engine compartment, left side of engine below intake manifold	• • •	• • •
X160	Engine Wiring Harness to Fuel Injector Wiring Harness - Bank 1	L84 / L87 / LZ0	(L84 / L87) In the engine compartment, rear of the engine near the top center	• • •	• • •
X161	Engine Wiring Harness to Fuel Injector Wiring Harness - Bank 2	L84 / L87	In the engine compartment, rear of the engine near the top right		
X162	Front Object Alarm Sensor Wiring Harness to Front Object Alarm Sensor Wiring Harness	UKL	At the front of the vehicle, left side, rearward of front bumper, at the end of the breakout between breakout B306A Parking Assist Alarm Sensor - Front Left Outer and breakout to E29LF Front Fog Lamp - Left		
X163	Engine Wiring Harness to Diesel Glow Plug Wiring Harness	LZ0	In the engine compartment, left front, beneath air charge cooler outlet hose		
X165	Front Object Alarm Sensor Wiring Harness to Front Object Alarm Sensor Wiring Harness	UKL	At the front of the vehicle, right side, between the lower right side of the radiator core support and E13RA Front Headlamp - Right		
X175	Engine Wiring Harness to Automatic Transmission Wiring Harness	MQC / MFC	Under the vehicle, at the rear of the T12 Automatic Transmission	• •	
X176	Automatic Transmission Wiring Harness to Automatic Transmission Wiring Harness	MHS / MHT / MI2 / MQB / MQC / MFC	Under the vehicle, inside the T12 Automatic Transmission	—	• •
X177	Automatic Transmission Wiring Harness to Automatic Transmission Output Speed Sensor Wiring Harness	—	• (MHT / MI2 / MQB / MFC) Under the vehicle, inside the T12 Automatic Transmission • (MHS / MQC) Under the vehicle, inside of the T12 Automatic Transmission	—	

Code	Name	Option	Location	Locator View	Connector End View
X210	Instrument Panel Wiring Harness to Body Wiring Harness	—	In the passenger compartment, left front, behind the left front trim panel beneath the A-pillar	• • • • •	
X211	Instrument Panel Wiring Harness to Body Wiring Harness	—	In the passenger compartment, right front, below passenger a-pillar, behind passenger trim panel	• • • • •	
X213	Auxiliary Fuse Block Wiring Harness to Instrument Panel Wiring Harness	—	In the passenger compartment, within instrument panel, front left, taped to instrument panel harness, near breakout to X84 Data Link Connector (was X213A, X213B)	—	• •
X217	Body Wiring Harness to Instrument Panel Wiring Harness	UV2 / UVB	In the passenger compartment, right front, below passenger a-pillar, behind passenger trim panel	• • • •	
X218	Instrument Panel Wiring Harness to Body Wiring Harness	—	In the passenger compartment, right front, below passenger a-pillar, behind passenger trim panel	• • •	
X219	Police Accessory Wiring Harness to Instrument Panel Wiring Harness	5W4 / 9C1	In the passenger compartment, in the top of the left side of the instrument panel		
X220	Police Accessory Wiring Harness to Instrument Panel Wiring Harness	5W4 / 9C1	In the passenger compartment, in the top of the right side of the instrument panel		
X225	Front Floor Console Wiring Harness to Body Wiring Harness	D07	In the passenger compartment, center, beneath the rear of the floor console	• • •	
X226	Front Floor Console Wiring Harness to Instrument Panel Wiring Harness	D07	In the passenger compartment, front center, beneath right front side of floor console	• • • •	• •
X227	Front Floor Console Wiring Harness to Body Wiring Harness	AZ3 / D07	In the passenger compartment, center, beneath right rear of floor console	• • • • •	• •
X237	Instrument Panel Wiring Harness to Passenger Instrument Panel Air Bag Jumper Wiring Harness	—	In the passenger compartment, right front, within instrument panel, near right side of instrument panel tie bar	• • •	

Code	Name	Option	Location	Locator View	Connector End View
X250	Instrument Panel Wiring Harness to Heater Wiring Harness	—	In the passenger compartment, right front, at the bottom of the A-pillar, behind passenger kick panel	• • • •	
X251	HVAC Wiring Harness to Body Wiring Harness	C32	In the passenger compartment, right front, behind passenger front kick panel		
X309	Body Wiring Harness to Inside Rearview Mirror Wiring Harness - Jumper	UVN	In the passenger compartment, left rear, above the headliner		
X324	Body Wiring Harness to Body Rear Wiring Harness Extension Harness	KI4 / KI5	In the passenger compartment, rear center, beneath rear window	• •	
X331	Front Seat Wiring Harness - Driver to Body Wiring Harness	—	In the passenger compartment, left side, beneath driver seat	• • •	
X336	Front Seat Wiring Harness - Passenger to Body Wiring Harness	—	In the passenger compartment, right side, beneath passenger seat	• • •	
X340	Body Wiring Harness to Rear Seat Heater Control Wiring Harness	KA6	In the passenger compartment, left rear, behind rear seat, beneath rear window	• •	
X370	Dome Lamp Wiring Harness to Instrument Panel Wiring Harness	IOK / IOR	In the passenger compartment, on top of the right side of the instrument panel under the top cover.	• • • • • •	• •
X371	Inside Rearview Mirror Wiring Harness - Jumper to Dome Lamp Wiring Harness	Double Cab / Crew Cab	In the passenger compartment, left rear, above the headliner	• • •	• •
X375	Sunroof Wiring Harness to Dome Lamp Wiring Harness	CF5	In the passenger compartment, front center, above headliner, above A103 Roof Console		
X381	Rearview Driver Information Camera Rear Closure Coaxial Cable to Rearview Driver Information Camera Rear Closure Coaxial Cable	DRZ	In the passenger compartment, at the rear of the headliner		

Code	Name	Option	Location	Locator View	Connector End View
X382	Headlamp Automatic Control Ambient Light Sensor Wiring Harness to Dome Lamp Wiring Harness	ASV	In the passenger compartment, front center, forward of A103 Roof Console	• • •	• •
X400	Body Wiring Harness to Chassis Wiring Harness	Regular Cab / Double Cab / Crew Cab	In the engine compartment, left side, inboard of left side body structure	• • •	• •
X401	Engine Wiring Harness to Chassis Wiring Harness	LZ0	In the engine compartment, left front, inboard of left frame rail, near engine cross member	• •	
X402A	Body Wiring Harness to Chassis Wiring Harness	UV2	In the right front wheel house, behind wheel liner, forward of suspension, attached to the right outboard frame rail	• •	
X402B	Body Wiring Harness to Chassis Wiring Harness	UV2	In the right front wheel house, behind wheel liner, forward of suspension, attached to the right outboard frame rail	• •	
X402C	Body Wiring Harness to Chassis Wiring Harness	UV2	In the right front wheel house, behind wheel liner, forward of suspension, attached to the right outboard frame rail	• • •	
X403	Chassis Wiring Harness to Power Steering Wiring Harness Extension Harness	Regular Cab / Double Cab / Crew Cab	In the engine compartment, left front, inboard of left frame rail, near engine cross member	• • •	• •
X404	Chassis Wiring Harness to Emission Reduction Fluid Tank Reservoir Wire Harness	FHX	Under the vehicle, right rear, forward of rear axle, inboard of right frame rail		
X405	Power Steering Wiring Harness to Power Steering Control Module Wiring Harness	—	In the engine compartment, left front, above steering gear		
X410	Chassis Wiring Harness to Body Wiring Harness	—	In the engine compartment, top left side, rear of grounds on left side of body	• • •	
X412	Assist Step Wire Jumper - Left to Chassis Wiring Harness	BRS	Under the vehicle, left rear, forward of left front leaf spring hanger, outboard of left frame rail		
X413	Assist Step Wire Jumper - Right to Chassis Wiring Harness	BRS	Under the vehicle, right rear, forward of right front leaf spring hanger, outboard of right frame rail		
X414	Chassis Rear Wiring Harness to Chassis Wiring Harness	KC9 / KCA	At the rear of the vehicle, right side, forward of rear bumper, inboard of right frame rail, rearward of frame cross member	• • •	

Code	Name	Option	Location	Locator View	Connector End View
X415	Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness to Engine Wiring Harness	—	In the engine compartment, left front, lower, attached to the top of the front axle (Was X415A)		
X416A	Chassis Wiring Harness to Electronic Suspension Strut Wiring Harness Extension Harness	Z45	Under the vehicle, in the left front wheel well, forward of strut tower, near outboard side of left frame rail	• •	
X416B	Chassis Wiring Harness to Electronic Suspension Strut Wiring Harness Extension Harness	Z45	Under the vehicle, in the right front wheel well, forward of strut tower, near outboard side of right frame rail	• •	
X416C	Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness to Chassis Wiring Harness	G93	In the engine compartment, left front, between front differential housing and left front strut tower		
X417	Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness to Shift Control Switch Wiring Harness Extension Harness	G93	In the engine compartment, near front differential	—	
X418	Assist Step Wire Jumper - Left to Assist Step Wire - Left	BRS	Under the vehicle, left rear, forward of left rear wheel, between left frame rail and assist step	—	
X419	Assist Step Wire Jumper - Right to Assist Step Wire - Right	BRS	Under the vehicle, right rear, forward of right rear wheel, between right frame rail and assist step	—	
X420A	Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness	—	Under the rear of the vehicle, above rear differential attached to bracket that is mounted to frame cross member	• • •	
X420B	Chassis Rear Wiring Harness Extension Harness to Chassis Wiring Harness	without Z45	Under the rear of the vehicle, above rear differential attached to bracket that is mounted to frame cross member	• • •	• •
X420B	Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness	Z45	Under the rear of the vehicle, above rear differential attached to bracket that is mounted to frame cross member	• • •	• •
X424	Body Wiring Harness to Chassis Wiring Harness	FHS	Under the vehicle, in the right front wheel well, on top of the right front strut tower	• • •	

Code	Name	Option	Location	Locator View	Connector End View
X500	Front Side Door Door Wiring Harness - Driver to Body Wiring Harness	—	In the passenger compartment, behind the left side of the instrument panel	• • • •	
X505	Front Side Door Door Wiring Harness - Driver to Front Side Door Door Lock Door Wiring Harness - Driver	—	In the driver door, behind the driver door panel		
X600	Front Side Door Door Wiring Harness - Passenger to Body Wiring Harness	—	In the passenger compartment, behind the right side of the instrument panel	• • • •	
X605	Front Side Door Door Wiring Harness - Passenger to Front Side Door Door Lock Door Wiring Harness - Passenger	—	In the passenger door, behind the passenger door panel	• •	
X618A	Engine Wiring Harness to Active Grille Air Shutter Wiring Harness	VTI / WMI	At the front of the vehicle, left side of M96 Active Grille Air Shutter Actuator, approximately half way down	• • •	
X618L	Active Grille Air Shutter Jumper Wiring Harness to Active Grille Air Shutter Wiring Harness	WMI	At the front of the vehicle, left side, between M96 Active Grille Air Shutter Actuator and M96B Active Grille Air Shutter Actuator 2		—
X630	Auxiliary Fuse Block Wiring Harness to Auxiliary Fuse Block Wiring Harness	9L7	In the passenger compartment, left front, within instrument panel, left side, taped to the instrument panel wiring harness	—	
X700	Rear Side Door Door Wiring Harness - Left Rear to Body Wiring Harness	Double Cab / Crew Cab	In the passenger compartment, behind the left B-pillar, near the middle	• • •	
X701	Rear Side Door Door Wiring Harness - Left Rear to Rear Side Door Door Wiring Harness - Jumper	UQS	Attached to the left rear door trim panel, towards the front, at the top	—	
X800	Rear Side Door Door Wiring Harness - Right Rear to Body Wiring Harness	Double Cab / Crew Cab	In the passenger compartment, behind the right B-pillar, near the middle	• • •	

Code	Name	Option	Location	Locator View	Connector End View
X801	Rear Side Door Door Wiring Harness - Right Rear to Rear Side Door Door Wiring Harness - Left	UQS	Attached to the right rear door trim panel, towards the front, at the top	—	
X910	Rear Body Structure Stop Lamp to Chassis Wiring Harness	GA4 / GFG / GFU / GFW / GFY / GFF / GFI / GFJ / GFS	At the rear of the vehicle, left corner, underneath, on left frame rail	—	
X918	Endgate Wiring Harness to Chassis Wiring Harness	—	At the rear of the vehicle, left side, beneath truck bed, forward of endgate	• • • •	
X919	Endgate Wiring Harness to Chassis Wiring Harness	UV2 / UVB	At the rear of the vehicle, left side, beneath truck bed, forward of endgate	• • • •	
X920	Rear Body Structure Stop Lamp to Chassis Wiring Harness	GA4 / GFG / GFU / GFW / GFY / GFF / GFI / GFJ / GFS	At the rear of the vehicle, right corner, underneath, on right frame rail	—	
X944	Engine Wiring Harness to Engine Coolant Temperature Sensor Harness	LZ0	In the engine compartment, left of center, above Q97 Engine Coolant Flow Control Valve		
X950	Rear Object Alarm Sensor Wiring Harness to Chassis Wiring Harness	—	At the rear of the vehicle, right side, forward of rear bumper, inboard of right frame rail, rearward of frame cross member	• • • •	
X961	Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness	L84 / L87	In the engine compartment, beneath the intake manifold, at the front of the engine block valley cover		
X962	Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness	L84 / L87	In the engine compartment, left front, near the top of the left rocker arm cover	• •	
X963	Valve Rocker Arm Oil Control Valve Extension Harness to Valve Rocker Arm Oil Control Valve Harness	L84 / L87	In the engine compartment, beneath the intake manifold, at the front of the engine block valley cover		
X977	Engine Wiring Harness to Accessory Wiring Harness	VYU	In the engine compartment, left front, near top of G13 Generator		
X985	Rearview Driver Information Camera Rear Closure Coaxial Cable to Inside Rearview Mirror Wiring Harness - Jumper	DRZ	In the passenger compartment, at the rear of the headliner		

Code	Name	Option	Location	Locator View	Connector End View
G102A	Engine Wiring Harness	—	In the engine compartment, left front, attached to the inboard side of the left body structure, forward of grounds G103A and G103B		—
G102B	Body Wiring Harness	—	In the engine compartment, left front, attached to the inboard side of the left body structure, forward of grounds G103A and G103B		—
G103A	Body Wiring Harness	—	In the engine compartment, left front, attached to the inboard side of the left body structure, rearward of grounds G102A and G102B		—
G103B	Body Wiring Harness	—	In the engine compartment, left front, attached to the inboard side of the left body structure, rearward of grounds G102A and G102B		—
G104	Body Wiring Harness	—	In the engine compartment, right side, attached to the inboard side of the right body structure, rearward of X50A Engine Wiring Harness Junction Block		—
G105	Battery Negative Cable	—	In the engine compartment, right rear corner		—
G106	Power Steering Control Module Wiring Harness	—	In the engine compartment, left front		—
G131	Ground Strap	—	Under the vehicle, right front wheel well, behind front fender paint protector, rearward of lower control arm, attaching to the vehicle frame	• •	—
G132	Ground Strap	—	Under the vehicle, right front wheel well, behind inner fender, rearward of upper control arm	• •	—
G133	Ground Strap	—	Under the vehicle, right front wheel well, behind front wheelhouse liner, rearward of lower control arm	• •	—
G134	Ground Strap	—	Under the vehicle, right front wheel well, behind inner fender, rearward of upper control arm, attached to the engine	• • •	—
G175	Engine Wiring Harness	LZ0 / L84 / L87	• (L84 / L87) In the engine compartment, right rear, attached to the rear of the bank 2 cylinder head • (LZ0) In the engine compartment, left front, mounted to engine block	• •	—
G176A	Engine Wiring Harness	LZ0	In the engine compartment, right front, attached to the right front of the engine, forward of turbo manifold		—

Code	Name	Option	Location	Locator View	Connector End View
G176B	Engine Wiring Harness	L84 / L87	In the engine compartment, left rear, mounted to the rear of bank 1 cylinder head		—
G177A	Engine Wiring Harness	L3B / L84 / L87	• (L3B) In the engine compartment, right rear, attached to the right rear of the cylinder head • (L84 / L87) In the engine compartment, left front, mounted to the left front side of the engine block	• •	—
G177B	Engine Wiring Harness	L3B / LZ0 / L84 / L87	• (L3B) In the engine compartment, right rear, attached to the right rear of the cylinder head • (L84 / L87) In the engine compartment, left front, mounted to the left front side of the engine block • (LZ0) In the engine compartment, right front, attached to the right front of the engine, forward of turbo manifold	• • •	—
G178A	Engine Wiring Harness	L3B	In the engine compartment, right front, attached to the right front side of the cylinder head		—
G178B	Engine Wiring Harness	L3B	In the engine compartment, right front, attached to the right front side of the cylinder head		—
G200	Instrument Panel Wiring Harness	—	In the passenger compartment, right front, below A-pillar, behind passenger side kick panel		—
G201	Instrument Panel Wiring Harness	—	In the passenger compartment, left front, behind driver front kick panel, beneath driver side A-pillar		—
G202	Air Heater Ground Wiring Harness	C32	In the passenger compartment, right front, behind passenger front kick panel	—	—
G203	Air Heater Ground Wiring Harness	C32	In the passenger compartment, left front, behind driver front kick panel, beneath driver side A-pillar		—
G208	Steering Wheel Driver Monitoring System Module Ground Wiring Harness	UKL	In the passenger compartment, left front, within steering wheel	—	—
G209	Steering Wheel Driver Monitoring System Module Ground Wiring Harness	UKL	In the passenger compartment, left front, within steering wheel	—	—
G300A	Body Wiring Harness	—	In the passenger compartment, right side, at the base of the B-pillar	• •	—

Code	Name	Option	Location	Locator View	Connector End View
G300B	Body Wiring Harness	—	In the passenger compartment, right side, at the base of the B-pillar	• •	—
G301A	Instrument Panel Wiring Harness	—	In the passenger compartment, left side, at the base of the left B-Pillar	• •	—
G301B	Body Wiring Harness	—	In the passenger compartment, left side, at the base of the left B-Pillar	• •	—
G303	Body Wiring Harness	—	In the passenger compartment, left side, attached to the body beneath the driver seat	• •	—
G402	Chassis Wiring Harness	—	Under the vehicle, right side, attached to the right rear of the body mount		—
G403	Chassis Wiring Harness	—	Under the vehicle, right rear, rearward of forward leaf spring mount, attached to the front of the cargo box mount		—
G404	Chassis Wiring Harness	—	Under the rear of the vehicle, forward of the hitch and endgate, attached to the rear of the frame cross member, furthest right of the 3 grounds		—
G406	Chassis Wiring Harness	—	Under the rear of the vehicle, forward of the hitch and endgate, attached to the rear of the frame cross member, in the middle of the 3 grounds		—
G407	Chassis Wiring Harness	—	Under the rear of the vehicle, forward of the hitch and endgate, attached to the rear of the frame cross member, furthest left of the 3 grounds		—
J100	Front Object Alarm Sensor Wiring Harness	—	At the front of the vehicle, attached to the inside of the front bumper, between breakout to B306C Parking Assist Alarm Sensor - Front Right Middle and breakout to B306D Parking Assist Alarm Sensor - Front Right Outer	• •	—
J101	Front Object Alarm Sensor Wiring Harness	—	At the front of the vehicle, attached to the inside of the front bumper, between breakout to B306B Parking Assist Alarm Sensor - Front Left Middle and breakout to B306C Parking Assist Alarm Sensor - Front Right Middle	• •	—

Code	Name	Option	Location	Locator View	Connector End View
J102	Front Object Alarm Sensor Wiring Harness	—	At the front of the vehicle, attached to the inside of the front bumper, between breakout to B306B Parking Assist Alarm Sensor - Front Left Middle and breakout to B306C Parking Assist Alarm Sensor - Front Right Middle	• •	—
J103	Front Object Alarm Sensor Wiring Harness	—	At the front of the vehicle, attached to the inside of the front bumper, between breakout to B306C Parking Assist Alarm Sensor - Front Right Middle and breakout to B306D Parking Assist Alarm Sensor - Front Right Outer	• •	—
J104	Front Object Alarm Sensor Wiring Harness	UKL	At the front of the vehicle, attached to the inside of the front bumper, between breakout to B306D Parking Assist Alarm Sensor - Front Right Outer and breakout to B233B Radar Sensor Module - Long Range		—
J105	Front Object Alarm Sensor Wiring Harness	UKL	At the front of the vehicle, attached to the inside of the front bumper, between breakout to B306D Parking Assist Alarm Sensor - Front Right Outer and breakout to B233B Radar Sensor Module - Long Range		—
J107	Active Grille Air Shutter Wiring Harness	WMI	At the front of the vehicle, front center, within Active Grille Air Shutter Harness	—	—
J109	Active Grille Air Shutter Wiring Harness	WMI	At the front of the vehicle, front center, within Active Grille Air Shutter Harness	—	—
J110	Active Grille Air Shutter Wiring Harness	WMI	At the front of the vehicle, in active grille air shutter harness, attached to rear of the air shutter, near M96B Active Grille Air Shutter Actuator 2	—	—
J111	Active Grille Air Shutter Jumper Wiring Harness	WMI	At the front of the vehicle, in active grille air shutter jumper harness attached to rear of air shutter, between breakout to M96 Active Grille Air Shutter and breakout to inline connector X618L	—	—
J124	Body Wiring Harness	—	In the engine compartment, left front, in breakout to inline connector X125, approximately 6 cm (2.4 in) from breakout towards B118 Windshield Washer Solvent Container Level Switch and G24 Windshield Washer Pump	—	—

Code	Name	Option	Location	Locator View	Connector End View
J125	Body Wiring Harness	—	In the engine compartment, left side, between breakout to grounds G102A and G102B and breakout to Grounds G103B and G103A		—
J126	Body Wiring Harness	—	In the engine compartment, left rear, in breakout towards M75 Windshield Wiper Motor and B20A Brake Fluid Level Switch		—
J127	Body Wiring Harness	—	In the engine compartment, left rear, in windshield wiper cowl, in breakout to M75 Windshield Wiper Motor		—
J128	Body Wiring Harness	—	In the engine compartment, left rear, between breakout to inline connector X410 and breakout to K160 Brake System Control Module		—
J129	Body Wiring Harness	—	In the engine compartment, left rear, between breakout to inline connector X410 and breakout to K160 Brake System Control Module		—
J130	Body Wiring Harness	—	In the engine compartment, left rear, between breakout to K160 Brake System Control Module and wiring harness grommet at the bulkhead		—
J131	Body Wiring Harness	—	In the engine compartment, right front, between breakout to X50A Engine Wiring Harness Junction Block and breakout to B58R Airbag Front End Discriminating Sensor - Right		—
J132	Body Wiring Harness	—	In the engine compartment, right rear, between breakout to X50B Battery Distribution Engine Compartment Fuse Block and grommet at the right side of the bulkhead		—
J135	Chassis Wiring Harness	JL1/Z82-JL1	In the engine compartment, right front, forward of strut tower, in harness channel, approximately 100 cm (39.4 in) from breakout to X50A Engine Wiring Harness Junction Block X4	• •	—
J140	Accessory Wiring Harness	VYU	In the front of the engine compartment, in accessory wiring harness, near X55SP Fuse Holder - Snow Plow		—
J141	Accessory Wiring Harness	VYU	Left side of engine compartment, in accessory wiring harness between X54 Fuse Block - Snow Plow and the not used connector for the auxiliary generator	• •	—
J148	Engine Wiring Harness	(L84 / L87)+ (VTI / WMI)	In the engine compartment, left front side of engine, in harness channel		—

Code	Name	Option	Location	Locator View	Connector End View
J149	Automatic Transmission Wiring Harness - Control Extension	MHS / MHT / MQB / MQC	Under the vehicle, inside of the T12 Automatic Transmission, between breakout to Q77H Transmission Control Solenoid Valve 8 and breakout to Q77G Transmission Control Solenoid Valve 7	—	—
J150	Engine Wiring Harness	—	• (L3B) In the engine compartment, front center, approximately 19 cm (7.5 in) from breakout to harness channel • (L84 / L87) In the engine compartment, rear of engine, approximately 4 cm (1.6 in) from breakout to G177A • (LZ0) In the engine compartment, front of engine, in left side of harness channel	• •	—
J151	Engine Wiring Harness	L3B / L84 / L87 / LZ0	• (L3B) In the engine compartment, front center, approximately 4 cm (1.6 in) from breakout to harness channel • (L84 / L87) In the engine compartment, left front side of engine, in harness channel • (LZ0) In the engine compartment, left rear side of engine, in harness channel	• • •	—
J152	Engine Wiring Harness	L3B / L84 / L87 / LZ0	• (L3B) In the engine compartment, center, between breakout to Q6E Camshaft Position Actuator Solenoid Valve - Exhaust and breakout to M128 Turbocharger Wastegate Actuator • (L84 / L87) In the engine compartment, left front side of engine, in harness channel • (LZ0) In the engine compartment, front of engine, in left side of harness channel	• • •	—

Code	Name	Option	Location	Locator View	Connector End View
J153	Engine Wiring Harness	—	• (L3B) In the engine compartment, lower left front, in harness channel on frame rail • (L84 / L87) In the engine compartment, front center, between breakout to K69 Transfer Case Control Module and breakout to harness channel • (LZ0) In the engine compartment, left front, approximately 17 cm (6.7 in) from breakout towards G13 Generator and G1 Air Conditioning Compressor	• • •	—
J154	Engine Wiring Harness	—	• (L3B) In the engine compartment, right rear of engine, approximately 50 cm (19.7 in) from breakout to B26 Crankshaft Position Sensor and Q74 Engine Coolant Bypass Valve • (L84 / L87) In the engine compartment, front center, between breakout to B75 Mass Airflow Sensor and breakout to K69 Transfer Case Control Module • (LZ0) In the engine compartment, front of engine, in left side of harness channel	• • •	—
J155	Engine Wiring Harness	L3B / L84 / L87	• (L3B) In the engine compartment, lower left front, in harness channel on frame rail • (L84 / L87) In the engine compartment, front center, between breakout of the main section of harness and breakout to Q38 Throttle Body	• •	—
J156	Engine Wiring Harness	L3B / L84 / L87	• (L3B) In the engine compartment, front center, approximately 4 cm (1.6 in) from breakout to harness channel, going towards B338A Intake Camshaft Profile Sleeve Position Sensor 1 • (L84 / L87) In the engine compartment, front center, between breakout of the main section of harness and breakout to Q38 Throttle Body	• •	—

Code	Name	Option	Location	Locator View	Connector End View
J157	Engine Wiring Harness	—	• (L3B) In the engine compartment, front center, approximately 11 cm (4.3 in) from breakout to harness channel • (L84 / L87) In the engine compartment, front center, approximately 4 cm (1.6 in) from breakout to Q38 Throttle Body • (LZ0) In the engine compartment, left rear, approximately 7 cm (2.8 in) from breakout to Q18B Fuel Pressure Regulator 2	• • •	—
J158	Engine Wiring Harness	L3B / L84 / L87	• (L3B) In the engine compartment, center, between breakout to T8B Ignition Coil 2 and breakout to T8C Ignition Coil 3 • (L84 / L87) In the engine compartment, left side of engine, between breakout to T8A Ignition Coil 1 and breakout to T8C Ignition Coil 3	• •	—
J159	Engine Wiring Harness	L84 / L87	In the engine compartment, left side of engine, between breakout to T8C Ignition Coil 3 and breakout to T8E Ignition Coil 5		—
J160	Engine Wiring Harness	L84 / L87	In the engine compartment, rear of the engine, in harness channel		—
J161	Engine Wiring Harness	L84 / L87	In the engine compartment, right side of engine, between breakout to ground G175 and breakout to T8H Ignition Coil 8		—
J162	Engine Wiring Harness	L84 / L87	In the engine compartment, right side of engine, between breakout to T8H Ignition Coil 8 and breakout to T8F Ignition Coil 6		—
J163	Engine Wiring Harness	L3B / L84 / L87	• (L3B) In the engine compartment, rear center, approximately 4 cm (1.6 in) from breakout to G18 Fuel Pump - High Pressure • (L84 / L87) In the engine compartment, rear of the engine, in harness channel	• •	—

Code	Name	Option	Location	Locator View	Connector End View
J164	Engine Wiring Harness	L3B / L84 / L87 / LZ0	• (L3B) In the engine compartment, front center, between breakout to Q6F Camshaft Position Actuator Solenoid Valve - Intake and breakout to harness channel • (L84 / L87) In the engine compartment, rear, between breakout to B52E Heated Oxygen Sensor - Bank 2 Sensor 1 and breakout to B52C Heated Oxygen Sensor - Bank 1 Sensor 1 • (LZ0) In the engine compartment, front of engine, center of harness channel	• • •	—
J165	Engine Wiring Harness	L3B	In the engine compartment, rear center, in breakout to inline connector X175		—
J166	Automatic Transmission Wiring Harness - Control	MHS / MQC / MFC	• (MFC) Under the vehicle, inside of the T12 Automatic Transmission, in breakout towards Q77C Transmission Control Solenoid Valve 3 and Q77E Transmission Control Solenoid Valve 5 • (MHS / MQC) Under the vehicle, inside of the T12 Automatic Transmission, approximately 5 cm (2.0 in) from breakout to B316 Transmission Park Valve Position Switch	—	—
J167	Engine Wiring Harness	L3B	In the engine compartment, lower left front, in harness channel on frame rail		—
J168	Engine Wiring Harness	L3B	In the engine compartment, upper left front side of engine, in harness channel		—
J169	Engine Wiring Harness	L3B	In the engine compartment, upper left front side of engine, in harness channel		—
J170	Engine Wiring Harness	L3B	In the engine compartment, upper left front side of engine, in harness channel		—
J171	Engine Wiring Harness	L3B	In the engine compartment, rear center, approximately 7 cm (2.8 in) rearward of breakout to T8D Ignition Coil 4		—
J172	Engine Wiring Harness	L3B	In the engine compartment, front center, between breakout to Q6F Camshaft Position Actuator Solenoid Valve - Intake and breakout to harness channel		—

Code	Name	Option	Location	Locator View	Connector End View
J173	Engine Wiring Harness	L3B	In the engine compartment, front center, between breakout to Q6F Camshaft Position Actuator Solenoid Valve - Intake and breakout to harness channel		—
J174	Engine Wiring Harness	L3B	In the engine compartment, front center, approximately 6 cm (2.4 in) from breakout to Q6F Camshaft Position Actuator Solenoid Valve - Intake		—
J175	Engine Wiring Harness	L3B	In the engine compartment, front center, approximately 9 cm (3.5 in) from breakout to Q6F Camshaft Position Actuator Solenoid Valve - Intake		—
J176	Engine Wiring Harness	L3B	In the engine compartment, on top of engine, approximately 5 cm (2.0 in) from breakout to ground G178A and G178B	—	—
J177	Engine Wiring Harness	L3B	In the engine compartment, rear center, approximately 4 cm (1.6 in) from breakout to G18 Fuel Pump - High Pressure		—
J178	Engine Wiring Harness	L3B	In the engine compartment, center, between breakout to Q6E Camshaft Position Actuator Solenoid Valve - Exhaust and breakout to M128 Turbocharger Wastegate Actuator	—	—
J179	Engine Wiring Harness	L3B	In the engine compartment, right front, approximately 3 cm (1.2 in) from breakout to B34B Engine Coolant Temperature Sensor 2		—
J180	Engine Wiring Harness	LZ0	In the engine compartment, left rear side of engine, in harness channel		—
J181	Engine Wiring Harness	LZ0	In the engine compartment, left front, approximately 12 cm (4.7 in) from breakout towards G13 Generator and G1 Air Conditioning Compressor		—
J182	Engine Wiring Harness	LZ0	In the engine compartment, front of engine, center of harness channel		—
J183	Engine Wiring Harness	LZ0	In the engine compartment, front, in harness channel on front of engine	—	—
J184	Engine Wiring Harness	LZ0	In the engine compartment, rear center, in harness channel on top of engine		—
J186	Engine Wiring Harness	LZ0	In the engine compartment, front of engine, in left side of harness channel		—

Code	Name	Option	Location	Locator View	Connector End View
J188	Engine Wiring Harness	LZ0	In the engine compartment, left rear side of engine, in harness channel		—
J189	Engine Wiring Harness	LZ0	In the engine compartment, rear center, in harness channel on top of engine		—
J190	Engine Wiring Harness	LZ0	In the engine compartment, rear center, in harness channel on top of engine		—
J191	Engine Wiring Harness	LZ0	In the engine compartment, left rear side of engine, in harness channel		—
J192	Automatic Transmission Wiring Harness - Case	MHS / MHT / MQB / MQC	Under the vehicle, within T12 Automatic Transmission, between breakout to B14A Transmission Output Shaft Speed Sensor and breakout to G5 Transmission Fluid Pump - Electric/Auxiliary	—	—
J193	Automatic Transmission Wiring Harness - Case	—	• (MFC) Under the vehicle, within T12 Automatic Transmission, between breakout to inline connector X175 and inline connector X176 • (MHS / MHT / MQB / MQC) Under the vehicle, within T12 Automatic Transmission, between breakout to B14DB Transmission Intermediate Shaft Speed Sensor 2 and breakout to T12 Automatic Transmission X2 and X3 connectors	—	—
J194	Automatic Transmission Wiring Harness - Case	MHS / MHT / MQB / MQC	Under the vehicle, inside of the T12 Automatic Transmission, between breakout to B14DB Transmission Intermediate Shaft Speed Sensor 2 and breakout to T12 Automatic Transmission X2 and X3 connectors	—	—
J195	Automatic Transmission Wiring Harness - Control	MHS / MHT / MQB / MQC	Under the vehicle, inside of the T12 Automatic Transmission, between breakout to Q77B Transmission Control Solenoid Valve to and breakout to Q77E Transmission Control Solenoid Valve 2	—	—

Code	Name	Option	Location	Locator View	Connector End View
J197	Automatic Transmission Wiring Harness - Control	—	• (MFC) Under the vehicle, within T12 Automatic Transmission, between breakout to Q77B Transmission Control Solenoid Valve 2 and breakout to B13 Automatic Transmission Fluid Temperature Sensor • (MHS / MHT / MQB / MQC) Under the vehicle, within T12 Automatic Transmission, between breakout to B310 Transmission Park Valve Position Switch and breakout to M123 Transmission Park Valve Lock Solenoid Actuator	—	—
J200	Body Wiring Harness	LZ0	In the passenger compartment, left front, behind left kick panel, approximately 16 cm (6.3 in) from breakout to inline connector X210 and X51L Instrument Panel Wiring Harness Junction Block - Left	• •	—
J201	Body Wiring Harness	FHX	In the passenger compartment, left front, behind left kick panel, in breakout to X51L Instrument Panel Wiring Harness Junction Block - Left	• •	—
J202	Body Wiring Harness	BRS	(Double Cab/Crew Cab) In the passenger compartment, left front, behind left kick panel, in breakout to X51L Instrument Panel Wiring Harness Junction Block - Left		—
J203	Body Wiring Harness	LZ0	In the passenger compartment, left front, within instrument panel, approximately 20 cm (7.9 in) from breakout to B22 Brake Pedal Position Sensor	• •	—
J204	Body Wiring Harness	KC9/KCA	In the passenger compartment, left front, within instrument panel, in harness channel, approximately 12 cm (4.7 in) from breakout to B22 Brake Pedal Position Sensor	• •	—
J205	Body Wiring Harness	—	In the passenger compartment, left front, within instrument panel, in harness channel, approximately 25 cm (9.8 in) from breakout towards grommet at the left side of the bulkhead	• •	—

Code	Name	Option	Location	Locator View	Connector End View
J206	Body Wiring Harness	—	(Double Cab/Crew Cab) In the passenger compartment, left front, within instrument panel, approximately 16 cm (6.3 in) from breakout towards grommet at the left side of the bulkhead		—
J207	Body Wiring Harness	—	In the passenger compartment, left front, within instrument panel, in harness channel, approximately 10 cm (3.9 in) from breakout towards grommet at the left side of the bulkhead	• •	—
J208	Body Wiring Harness	—	In the passenger compartment, left front, within instrument panel, in harness channel, approximately 5 cm (2.0 in) from breakout towards grommet at the left side of the bulkhead	• •	—
J209	Body Wiring Harness	—	In the passenger compartment, left front, within instrument panel, in harness channel, approximately 5 cm (2.0 in) from breakout towards grommet at the left side of the bulkhead	• •	—
J210	Body Wiring Harness	—	In the passenger compartment, left front, within instrument panel, approximately 4 cm (1.6 in) from breakout to B107 Accelerator Pedal Position Sensor	• •	—
J211	Body Wiring Harness	—	In the passenger compartment, front center, within instrument panel, approximately 14 cm (5.5 in) from breakout to B107 Accelerator Pedal Position Sensor	• •	—
J212	Body Wiring Harness	—	In the passenger compartment, front center, within instrument panel, approximately 30 cm (11.8 in) from breakout to B107 Accelerator Pedal Position Sensor	• •	—

Code	Name	Option	Location	Locator View	Connector End View
J213	Body Wiring Harness	—	• (Double Cab/Crew Cab) In the passenger compartment, front center, within instrument panel, approximately 39 cm (15.4 in) from breakout towards grommet at the right side of the bulkhead • (Regular Cab) In the passenger compartment, front center, within instrument panel, approximately 57 cm (22.4 in) from breakout towards grommet at the right side of the bulkhead	• • •	—
J215	Body Wiring Harness	—	In the passenger compartment, front center, within instrument panel, approximately 42 cm (16.5 in) from breakout to B107 Accelerator Pedal Position Sensor	• •	—
J216	Body Wiring Harness	—	(Double Cab/Crew Cab) In the passenger compartment, front center, within instrument panel, approximately 31 cm (12.2 in) from breakout towards grommet at the right side of the bulkhead		—
J217	Body Wiring Harness	—	• (Double Cab/Crew Cab) In the passenger compartment, front center, within instrument panel, approximately 19 cm (7.5 in) from breakout towards grommet at the right side of the bulkhead • (Regular Cab) In the passenger compartment, front center, within instrument panel, approximately 36 cm (14.2 in) from breakout towards grommet at the right side of the bulkhead	• •	—
J218	Body Wiring Harness	—	• (Double Cab/Crew Cab) In the passenger compartment, front center, within instrument panel, approximately 22 cm (8.7 in) from breakout towards grommet at the right side of the bulkhead • (Regular Cab) In the passenger compartment, front center, within instrument panel, approximately 39 cm (15.4 in) from breakout towards grommet at the right side of the bulkhead	• •	—

Code	Name	Option	Location	Locator View	Connector End View
J219	Body Wiring Harness	—	(Double Cab/Crew Cab) In the passenger compartment, right front, within instrument panel, approximately 14 cm (5.5 in) from breakout towards grommet at the right side of the bulkhead		—
J220	Heater Wiring Harness	—	In the passenger compartment, right front, within instrument panel, in Heater Wiring Harness, approximately 18 cm (7.1 in) from inline connector X250		—
J221	Heater Wiring Harness	—	In the passenger compartment, right front, within instrument panel, in Heater Wiring Harness, approximately 24 cm (9.4 in) from breakout to M4 Air Inlet Valve Actuator		—
J222	Heater Wiring Harness	—	In the passenger compartment, right front, within instrument panel, in Heater Wiring Harness, approximately 36 cm (14.2 in) from breakout to M4 Air Inlet Valve Actuator		—
J223	Heater Wiring Harness	CJ2	In the passenger compartment, right front, within instrument panel, in Heater Wiring Harness	—	—
J225	Instrument Panel Wiring Harness	—	In the passenger compartment, left front, within instrument panel, in breakout to K9 Body Control Module	• • •	—
J226	Instrument Panel Wiring Harness	—	• (IOK) In the passenger compartment, left front, within instrument panel, in breakout to K9 Body Control Module • (IOR) In the passenger compartment, left front, within instrument panel, approximately 10 cm (3.9 in) from breakout to P16 Instrument Panel Cluster Control Module	• • •	—
J227	Instrument Panel Wiring Harness	—	• (IOK) In the passenger compartment, left front, within instrument panel, in breakout to K9 Body Control Module • (IOR) In the passenger compartment, left front, within instrument panel, approximately 5 cm (2.0 in) from breakout to K9 Body Control Module	• • •	—

Code	Name	Option	Location	Locator View	Connector End View
J228	Instrument Panel Wiring Harness	JHD	• (IOK+(GFW/GFY)) In the passenger compartment, left front, within instrument panel, approximately 14 cm (5.5 in) from breakout to S38 On/Off Vehicle Switch and S171 Instrument Panel Center Accessory Function Switch - Left • (IOK-GFW-GFY) In the passenger compartment, left front, within instrument panel, between breakout to X84 Data Link Connector and breakout to inline connector X213 • (IOR) In the passenger compartment, front center, within instrument panel, approximately 5 cm (2.0 in) from breakout to inline connector X370	• • •	—
J229	Instrument Panel Wiring Harness	—	• (IOK) In the passenger compartment, left front, within instrument panel, approximately 18 cm (7.1 in) from breakout to S30 Headlamp switch and S91 Parking Brake Control Switch • (IOR) In the passenger compartment, left front, within instrument panel, in breakout to K9 Body Control Module	• • •	—
J230	Instrument Panel Wiring Harness	—	• (IOK+(GFW/GFY)) In the passenger compartment, left front, within instrument panel, approximately 10 cm (3.9 in) from breakout to P16 Instrument Panel Cluster Control Module • (IOK-GFW-GFY) In the passenger compartment, left front, within instrument panel, left of breakout to P16 Instrument Panel Cluster Control Module • (IOR) In the passenger compartment, left front, in breakout towards K56 Serial Data Gateway Module connectors	• • •	—
J231	Instrument Panel Wiring Harness	9L7+(G93/G94)	In the passenger compartment, left front, within instrument panel, left of breakout to P16 Instrument Cluster Control Module		—

Code	Name	Option	Location	Locator View	Connector End View
J233	Instrument Panel Wiring Harness	UV6	• (IOK-GFW-GFY) In the passenger compartment, left front, within instrument panel, between breakout to P16 Instrument Panel Cluster Control Module and breakout to K60 Column Lock Module • (IOK+(GFW/GFY)) In the passenger compartment, right front, within instrument panel, in harness breakout going towards A11 Radio	• •	—
J234	Instrument Panel Wiring Harness	—	• (IOK+(GFW/GFY)) In the passenger compartment, left front, within instrument panel, in breakout to K60 Column Lock Module • (IOK-GFW-GFY) In the passenger compartment, left front, within instrument panel, approximately 14 cm (5.5 in) from breakout to S38 On/Off Vehicle Switch and S171 Instrument Panel Center Accessory Function Switch - Left • (IOR) In the passenger compartment, left front, in breakout towards K56 Serial Data Gateway Module connectors	• •	—
J235	Instrument Panel Wiring Harness	—	• (IOK+(GFW/GFY)) In the passenger compartment, front center, within instrument panel, in harness breakout going towards A11 Radio • (IOK-GFW-GFY) In the passenger compartment, front center, within instrument panel, approximately 10 cm (3.9 in) from breakout to B10D Sun Load and Ambient Light and Security Indicator Sensor • (IOR) In the passenger compartment, left front, within instrument panel, in breakout to K9 Body Control Module	• • •	—

Code	Name	Option	Location	Locator View	Connector End View
J236	Instrument Panel Wiring Harness	—	• (IOK+(GFW/GFY)) In the passenger compartment, right front, approximately 20 cm (7.9 in) from breakout to T4TA Auxiliary Wireless Communication Antenna • (IOK-GFW-GFY) In the passenger compartment, front center, within instrument panel, in harness breakout towards S171L Instrument Panel Center Accessory Function Switch - Left, S171R Instrument Panel Center Accessory Function Switch - Right, and S86 Vehicle Stability Control System Switch • (IOR) In the passenger compartment, front center, within instrument panel, above the instrument panel tie bar, forward of A26 Heater and Air Conditioning User Interface Control - Front	• • •	—
J237	Instrument Panel Wiring Harness	—	• (IOK+(GFW/GFY)) In the passenger compartment, front center, within instrument panel, approximately 13 cm (5.1 in) right of breakout to B10D Sun Load and Ambient Light and Security Indicator Sensor • (IOK-GFW-GFY) In the passenger compartment, front center, within instrument panel, in harness breakout towards S171L Instrument Panel Center Accessory Function Switch - Left, S171R Instrument Panel Center Accessory Function Switch - Right, and S86 Vehicle Stability Control System Switch • (IOR) In the passenger compartment, front center, within instrument panel, above the instrument panel tie bar, forward of A26 Heater and Air Conditioning User Interface Control - Front	• • •	—

Code	Name	Option	Location	Locator View	Connector End View
J238	Instrument Panel Wiring Harness	—	• (IOK+(GFW/GFY)) In the passenger compartment, front center, within instrument panel, in harness breakout going towards A26 Heater and Air Conditioning User Interface Control - Front, S171R Instrument Panel Center Accessory Function Switch - Right, and S86 Vehicle Stability Control System Switch • (IOK-GFW-GFY) In the passenger compartment, front center, within instrument panel, approximately 13 cm (5.1 in) right of breakout to B10D Sun Load and Ambient Light and Security Indicator Sensor • (IOR) In the passenger compartment, front center, within instrument panel, above the instrument panel tie bar, forward of A26 Heater and Air Conditioning User Interface Control - Front	• •	—
J239	Instrument Panel Wiring Harness	—	In the passenger compartment, right front, approximately 12 cm (4.7 in) from breakout to T4TA Auxiliary Wireless Communication Antenna	• • •	—
J240	Instrument Panel Wiring Harness	—	• (IOK) In the passenger compartment, right front, approximately 15 cm (5.9 in) from breakout to T4TA Auxiliary Wireless Communication Antenna • (IOR) In the passenger compartment, left front, within instrument panel, in breakout to K9 Body Control Module	• • •	—
J241	Instrument Panel Wiring Harness	—	• (IOK) In the passenger compartment, right front, approximately 30 cm (11.8 in) from breakout to T4TA Auxiliary Wireless Communication Antenna • (IOR) In the passenger compartment, right front, approximately 12 cm (4.7 in) from breakout to T4TA Auxiliary Wireless Communication Antenna	• • •	—

Code	Name	Option	Location	Locator View	Connector End View
J242	Instrument Panel Wiring Harness	—	• (IOK) In the passenger compartment, right front, within instrument panel, approximately 16 cm (6.3 in) from breakout to M8 Blower Motor • (IOR) In the passenger compartment, right front, within instrument panel, between breakout to M8 Blower Motor and breakout to A11 Radio	• • •	—
J243	Instrument Panel Wiring Harness	IOR	In the passenger compartment, front right, within instrument panel, in breakout to X51R Instrument Panel Wiring Harness Junction Block - Right X2	—	—
J250	Steering Wheel Horn Switch Wiring Harness	UK3	In the passenger compartment, left front, within steering wheel, right of breakout to X85 Steering Wheel Airbag Coil		—
J251	Steering Wheel Horn Switch Wiring Harness	—	In the passenger compartment, left front, within steering wheel, left of breakout to X85 Steering Wheel Airbag Coil		—
J300	Body Wiring Harness	—	(Double Cab/Crew Cab) In the passenger compartment, left front, approximately 31 cm (12.2 in) forward of breakout to the driver seat	• •	—
J301	Body Wiring Harness	—	(Double Cab/Crew Cab) In the passenger compartment, left front, approximately 27 cm (10.6 in) forward of breakout to the driver seat		—
J302	Body Wiring Harness	—	• (Double Cab/Crew Cab) In the passenger compartment, left front, approximately 21 cm (8.3 in) forward of breakout to the driver seat • (Regular Cab) In the passenger compartment, left front, approximately 15 cm (5.9 in) forward of breakout to the driver seat	• •	—
J303	Body Wiring Harness	—	(Double Cab/Crew Cab) In the passenger compartment, left front, approximately 16 cm (6.3 in) forward of breakout to the driver seat		—

Code	Name	Option	Location	Locator View	Connector End View
J304	Body Wiring Harness	—	• (Double Cab/Crew Cab) In the passenger compartment, right front, under passenger door sill, center of door opening • (Regular Cab) In the passenger compartment, right front, forward of breakout to the passenger seat	• •	—
J305	Body Wiring Harness	—	• (Double Cab/Crew Cab) In the passenger compartment, right front, under passenger door sill, center of door opening • (Regular Cab) In the passenger compartment, right front, forward of breakout to the passenger seat	• •	—
J306	Body Wiring Harness	—	• (Double Cab/Crew Cab) In the passenger compartment, left front, beneath driver seat, left of breakout to inline connector X331 • (Regular Cab) In the passenger compartment, front center, within instrument panel, approximately 18 cm (7.1 in) from breakout to B107 Accelerator Pedal Position Sensor	• •	—
J307	Body Wiring Harness	—	(Double Cab/Crew Cab) In the passenger compartment, left front, beneath driver seat, between breakout to ground G303 and breakout to K36 Restraints Control Module		—
J308	Body Wiring Harness	—	In the passenger compartment, center, approximately 11 cm (4.3 in) from breakout to K36 Restraints Control Module	• •	—
J309	Body Wiring Harness	—	(Double Cab/Crew Cab) In the passenger compartment, center, beneath floor console, left of breakout to inline connector X227		—
J310	Body Wiring Harness	—	In the passenger compartment, right front, beneath passenger seat, right of breakout to inline connector X336	• •	—
J311	Body Wiring Harness	—	(Double Cab/Crew Cab) In the passenger compartment, left rear, approximately 12 cm (4.7 in) rearward of breakout towards the driver seat		—

Code	Name	Option	Location	Locator View	Connector End View
J312	Body Wiring Harness	—	(Double Cab/Crew Cab) In the passenger compartment, right rear, approximately 7 cm (2.8 in) forward from breakout to grounds G300A and G300B		—
J313	Front Seat Wiring Harness - Driver	KA1 / KQV	In the passenger compartment, left front, in driver seat, approximately 10 cm (3.9 in) from breakout to E14B Front Seat Cushion Heater - Driver	—	—
J314	Body Wiring Harness	—	• (Double Cab/Crew Cab) In the passenger compartment, right front, at the base of the passenger side A-pillar, rearward of inline connector X251 • (Regular Cab) In the passenger compartment, right front, approximately 30 cm (11.8 in) rearward from breakout to X51R Instrument Panel Wiring Harness Junction Block - Right	• •	—
J319	Chassis Wiring Harness	FHS	Under the vehicle, right center, in chassis harness at right rear side of transmission crossmember	—	—
J320	Chassis Wiring Harness	—	Under the vehicle, right side, approximately 36 cm (14.2 in) rearward of ground G402		—
J321	Chassis Wiring Harness	—	Under the vehicle, right side, approximately 6 cm (2.4 in) rearward of breakout towards the left side of the vehicle, near transmission cross member		—
J322	Chassis Wiring Harness	—	Under the vehicle, right side, forward of breakout to K4 Running Board Control Module		—
J323	Chassis Wiring Harness	—	Under the vehicle, right side, approximately 57 cm (22.4 in) rearward of breakout to B136 Exhaust Particulate Matter Sensor		—
J324	Chassis Wiring Harness	—	Under the vehicle, right side, approximately 57 cm (22.4 in) rearward of breakout to B136 Exhaust Particulate Matter Sensor		—
J326	Chassis Wiring Harness	—	Under the vehicle, right side, rearward of breakout to G403		—
J328	Front Seat Wiring Harness - Driver	A45	In the passenger compartment, left front, within the driver seat, approximately 3 cm (1.2 in) from breakout to inline connector X331		—

Code	Name	Option	Location	Locator View	Connector End View
J329	Front Seat Wiring Harness - Driver	KQV	In the passenger compartment, left front, in driver seat, approximately 7 cm (2.8 in) from breakout to P45R Front Seat Lane Departure Warning - Right		—
J330	Dome Lamp Wiring Harness	—	In the passenger compartment, right front, in harness channel behind right front A-pillar trim panel	• • •	—
J331	Dome Lamp Wiring Harness	—	In the passenger compartment, right front, above headliner, to the right of breakout to A3R Sunshade - Right	• • •	—
J332	Dome Lamp Wiring Harness	—	In the passenger compartment, right front, above headliner, between the breakout to A3R Sunshade - Right and breakout to B24RF Mobile Telephone Microphone - Right Front	• • •	—
J333	Dome Lamp Wiring Harness	—	In the passenger compartment, front center, above headliner, between the breakout to B24RF Mobile Telephone Microphone - Right Front and breakout to A103 Roof Console	• • •	—
J334	Dome Lamp Wiring Harness	—	In the passenger compartment, front center, above headliner, between the breakout to B24RF Mobile Telephone Microphone - Right Front and breakout to A103 Roof Console	• • •	—
J336	Front Seat Wiring Harness - Driver	KQV	In the passenger compartment, left front, within driver seat, approximately 5 cm (2.0 in) from breakout to M73D Front Seat Cushion Ventilation Blower - Driver		—
J337	Front Seat Wiring Harness - Driver	—	In the passenger compartment, left front, within driver seat, approximately 6 cm (2.4 in) from breakout to M55D Front Seat Vertical Adjuster Actuator - Driver		—
J338	Front Seat Wiring Harness - Driver	—	In the passenger compartment, left front, within driver seat, approximately 2 cm (0.8 in) from breakout to M73D Front Seat Cushion Ventilation Blower - Driver		—
J339	Front Seat Wiring Harness - Driver	KA1 / KQV	In the passenger compartment, left front, in driver seat, approximately 6 cm (2.4 in) from breakout to P45R Front Seat Lane Departure Warning - Right		—

Code	Name	Option	Location	Locator View	Connector End View
J340	Front Floor Console Wiring Harness	—	In the passenger compartment, front center, beneath the middle of the floor console, near breakout to inline connectors X227 and X225	• •	—
J341	Front Floor Console Wiring Harness	—	In the passenger compartment, center, beneath floor console compartment bin		—
J342	Front Floor Console Wiring Harness	—	In the passenger compartment, center, beneath floor console, near the breakout to X83B Audio/ Video Receptacle connectors	• •	—
J343	Front Floor Console Wiring Harness	UBC+UBD	In the passenger compartment, front center, beneath floor console, between breakout to T10UA Low Frequency Console Antenna and breakout to X83B Audio/Video Receptacle connectors		—
J344	Front Floor Console Wiring Harness	—	In the passenger compartment, center, beneath floor console, between breakout to inline connector X226 and breakout to T10UA Low Frequency Console Antenna	• •	—
J345	Front Seat Wiring Harness - Center	AZ3	In the passenger compartment, front center, within front center seat, approximately 15 cm (5.9 in) from breakout to Accessory Power Receptacle - Front Center Seat Rear Cover 110/220V AC		—
J347	Front Seat Wiring Harness - Passenger	A45	In the passenger compartment, right front, within passenger seat, approximately 3 cm (1.2 in) from breakout to M50P Front Seat Tilt Adjuster Actuator Passenger		—
J348	Front Seat Wiring Harness - Passenger	KQV	In the passenger compartment, right front, within passenger seat harness, approximately 8 cm (3.1 in) from breakout to M73P Front Seat Cushion Ventilation Blower - Passenger		—
J349	Front Seat Wiring Harness - Passenger	KQV	In the passenger compartment, right front, within passenger seat, in breakout towards K29FV Front Seat Heater Vent Control Module connectors		—

Code	Name	Option	Location	Locator View	Connector End View
J350	Rear Seat Heater Control Wiring Harness - 2nd Row	KA6	In the passenger compartment, center rear, in rear seat cushion, approximately 20 cm (7.9 in) from breakout to E14F Rear Seat Cushion Heater - Left Rear		—
J351	Front Seat Wiring Harness - Passenger	—	In the passenger compartment, right front, within passenger seat, approximately 3 cm (1.2 in) from breakout towards K85P Restraints Occupant Classification System Module - Passenger		—
J352	Front Seat Wiring Harness - Passenger	KA1 / KQV	In the passenger compartment, right front, within passenger seat, approximately 3 cm (1.2 in) from breakout towards K85P Restraints Occupant Classification System Module - Passenger		—
J353	Front Seat Wiring Harness - Passenger	—	In the passenger compartment, right front, within passenger seat, approximately 7 cm (2.8 in) from breakout to M50P Front Seat Tilt Adjuster Actuator Passenger		—
J400	Chassis Wiring Harness	—	Under the vehicle, right rear, approximately 66 cm (26.0 in) rearward of breakout headed towards the fuel tank	• •	—
J401	Chassis Wiring Harness	—	• (Double Cab/Crew Cab) Under the vehicle, right rear, approximately 18 cm (7.1 in) rearward of breakout to K68 Trailer Lamp Control Module and K67 Trailer Brake Control Module • (Regular Cab) Under the vehicle, right rear, approximately 28 cm (11.0 in) forward of breakout to E42R Rear Body Structure Stop Lamp - Right	• •	—
J402	Chassis Wiring Harness	—	At the rear of vehicle, center, forward of the rear bumper, near breakout to ground G407	• •	—
J500	Front Side Door Door Wiring Harness - Driver	—	In the driver front door, between breakout to B63LF Airbag Side Impact Sensor - Left Front Door and breakout to P19AG Radio Front Side Door Speaker - Left	• •	—

Code	Name	Option	Location	Locator View	Connector End View
J501	Front Side Door Door Wiring Harness - Driver	—	In the driver front door, between breakout to B63LF Airbag Side Impact Sensor - Left Front Door and breakout to P19AG Radio Front Side Door Speaker - Left	• •	—
J502	Front Side Door Door Wiring Harness - Driver	—	In the driver front door, approximately 15 cm (5.9 in) from breakout to A24D Front Side Door Outside Handle - Left	• •	—
J506	Front Side Door Door Lock Door Wiring Harness - Driver	—	In the driver front door, approximately 8 cm (3.1 in) from breakout to S79D Front Side Door Window Control Switch - Driver	—	—
J600	Front Side Door Door Wiring Harness - Passenger	—	In the passenger front door, between breakout to B63RF Airbag Side Impact Sensor - Right Front Door and breakout to P19AH Radio Front Side Door Speaker - Right	• •	—
J601	Front Side Door Door Wiring Harness - Passenger	—	In the passenger front door, between breakout to B63RF Airbag Side Impact Sensor - Right Front Door and breakout to P19AH Radio Front Side Door Speaker - Right	• •	—
J602	Front Side Door Door Wiring Harness - Passenger	—	• (Double Cab/Crew Cab) In the passenger front door, between breakout to B63RF Airbag Side Impact Sensor - Right Front Door and breakout to P19AH Radio Front Side Door Speaker - Right • (Regular Cab) In the passenger front door, approximately 17 cm (6.7 in) from breakout to B63RF Airbag Side Impact Sensor - Right Front Door	• •	—
J605	Front Side Door Door Lock Door Wiring Harness - Passenger	—	In the passenger front door, approximately 8 cm (3.1 in) from breakout to S79P Front Side Door Window Control Switch - Passenger	—	—
J700	Rear Side Door Door Wiring Harness - Left	UQS	In the left rear door, in the harness channel	—	—
J701	Rear Side Door Door Wiring Harness - Left	UQS	In the left rear door, in the harness channel	—	—
J702	Rear Side Door Door Wiring Harness - Left	—	In the left rear door, between breakout to B63LR Airbag Side Impact Rear Sensor - Left Door and breakout to P19AL Radio Rear Side Door Speaker - Left	• •	—

Code	Name	Option	Location	Locator View	Connector End View
J800	Rear Side Door Door Wiring Harness - Right	UQS	In the right rear door, in the harness channel	—	—
J801	Rear Side Door Door Wiring Harness - Right	UQS	In the right rear door, in the harness channel	—	—
J802	Rear Side Door Door Wiring Harness - Right	—	In the right rear door, between breakout to B63RR Airbag Side Impact Rear Sensor - Right Door and breakout to P19AM Radio Rear Side Door Speaker - Right	• •	—
J900	Rear Object Alarm Sensor Wiring Harness	—	• (UKL) At the rear of the vehicle, inside of rear fascia, between breakout to E7L Rear License Plate Lamp - Left and breakout to inline connector X950 • (without UKL) At the rear of the vehicle, inside of rear fascia, in breakout to E7L Rear License Plate Lamp - Left		—
J901	Rear Object Alarm Sensor Wiring Harness	—	At the rear of the vehicle, inside of rear fascia, between breakout to E7L Rear License Plate Lamp - Left and breakout to inline connector X950	• •	—
J902	Rear Object Alarm Sensor Wiring Harness	UKL	At the rear of the vehicle, inside of rear fascia, between breakout to E7L Rear License Plate Lamp - Left and breakout to inline connector X950		—
J903	Rear Object Alarm Sensor Wiring Harness	—	At the rear of the vehicle, inside of rear fascia, between breakout to E7L Rear License Plate Lamp - Left and breakout to inline connector X950	• •	—
J904	Rear Object Alarm Sensor Wiring Harness	—	At the rear of the vehicle, inside of rear fascia, between breakout to E7L Rear License Plate Lamp - Left and breakout to inline connector X950	• •	—

Code	Name	Option	Location	Locator View	Connector End View
J905	Rear Object Alarm Sensor Wiring Harness	—	- (UKL) At the rear of the vehicle, inside of rear fascia, between breakout to E7R Rear License Plate Lamp - Right and breakout to B306G Parking Assist Alarm Sensor - Rear Right Middle and B233RR Short Range Radar Sensor - Right Rear - (without UKL) At the rear of the vehicle, inside of rear fascia, between breakout to E7L Rear License Plate Lamp - Left and breakout to inline connector X950	• •	—
J906	Rear Object Alarm Sensor Wiring Harness	without UKL	At the rear of the vehicle, inside of rear fascia, between breakout to E7L Rear License Plate Lamp - Left and breakout to inline connector X950		—
J910	Endgate Wiring Harness	—	At the rear of the vehicle, within endgate, approximately 28 cm (11.0 in) from breakout towards A99L Pickup Box Endgate Latch - Left		—
J911	Endgate Wiring Harness	QK2+QT5	At the rear of the vehicle, within endgate, approximately 65 cm (25.6 in) from breakout to A99L Pickup Box Endgate Latch - Left		—
J912	Endgate Wiring Harness	QK2	At the rear of the vehicle, within endgate, approximately 32 cm (12.6 in) from breakout to A99L Pickup Box Endgate Latch - Left		—
J913	Endgate Wiring Harness	—	- (QK1) At the rear of the vehicle, within endgate, between breakout to M125 Pickup Box Endgate Power Assist Actuator and breakout to M151L Pickup Box Endgate Cinch Latch Actuator - Left - (QK2) At the rear of the vehicle, within endgate, between breakout to A99L Pickup Box Endgate Latch - Left and breakout to A99R Pickup Box Endgate Latch - Right	• •	—
J920	Tail Lamp Wiring Harness	—	At the rear of the vehicle, right side, near E42R Rear Body Structure Stop Lamp - Right, within tail lamp wiring harness	—	—

Description and Operation

Retained Accessory Power Description and Operation

Retained Accessory Power

The Retained Accessory Power (RAP) & Interruptible RAP (IRAP) Circuits are controlled by the K9 Body Control Module (BCM). The BCM is the Power Mode Master, it utilizes various Vehicle inputs to determine the Vehicle Power Mode and sends this information via Serial Data and providing associated electrical signals to the entire vehicle for proper feature operation.

The BCM monitors the vehicles power modes, and door ajar/open switch status to determine whether the retained accessory power should be initiated and remain active or be terminated. The RAP output is optional based on the vehicles option contents. When utilized, the RAP Output control can be used to control a RAP Relay, it may provide direct power, or a serial data message to vehicle devices/modules from the BCM.

Retained Accessory Power Relay Coil Control Circuit (If Equipped)

The BCM keeps the device or relay (if equipped) energized during all power modes, except Off-Awake and Crank. The device(s) remain active for approximately 10 min after the Vehicle is placed into the OFF Power Mode, provided none of the doors are opened.

Retained accessory power will end when one of the following conditions are met:

- The BCM receives an input from any door ajar switch indicating the opening of the door after the OFF Power Mode is achieved.

Note: If the BCM receives a door open/ajar active signal when the vehicle is placed into the OFF Power Mode, the retained accessory power will not initiate.

- The BCM internal timer for the retained accessory power expires after approximately 10 min.

Systems powered by the retained accessory power control circuit during the retained accessory power mode are as follows:

Note: The vehicle may not be equipped with all components as listed below.

- 12 V Accessory Power Receptacle
- Cigarette Lighter Receptacle
- Window Switches
- Sunroof Control Module (If Equipped)
- Sunroof Switch (If Equipped)
- Mobile Device Wireless Charger Module
- Mobile Telephone Control Module (If Equipped)
- Traffic Data Receiver (If Equipped)
- Transmission Shift Lever Position Indicator (w/floor mounted console gear shift)

Serial Data Controlled Retained Accessory Power

Retained accessory power systems controlled by serial data are as follows:

Radio
Radio retained accessory power activation/termination is the same as relay operation with one exception; the only door that will turn the radio off during retained accessory power is the driver door open/ajar switch. The USB Ports will function the same as the radio.

Vehicle Communication Interface Module (VCIM) (Onstar®) (If Equipped)
VCIM RAP activation/termination is the same as radio operation with 1 exception; if there is an active call and the vehicle is placed in the OFF Power Mode, the VCIM will remain in RAP mode, and keep the radio in RAP mode until the call is terminated.

Interruptible Retained Accessory Power

The Power Mode Master (PMM) Controls components as needed If equipped with a RAP relay, the BCM controls the Retained Accessory Power with an exception, Interruptible Retained Accessory Power (IRAP) is deactivated during transmitter authentication. During Transmitter Authentication the PMM will deactivate components including IRAP to prevent Radio Frequency (RF) Interference (RFI) that may cause a “NO REMOTE DETECTED” message to be displayed on the drivers information center.

Note: If transmitter Authentication occurs while in Run or Propulsion Modes, it is normal to for IRAP to be interrupted momentarily (i.e. items connected to auxiliary power ports or chargers may momentarily go off then come back on).

If a remote transmitter was not been previously detected, Transmitter Authentication can occurs under any of the following conditions:

- The drivers side front door is opened.
- The drivers side rear door is opened.
- The S38 Vehicle On/Off Switch is pressed.

Special Purpose Vehicle Module Description and Operation

Special Purpose Vehicle Module

The K56U Special Purpose Vehicle Module is an interface module that allows the Upfitter to interface with GM vehicle’s secure CAN networks to request predefined actions and to indirectly monitor key vehicle data that is available on the vehicle network.

The module is available to be ordered by dealer or as an Accessory to be installed. If ordered by the dealer it will be installed and programmed by the assembly plant with the output controls disabled. If ordered as an Accessory it will need to be installed on the vehicle, programmed and configured.

Input Controls

The Input Controls are Defaulted on and a GM approved Upfitter Switch must be installed to operate the appropriate Output control that must be enabled by the Upfitter. The input circuits may set a DTC if a non approved switch is installed.

Switches
There are 5 predefined functions that may be requested by switching analog inputs to the required input voltage range.

Refer to *https://www.gmupfitter.com/* for details on all available options

Output Controls

The SPVM has ten outputs that can be configured with a user interface to allow outputs to be switched ON or OFF based on the data that is monitored and available from the GM vehicle network.

Input/Output Configuration

Inputs:

- Battery Power
- Ground
- High Speed CAN (hi/lo)
- 10 Analog Inputs (0.5A Maximum load)

Outputs:

- High Speed CAN (hi/lo)
- 10 Digital Outputs

Module Configuration

Refer to *https://www.gmupfitter.com/*

Section 9

Roof

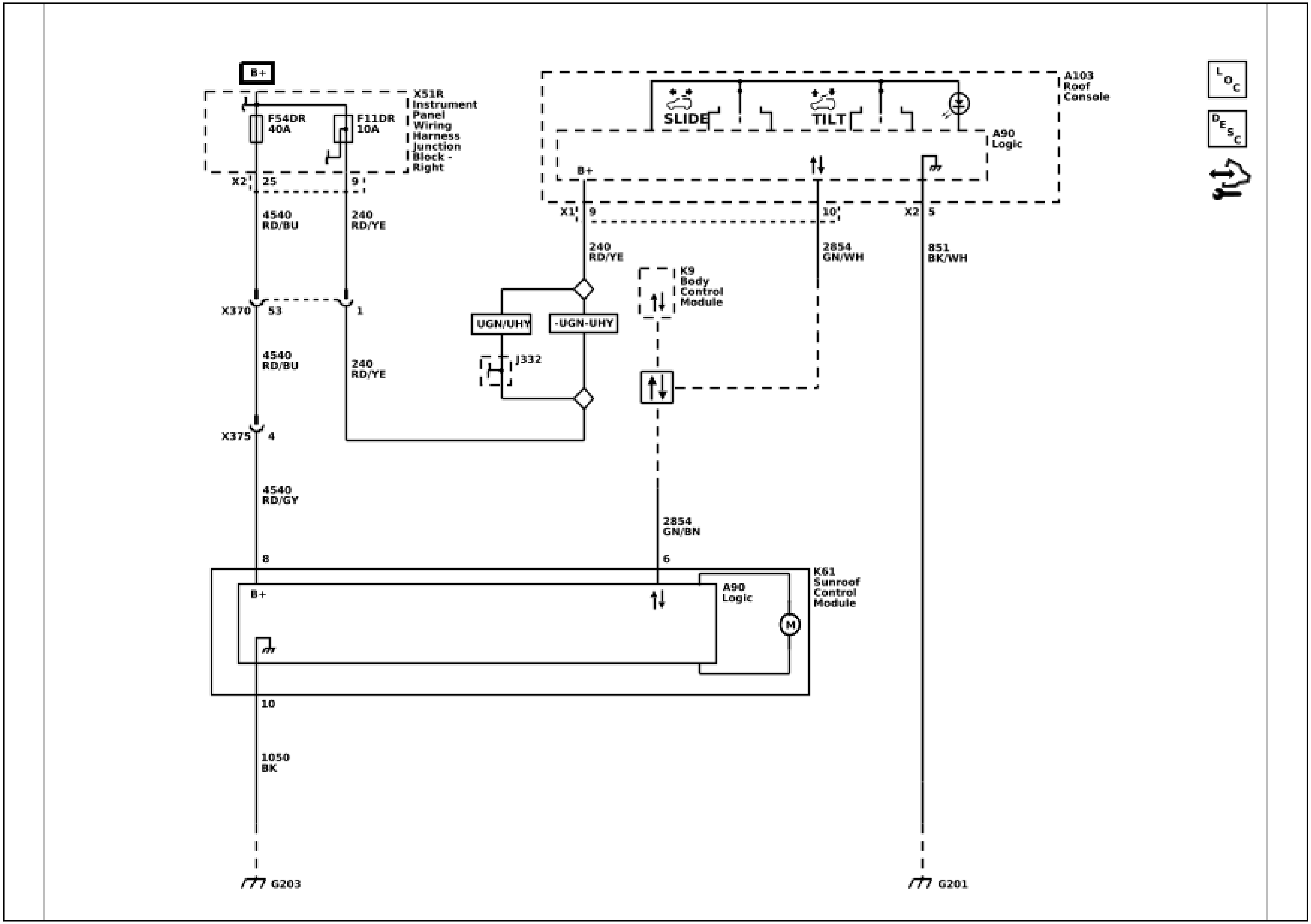
Sunroof **9-2**
  Schematic and Routing Diagrams **9-2**
    Sunroof Schematics 9-3
  Description and Operation **9-4**
    Sunroof Description and Operation 9-4

Roof

Sunroof

Schematic and Routing Diagrams

Sunroof Schematics (Sunroof (CF5))


B+
F54DR
40A
F11DR
10A
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
X2
25
9
4540
RD/BU
240
RD/YE
X370
53
1
4540
RD/BU
240
RD/YE
X375
4
4540
RD/GY
8
A103
Roof
Console
SLIDE
TILT
A90
Logic
B+
X1
9
10
X2
5
240
RD/YE
2854
GN/WH
851
BK/WH
K9
Body
Control
Module
UGN/UHY
-UGN-UHY
J332
2854
GN/BN
6
K61
Sunroof
Control
Module
B+
A90
Logic
M
10
1050
BK
G203
G201
L O C
D E S C

6847117

Description and Operation

Sunroof Description and Operation

Note: Not all sunroof systems use an electrically controlled sunshade.

To view the locations of the sunroof system components, refer to *Master Electrical Component List 8-1032*

The sunroof system consists of a glass panel, sunshade, sunroof motor/module, sunshade motor/module or manual sunshade, sunroof slide and/or tilt switches, sunshade switch, and the body control module (BCM). The electrical portion of the system controls the movement of the sunroof and sunshade (if equipped). The BCM communicates with the sunroof and sunshade motor/module to enable or disable sunroof and sunshade operation. The sunroof and sunshade motors/modules provide system status and diagnostic information to the BCM for diagnostic reporting and operational purposes. The sunroof and sunshade are each controlled by the integrated motor/controller containing the necessary electronics, motor, hall effect position sensors, as well as the interface to the driver control switches. Each motor/controller is capable of controlling motion based on control switch activation and commands from the BCM. The sunroof and sunshade operation is interdependent on some vehicles, in which case they are controlled by the BCM. If the system is overloaded, the power supply is temporarily cut off.

Sunroof and Sunshade Control Switches

The sunroof slide, tilt, and sunshade slide open/close operations are controlled by switches. Some switches may support express open/close operation. Not all vehicles are equipped with all three switches and the behavior of the sunroof for each switch press is vehicle dependent. Some vehicles may have a tilt switch while others may have a vent feature linked to the slide switch. Not all vehicles are equipped with an electrically controlled sunshade, thus lacking the sunshade switch.

System Protection

Normal operation of the sunroof system may be altered when system protection is engaged.

Obstacle or Blockage Detection

Obstacle detection is active when moving in the closing direction and while the sunroof or sunshade opening is approximately 4–200 mm (0.16–7.87 in). When an obstacle is detected in this range, the motion in the closing direction will stop and the sunroof/sunshade will reverse direction for a short distance. The reversal will complete regardless of operating mode. If the travel is outside the range defined above, the sunroof/sunshade motor will continue closing until it detects a motor stall condition or the system is at one of the defined stops.

Motor Stall

If the sunroof or sunshade is moving in the open or close direction and stops moving for 350 ms while a command is active, and no obstacle has been detected, the motor will be turned off to prevent overheating.

Sunroof System Thermal Protection

The sunroof/sunshade controllers have a thermal protection algorithm to protect the sunroof/sunshade controls and motors from damage due to overheating conditions resulting from immoderate switch actuations. The thermal protection algorithm will cause any new sunroof/sunshade open commands to be ignored until the motors cool. A defined number of close requests are allowed during an over temperature condition. If the thermal protection is triggered during an obstacle detection event, the sunroof/sunshade reversal will finish first.

Sunroof and Sunshade Coordination

For vehicles with an electrically controlled sunshade, the BCM will command the sunshade to open to predefined positions based on the requested sunroof position. This interaction may also prohibit the sunshade from closing past these points depending on the sunroof position. Faults on the sunroof or sunshade motor/module circuits will disable the system.

Opening

If the sunroof is opened anywhere between the fully closed and vent position, the BCM will command the sunshade to a minimum open position provided that the sunshade is not opened adequately at the time of the sunroof command. If the sunroof receives an open or express open command beyond vent position, the BCM will command the sunshade to open approximately halfway if the sunshade is not opened adequately. This position corresponds to a point behind the leading edge of a fully opened sunroof glass.

Closing

The sunshade can only be closed completely with the sunshade switch if the sunroof is completely closed. If the sunroof is opened past the vent position, the sunshade will not be allowed to close past the halfway point.

Service Tool Commanded Open

When a service tool commands the sunshade to open, it results in the sunshade moving to the half way position or to the fully open position depending on the calibration. If the half way point is calibrated on, this position is as far as the sunshade can be opened with the service tool. To go beyond this point a switch activation must be used.

Rear Sunshade Operation

If equipped, the rear window sunshade is controlled by a switch with open, close, express open, and express close functionality.

Section 10

Safety and Security

Driver Assistance Systems **10-3**

Schematic and Routing Diagrams **10-3**

Driver Assistance Systems Schematics (-UKL) 10-4

Driver Assistance Systems Schematics (UKL) 10-9

Description and Operation **10-19**

Forward Collision Alert Description and Operation (without UGN) 10-19

Forward Collision Alert Description and Operation (with UGN) 10-21

Lane Keep Assist Description and Operation 10-21

Safety Alert Seat Description and Operation 10-23

Side Blind Zone Alert Description and Operation 10-24

Super Cruise Description and Operation 10-26

Driver Monitoring **10-29**

Schematic and Routing Diagrams **10-29**

Driver Monitoring Schematics (UKL) 10-30

Description and Operation **10-31**

Driver Monitoring Description and Operation 10-31

Immobilizer **10-33**

Schematic and Routing Diagrams **10-33**

Immobilizer Schematics 10-34

Parking Assistance Systems **10-35**

Schematic and Routing Diagrams **10-35**

Parking Assistance Systems Schematics 10-36

Description and Operation **10-39**

Parking Assist Description and Operation (UD5) 10-39

Parking Assist Description and Operation (UKZ) 10-40

Parking Assist Description and Operation (UD7) 10-45

Remote Functions **10-48**

Schematic and Routing Diagrams **10-48**

Remote Function Schematics 10-49

Description and Operation **10-52**

Front Side Door Access Control Transmitter Description and Operation 10-52

Garage Door Opener Description and Operation 10-52

Keyless Entry System Description and Operation 10-53

Seat Belts **10-57**

Schematic and Routing Diagrams **10-57**

Seat Belt Schematics 10-58

Description and Operation **10-59**

Seat Belt System Description and Operation 10-59

Supplemental Restraints **10-61**

Schematic and Routing Diagrams **10-61**

SIR Schematics 10-62

Description and Operation **10-66**

Supplemental Inflatable Restraint System Description and Operation 10-66

Theft Deterrent **10-70**

Schematic and Routing Diagrams **10-70**

Theft Deterrent System Schematics 10-71

Description and Operation **10-73**

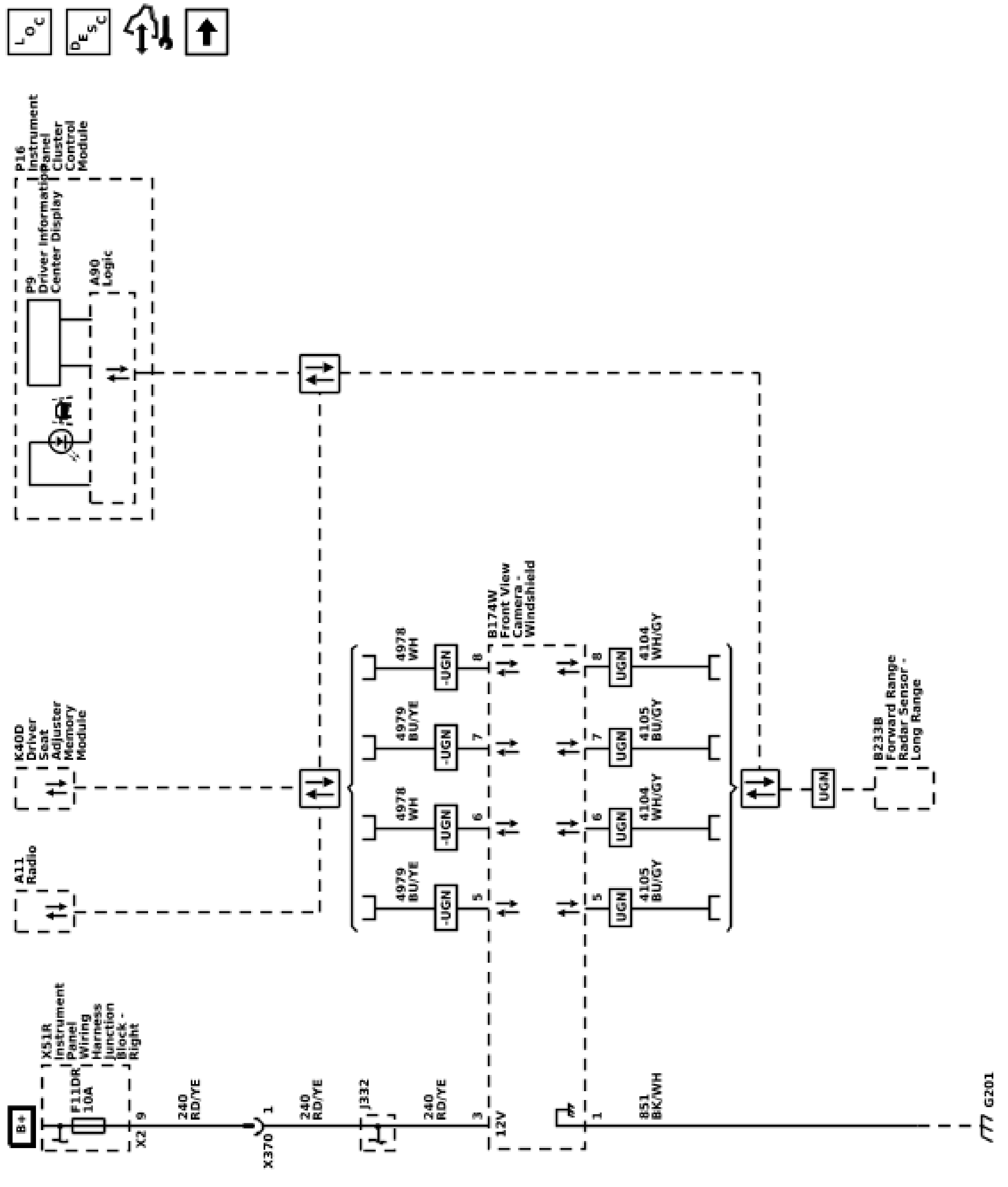
Theft Systems Description and Operation 10-73

Safety and Security

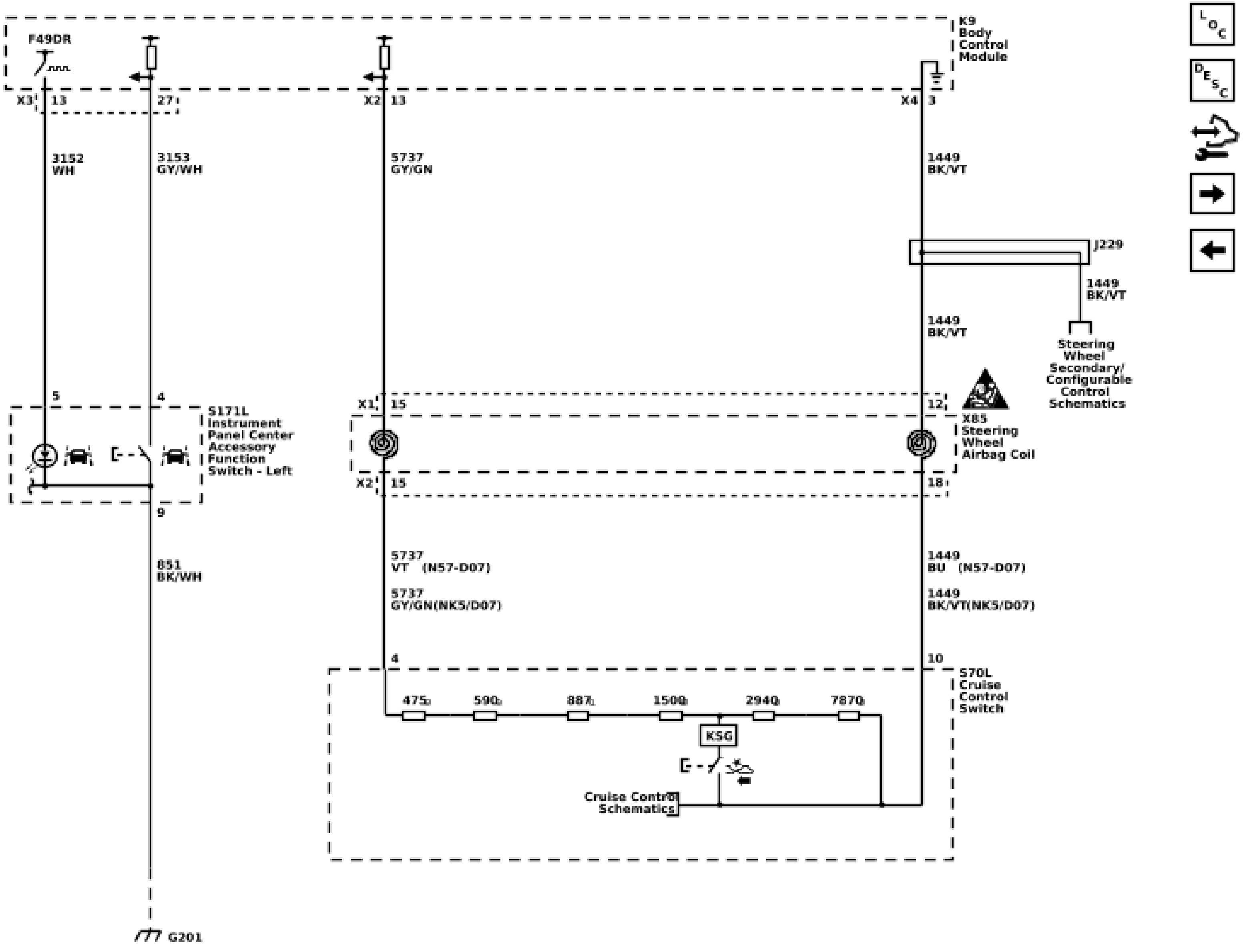
Driver Assistance Systems

Schematic and Routing Diagrams

Driver Assistance Systems Schematics (- UKL) (Lane Keep Assist and Forward Collision Alert - Module Power, Ground, and Serial Data (UEU))

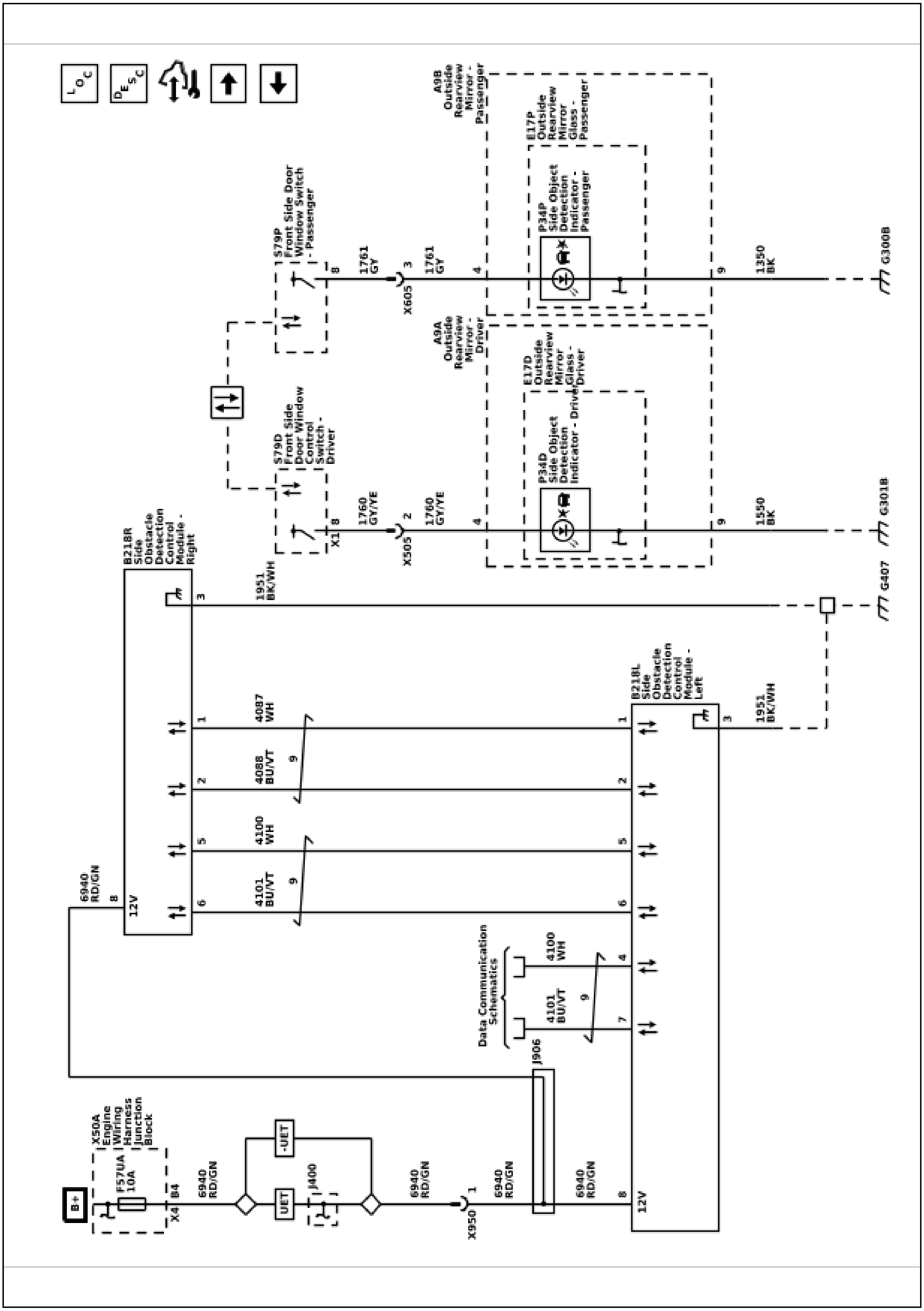

6847118
P16 Instrument Panel Cluster Control Module
P9 Driver Information Center Display
A90 Logic
K40D Driver Seat Adjuster Memory Module
A11 Radio
X51R Instrument Panel Wiring Harness Junction Block - Right
B+
F11DR 10A
X2 9
240 RD/YE
X370 1
240 RD/YE
J332
240 RD/YE
3 12V
1
851 BK/WH
G201
B174W Front View Camera - Windshield
4979 BU/YE
4978 WH
4979 BU/YE
4978 WH
-UGN
5
6
7
8
UGN
4105 BU/GY
4104 WH/GY
4105 BU/GY
4104 WH/GY
B233B Forward Range Radar Sensor - Long Range
UGN

Driver Assistance Systems Schematics (- UKL) (Lane Keep Assist and Forward Collision Alert - Controls (UEU))

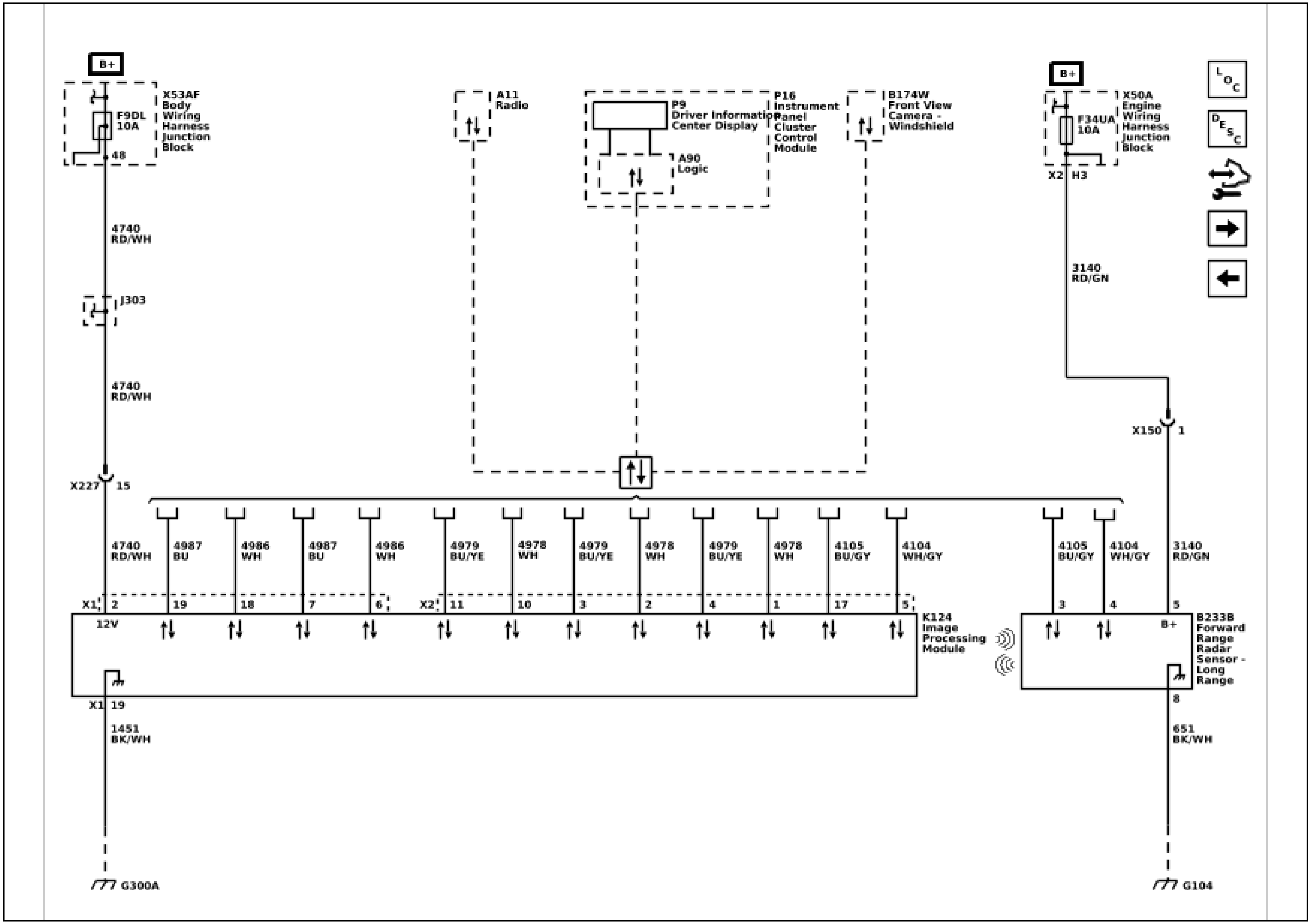

K9
Body
Control
Module
F49DR
X3 13
27
X2 13
X4 3
3152
WH
3153
GY/WH
5737
GY/GN
1449
BK/VT
J229
1449
BK/VT
Steering
Wheel
Secondary/
Configurable
Control
Schematics
1449
BK/VT
5
4
S171L
Instrument
Panel Center
Accessory
Function
Switch - Left
9
851
BK/WH
G201
X1 15
12
X85
Steering
Wheel
Airbag Coil
X2 15
18
5737
VT (N57-D07)
5737
GY/GN(NK5/D07)
1449
BU (N57-D07)
1449
BK/VT(NK5/D07)
4
10
S70L
Cruise
Control
Switch
475Ω
590Ω
887Ω
1500Ω
2940Ω
7870Ω
KSG
Cruise Control
Schematics

6847119

Driver Assistance Systems Schematics (- UKL) (Rear Cross Traffic Alert and Side Blind Zone Indicators (UKC / UKV))

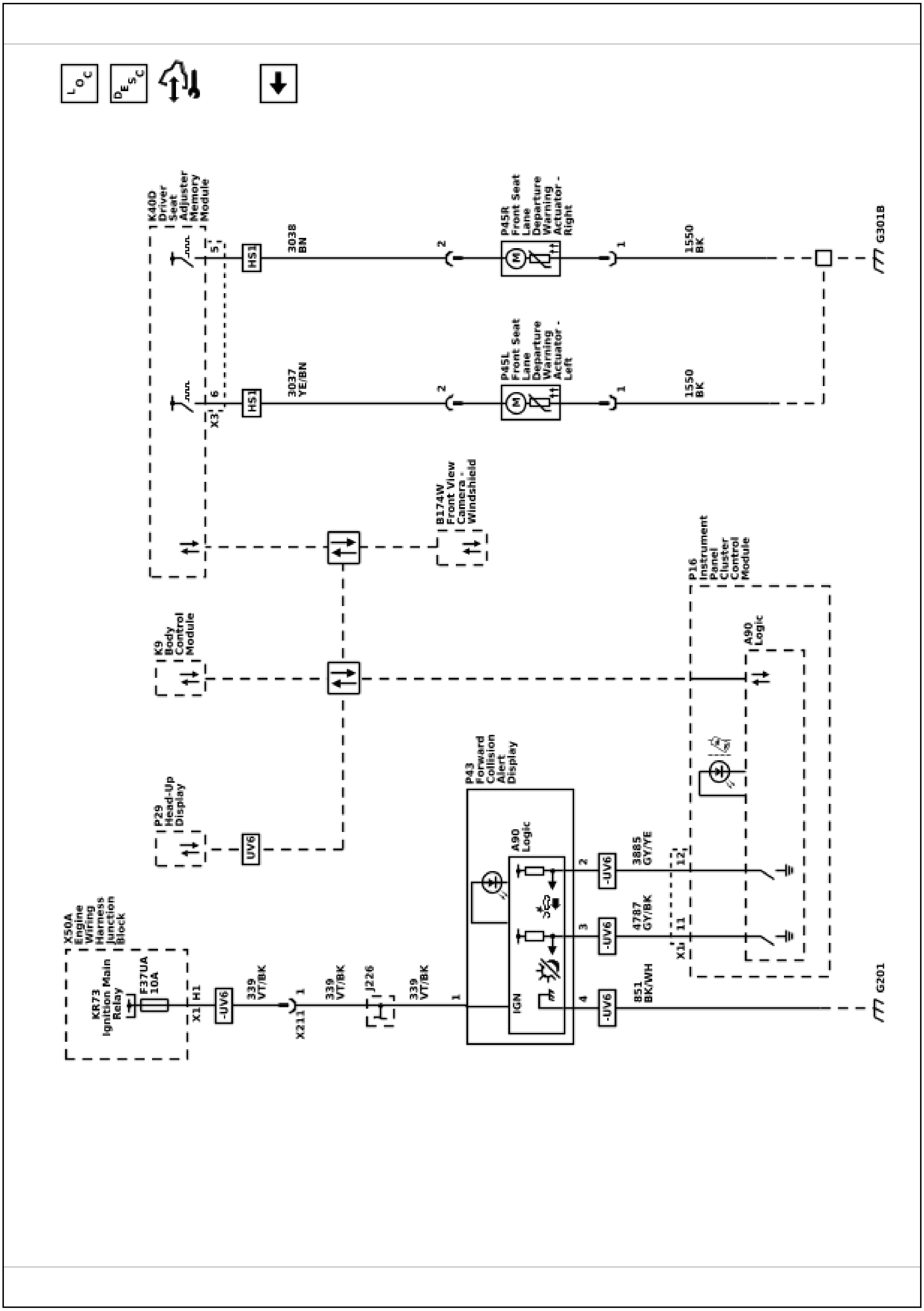

6847120
B+
X50A Engine Wiring Harness Junction Block
F57UA 10A
X4 B4
6940 RD/GN
UET
-UET
J400
X950 1
J906
8 12V
Data Communication Schematics
4101 BU/VT
4100 WH
9
7
4
B218L Side Obstacle Detection Control Module - Left
B218R Side Obstacle Detection Control Module - Right
1 4087 WH
2 4088 BU/VT
5 4100 WH
6 4101 BU/VT
3 1951 BK/WH
G407
S79D Front Side Door Window Control Switch - Driver
S79P Front Side Door Window Switch - Passenger
X1 8
1760 GY/YE
X505 2
1761 GY
X605 3
A9A Outside Rearview Mirror - Driver
A9B Outside Rearview Mirror - Passenger
E17D Outside Rearview Mirror Glass - Driver
E17P Outside Rearview Mirror Glass - Passenger
P34D Side Object Detection Indicator - Driver
P34P Side Object Detection Indicator - Passenger
1550 BK
1350 BK
G301B
G300B
L O C
D E S C

Driver Assistance Systems Schematics (- UKL) (Collision Avoidance - Module and Long Range Radar (UGN))

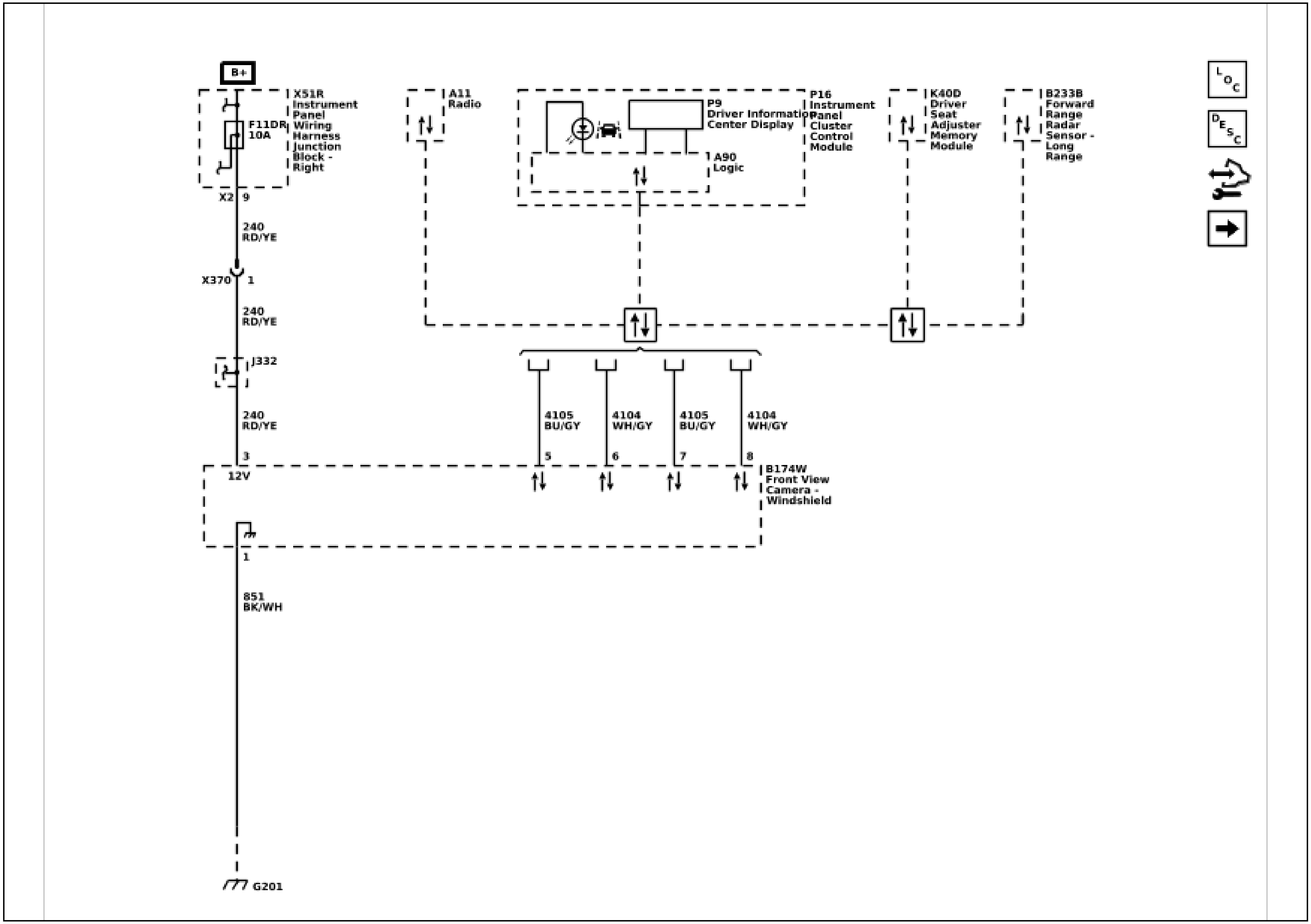

B+
X53AF Body Wiring Harness Junction Block
F9DL 10A
48
4740 RD/WH
J303
4740 RD/WH
X227 15
4740 RD/WH
A11 Radio
P9 Driver Information Center Display
P16 Instrument Panel Cluster Control Module
A90 Logic
B174W Front View Camera - Windshield
B+
X50A Engine Wiring Harness Junction Block
F34UA 10A
X2 H3
3140 RD/GN
X150 1
3140 RD/GN
4987 BU
4986 WH
4987 BU
4986 WH
4979 BU/YE
4978 WH
4979 BU/YE
4978 WH
4979 BU/YE
4978 WH
4105 BU/GY
4104 WH/GY
4105 BU/GY
4104 WH/GY
X1 2
19
18
7
6
X2 11
10
3
2
4
1
17
5
12V
K124 Image Processing Module
X1 19
1451 BK/WH
G300A
3
4
5
B+
B233B Forward Range Radar Sensor - Long Range
8
651 BK/WH
G104
LOC
DESC

6847121

Driver Assistance Systems Schematics (- UKL) (Collision Alert Indicators)

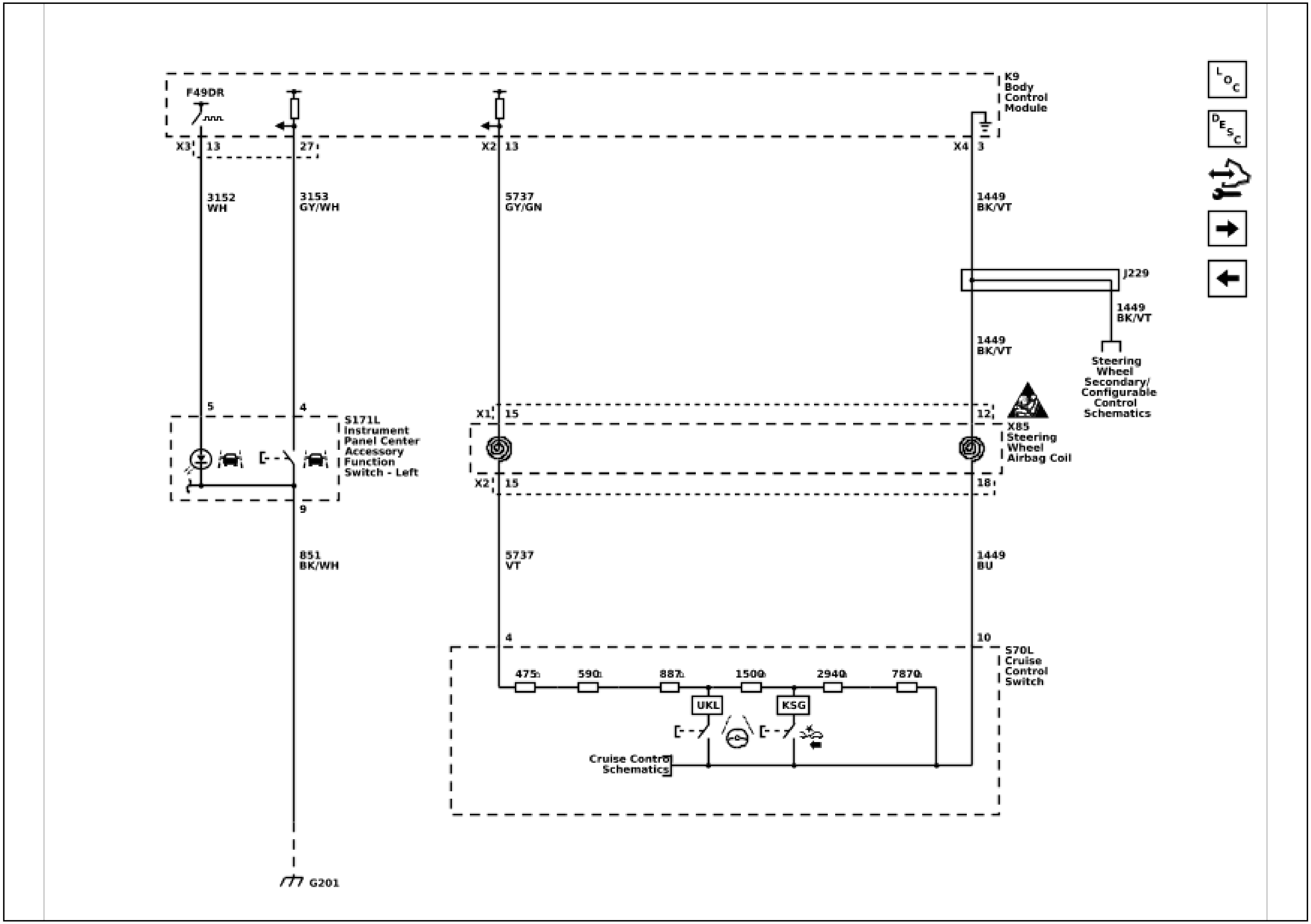

6847122
LOC
DESC
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F37UA 10A
X1 H1
-UV6
339 VT/BK
X211 1
339 VT/BK
J226
339 VT/BK
1
P43 Forward Collision Alert Display
A90 Logic
IGN
2
3
4
-UV6
-UV6
-UV6
3885 GY/YE
4787 GY/BK
851 BK/WH
X1 11
12
G201
P29 Head-Up Display
UV6
K9 Body Control Module
B174W Front View Camera - Windshield
P16 Instrument Panel Cluster Control Module
A90 Logic
K40D Driver Seat Adjuster Memory Module
X3 6
5
HS1
HS1
3037 YE/BN
3038 BN
2
2
P45L Front Seat Lane Departure Warning Actuator - Left
P45R Front Seat Lane Departure Warning Actuator - Right
M
M
1
1
1550 BK
1550 BK
G301B

Driver Assistance Systems Schematics (UKL) (Lane Keep Assist and Forward Collision Alert - Module Power, Ground, and Serial Data (UEU))


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F11DR 10A
X2 9
240 RD/YE
X370 1
240 RD/YE
J332
240 RD/YE
3
12V
1
851 BK/WH
G201
A11 Radio
P9 Driver Information Center Display
P16 Instrument Panel Cluster Control Module
A90 Logic
K40D Driver Seat Adjuster Memory Module
B233B Forward Range Radar Sensor - Long Range
4105 BU/GY
4104 WH/GY
4105 BU/GY
4104 WH/GY
5
6
7
8
B174W Front View Camera - Windshield

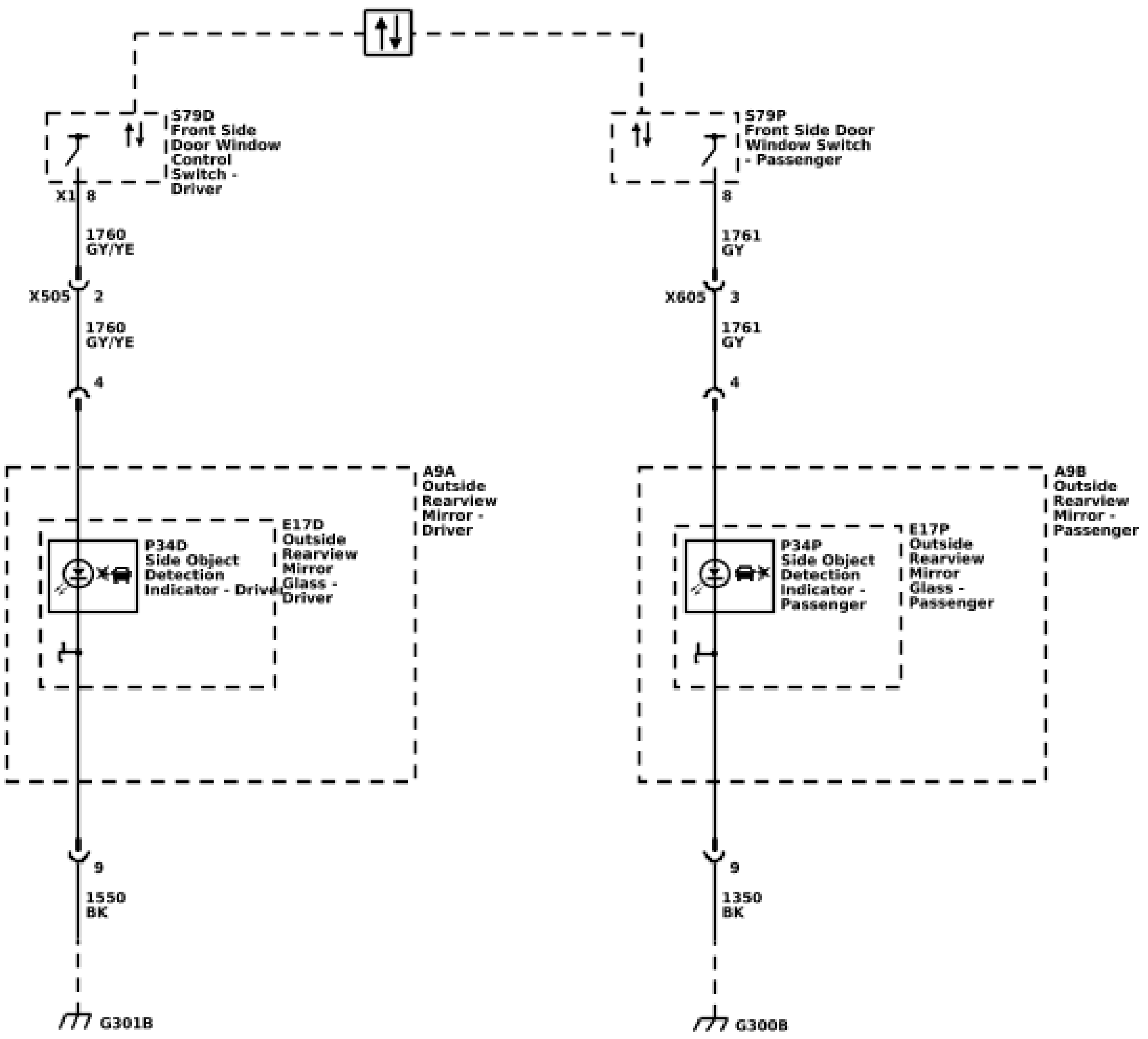
6847123

Driver Assistance Systems Schematics (UKL) (Lane Keep Assist and Forward Collision Alert - Controls (UEU))


K9 Body Control Module
F49DR
X3 13
27
X2 13
X4 3
3152 WH
3153 GY/WH
5737 GY/GN
1449 BK/VT
J229
1449 BK/VT
Steering Wheel Secondary/ Configurable Control Schematics
1449 BK/VT
5
4
S171L Instrument Panel Center Accessory Function Switch - Left
9
851 BK/WH
G201
X1 15
12
X85 Steering Wheel Airbag Coil
X2 15
18
5737 VT
1449 BU
4
10
S70L Cruise Control Switch
475Ω
590Ω
887Ω
1500Ω
2940Ω
7870Ω
UKL
KSG
Cruise Control Schematics

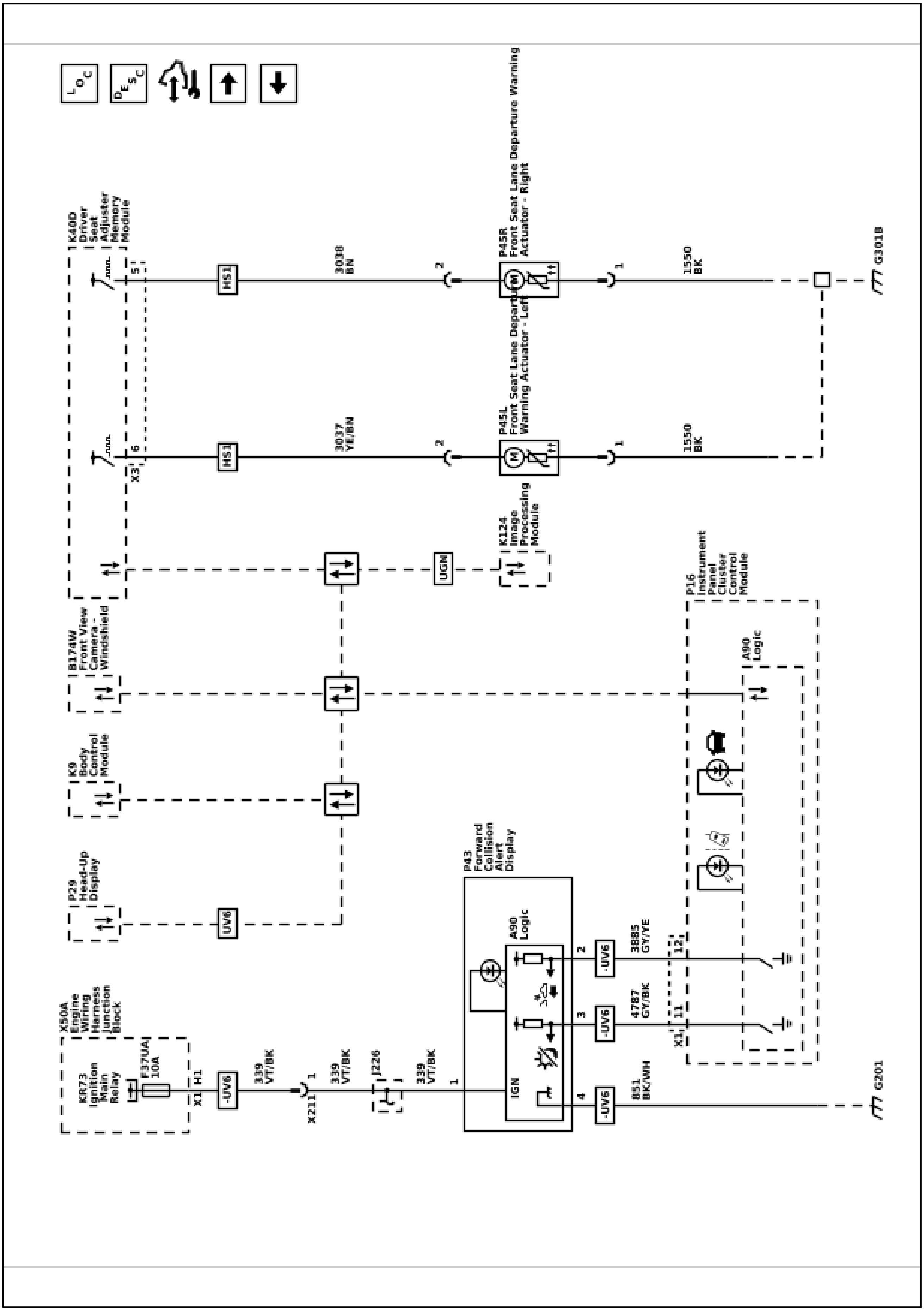
6847124

Driver Assistance Systems Schematics (UKL) (Side Blind Zone Indicators (UKC / UKV))

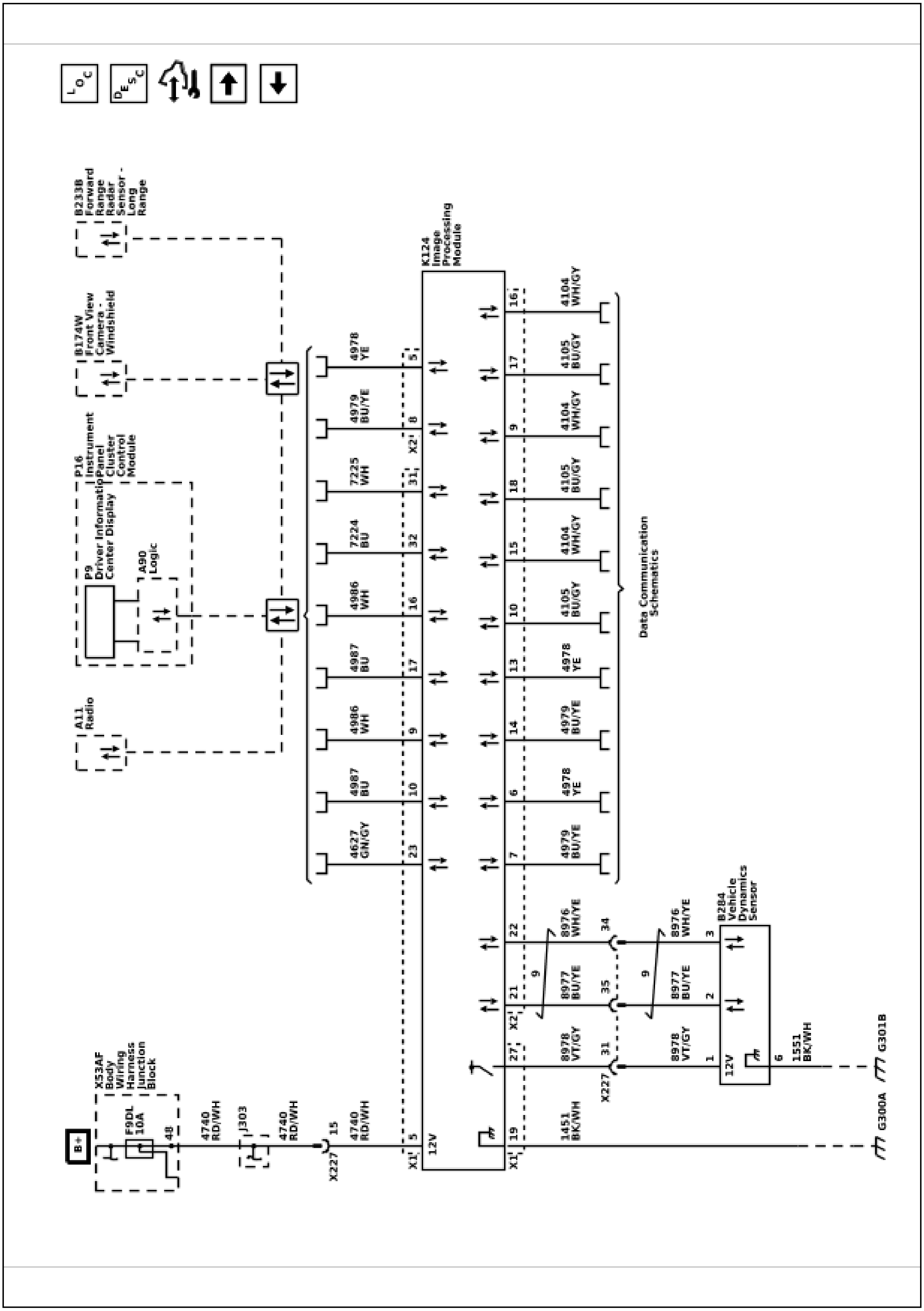

S79D
Front Side
Door Window
Control
Switch -
Driver
X1 8
1760
GY/YE
X505 2
1760
GY/YE
4
A9A
Outside
Rearview
Mirror -
Driver
E17D
Outside
Rearview
Mirror
Glass -
Driver
P34D
Side Object
Detection
Indicator - Driver
9
1550
BK
G301B
S79P
Front Side Door
Window Switch
- Passenger
8
1761
GY
X605 3
1761
GY
4
A9B
Outside
Rearview
Mirror -
Passenger
E17P
Outside
Rearview
Mirror
Glass -
Passenger
P34P
Side Object
Detection
Indicator -
Passenger
9
1350
BK
G300B

6847125

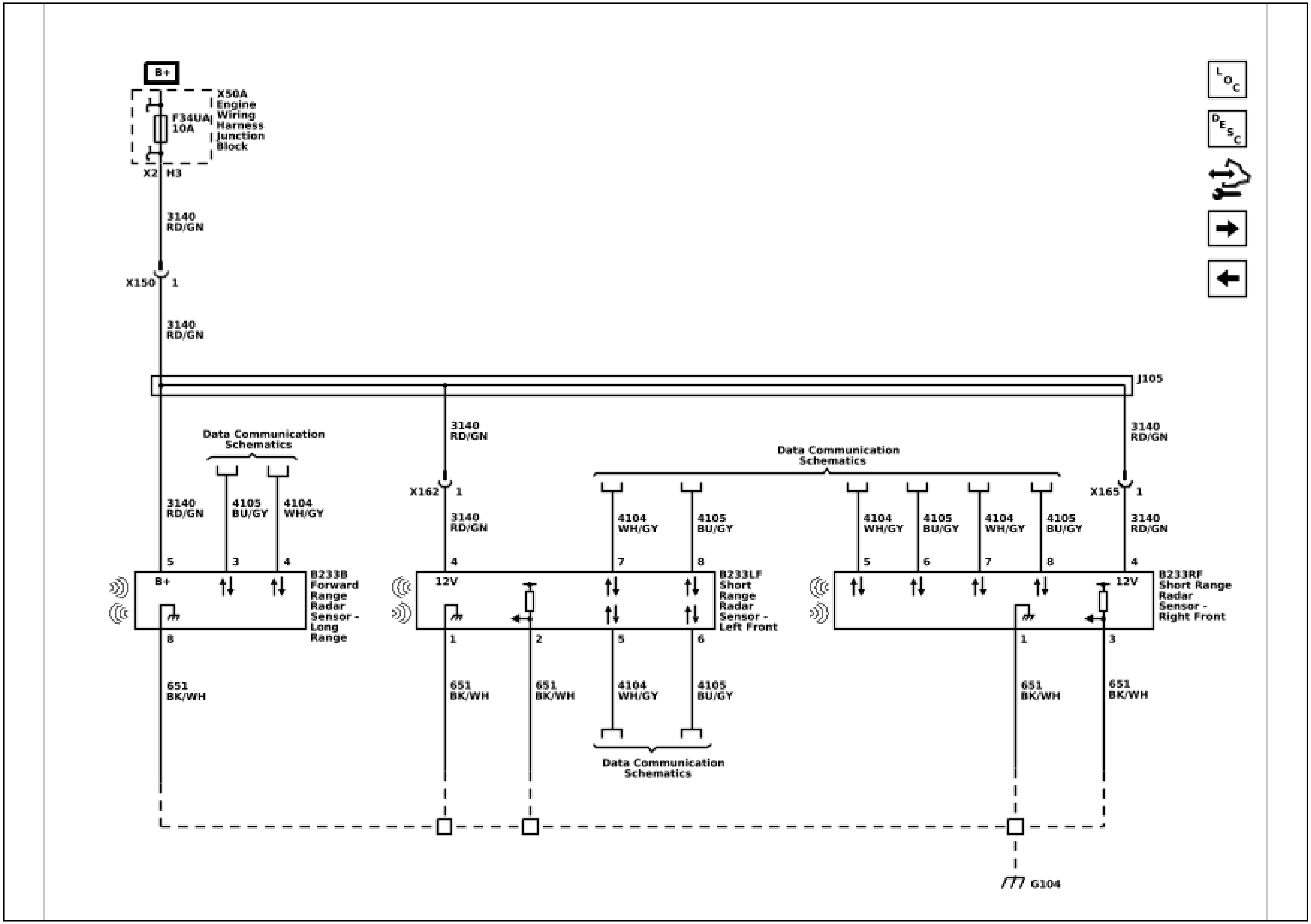
Driver Assistance Systems Schematics (UKL) (Collision Alert Indicators)


6847126
K40D Driver Seat Adjuster Memory Module
5
6
X3
HS1
3038 BN
3037 YE/BN
2
1
P45R Front Seat Lane Departure Warning Actuator - Right
P45L Front Seat Lane Departure Warning Actuator - Left
Front Seat Lane Departure Warning Actuator - Left
M
1550 BK
G301B
K124 Image Processing Module
UGN
P16 Instrument Panel Cluster Control Module
A90 Logic
B174W Front View Camera - Windshield
K9 Body Control Module
P29 Head-Up Display
UV6
P43 Forward Collision Alert Display
A90 Logic
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F37UA 10A
X1 H1
-UV6
339 VT/BK
X211
J226
IGN
4
3
3885 GY/YE
4787 GY/BK
851 BK/WH
X1
11
12
G201

Driver Assistance Systems Schematics (UKL) (Collision Mitigation - Image Processing Module and Vehicle Dynamic Sensor)

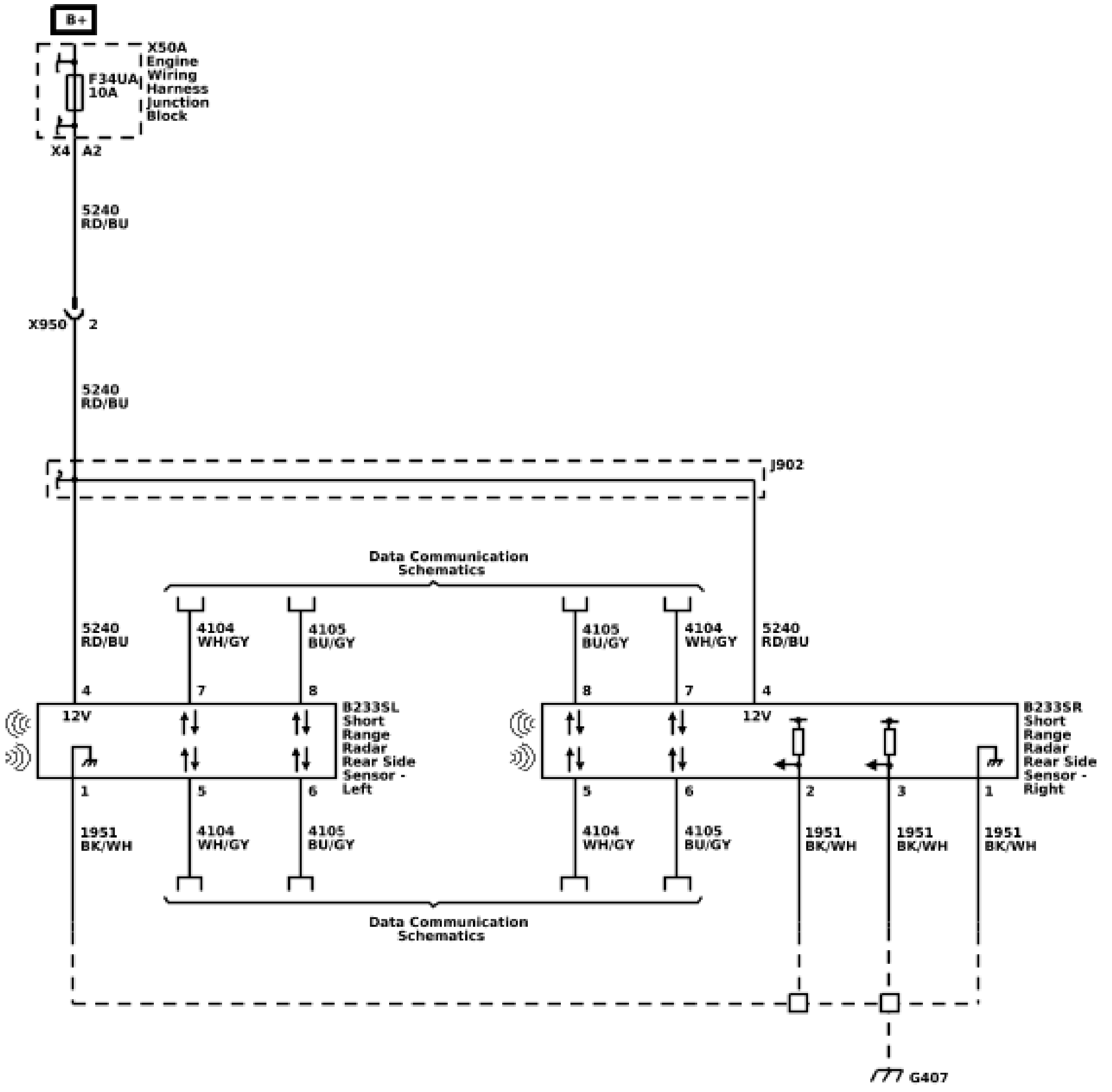

6847127
LOC
DESC
B2338 Forward Range Radar Sensor - Long Range
B174W Front View Camera - Windshield
P16 Instrument Panel Cluster Control Module
P9 Driver Information Center Display
A90 Logic
A11 Radio
K124 Image Processing Module
X53AF Body Wiring Harness Junction Block
B+
F9DL 10A
48
4740 RD/WH
J303
4740 RD/WH
X227 15
4740 RD/WH
X1 5
12V
23 4627 GN/GY
10 4987 BU
9 4986 WH
17 4987 BU
16 4986 WH
32 7224 BU
31 7225 WH
X2 8 4979 BU/YE
5 4978 YE
X1 19
1451 BK/WH
G300A
X2 27
8978 VT/GY
X227 31
21 8977 BU/YE
35
22 8976 WH/YE
34
9
8978 VT/GY
8977 BU/YE
8976 WH/YE
1
2
3
B284 Vehicle Dynamics Sensor
12V
6
1551 BK/WH
G301B
7 4979 BU/YE
6 4978 YE
14 4979 BU/YE
13 4978 YE
10 4105 BU/GY
15 4104 WH/GY
18 4105 BU/GY
9 4104 WH/GY
17 4105 BU/GY
16 4104 WH/GY
Data Communication Schematics

Driver Assistance Systems Schematics (UKL) (Collision Mitigation - Front Radars)


B+
X50A Engine Wiring Harness Junction Block
F34UA 10A
X2 H3
3140 RD/GN
X150 1
J105
Data Communication Schematics
4105 BU/GY
4104 WH/GY
5 3 4
B+
B233B Forward Range Radar Sensor - Long Range
8
651 BK/WH
X162 1
4 12V
1 2
B233LF Short Range Radar Sensor - Left Front
7 8 5 6
X165 1
B233RF Short Range Radar Sensor - Right Front
5 6 7 8 4 12V
1 3
G104

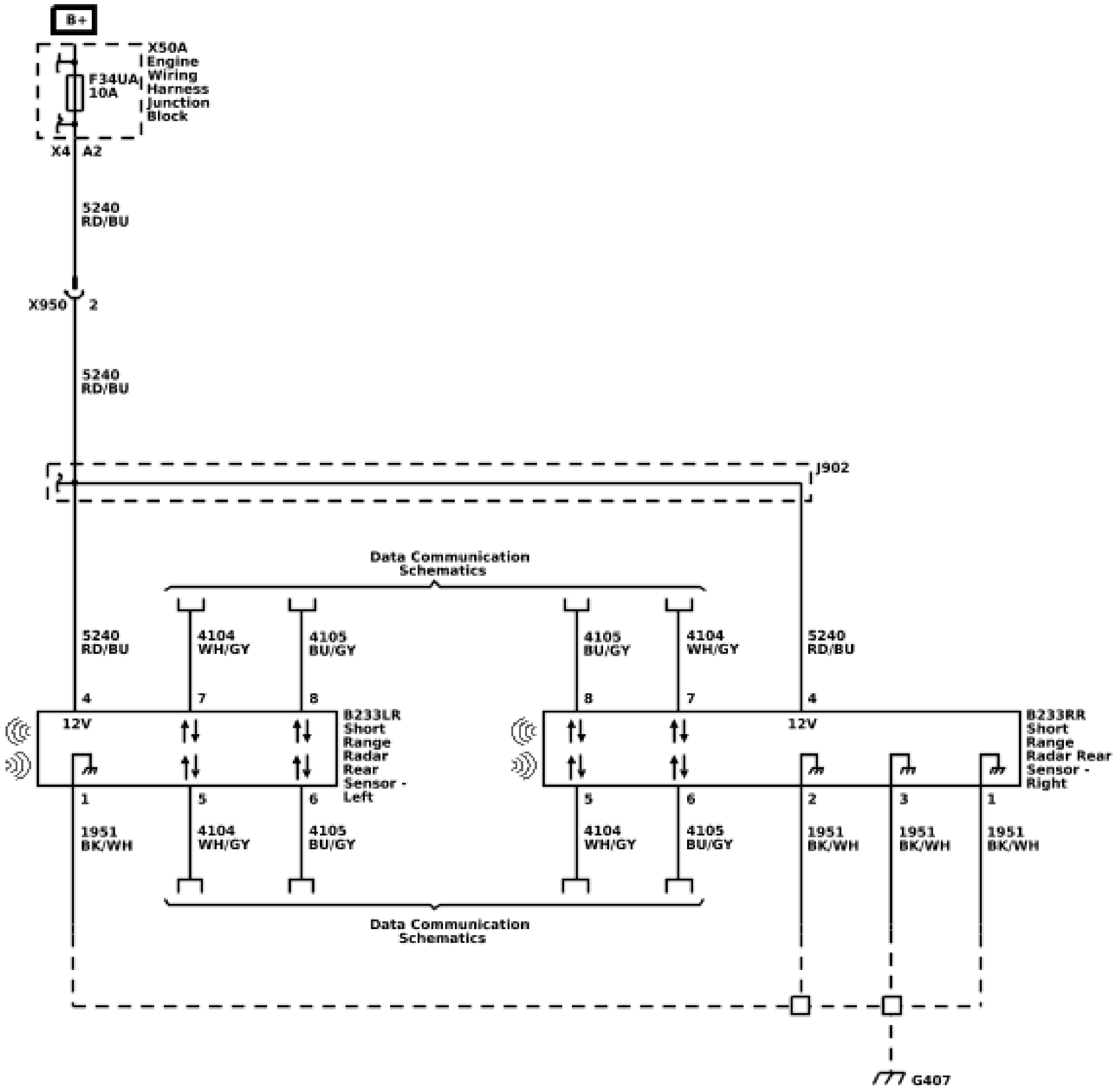
6847128

Driver Assistance Systems Schematics (UKL) (Collision Mitigation - Side Radars)


B+
X50A Engine Wiring Harness Junction Block
F34UA 10A
X4
A2
5240 RD/BU
X950
2
5240 RD/BU
J902
Data Communication Schematics
5240 RD/BU
4104 WH/GY
4105 BU/GY
4105 BU/GY
4104 WH/GY
5240 RD/BU
4
7
8
8
7
4
12V
12V
B233SL Short Range Radar Rear Side Sensor - Left
B233SR Short Range Radar Rear Side Sensor - Right
1
5
6
5
6
2
3
1
1951 BK/WH
4104 WH/GY
4105 BU/GY
4104 WH/GY
4105 BU/GY
1951 BK/WH
1951 BK/WH
1951 BK/WH
Data Communication Schematics
G407

6847129

Driver Assistance Systems Schematics (UKL) (Collision Mitigation - Rear Radars)


B+
X50A Engine Wiring Harness Junction Block
F34UA 10A
X4
A2
5240 RD/BU
X950
2
5240 RD/BU
J902
Data Communication Schematics
5240 RD/BU
4104 WH/GY
4105 BU/GY
4105 BU/GY
4104 WH/GY
5240 RD/BU
4
7
8
8
7
4
12V
12V
B233LR Short Range Radar Rear Sensor - Left
B233RR Short Range Radar Rear Sensor - Right
1
5
6
5
6
2
3
1
1951 BK/WH
4104 WH/GY
4105 BU/GY
4104 WH/GY
4105 BU/GY
1951 BK/WH
1951 BK/WH
1951 BK/WH
Data Communication Schematics
G407

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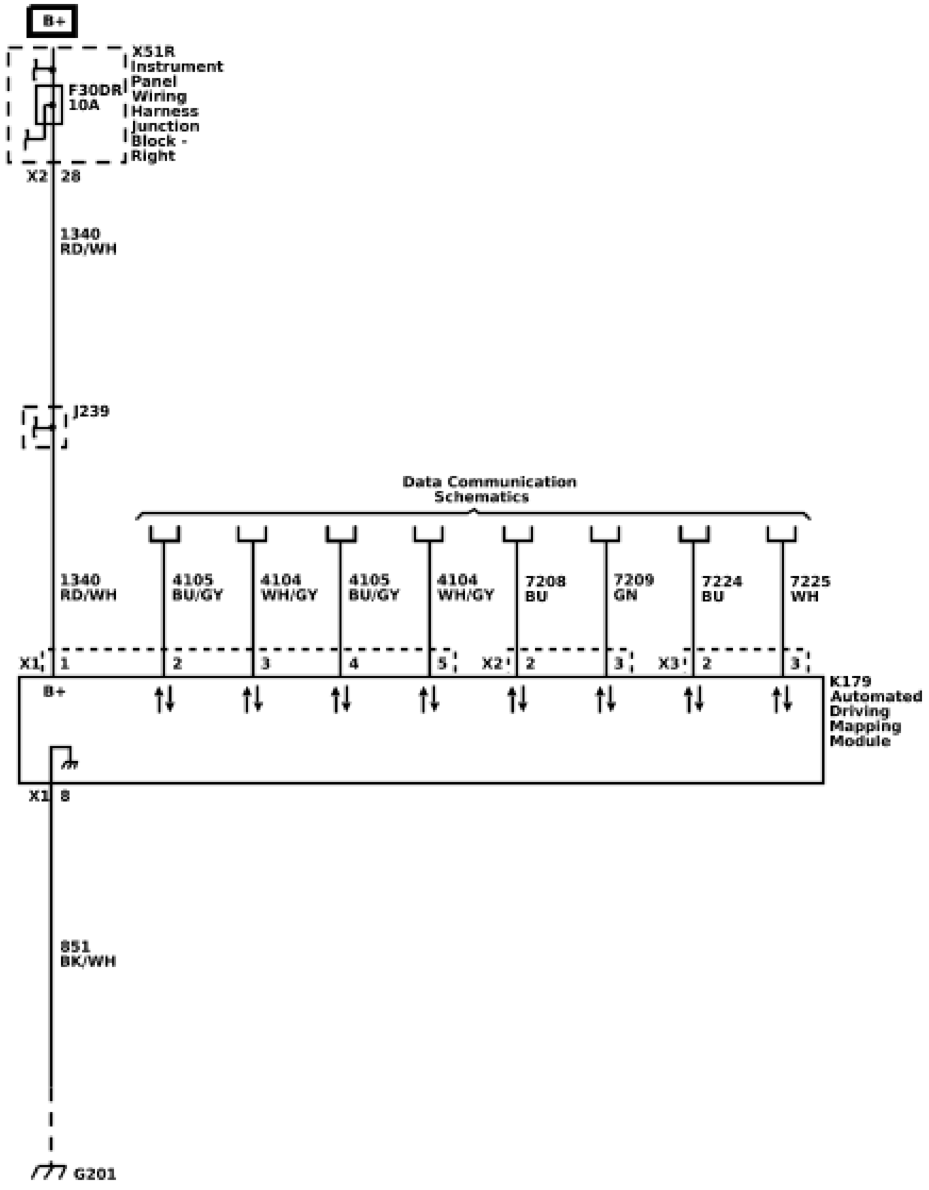
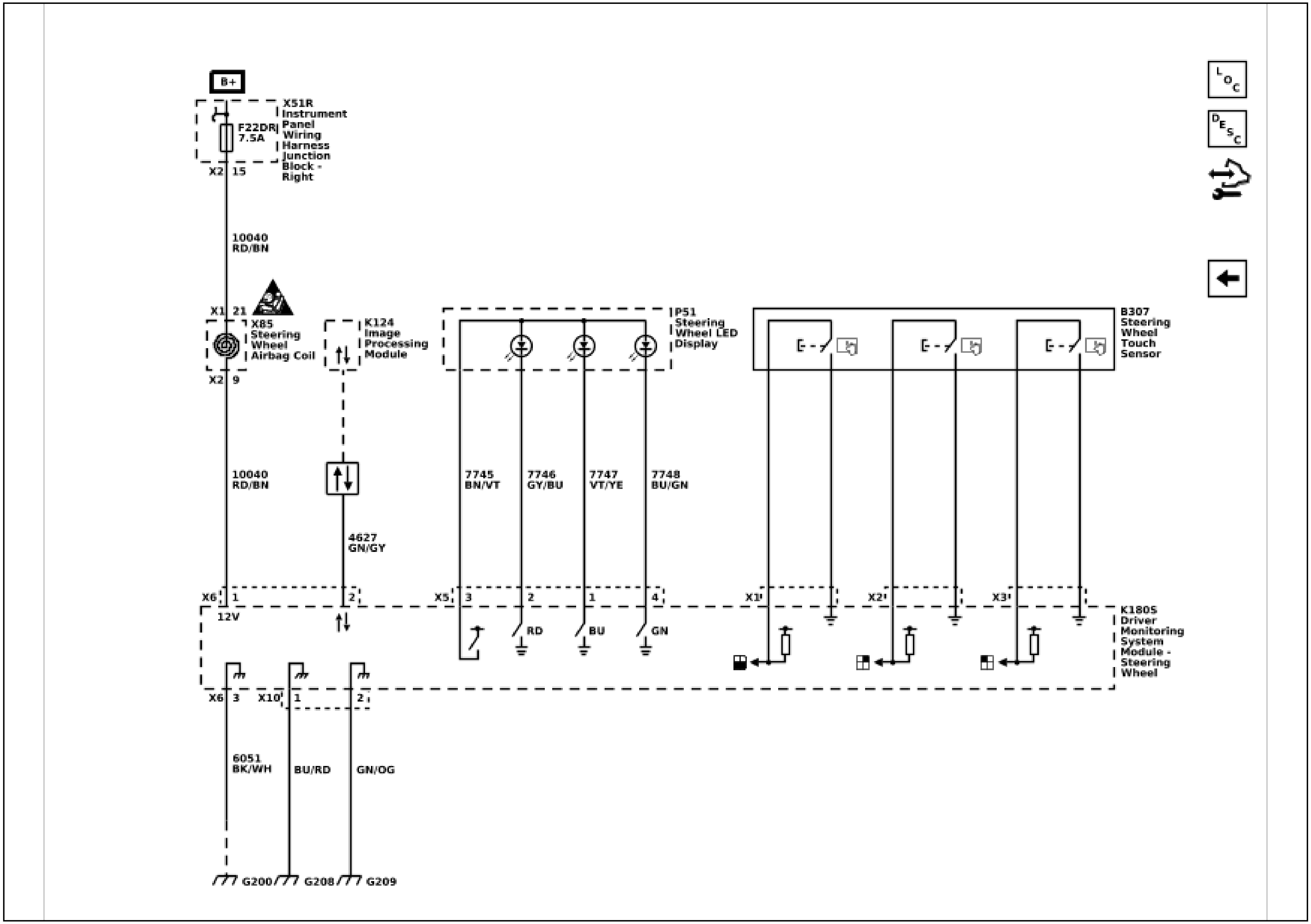
Driver Assistance Systems Schematics (UKL) (Digital Map Control Module)


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F30DR 10A
X2 28
1340 RD/WH
J239
Data Communication Schematics
1340 RD/WH
4105 BU/GY
4104 WH/GY
4105 BU/GY
4104 WH/GY
7208 BU
7209 GN
7224 BU
7225 WH
X1 1
2
3
4
5
X2 2
3
X3 2
3
B+
K179 Automated Driving Mapping Module
X1 8
851 BK/WH
G201

6847131

Driver Assistance Systems Schematics (UKL) (Steering Wheel Lightbar and Touch Sensors)


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F22DR 7.5A
X2 15
10040 RD/BN
X1 21
X85 Steering Wheel Airbag Coil
X2 9
10040 RD/BN
K124 Image Processing Module
4627 GN/GY
P51 Steering Wheel LED Display
7745 BN/VT
7746 GY/BU
7747 VT/YE
7748 BU/GN
B307 Steering Wheel Touch Sensor
X6 1 2
12V
X5 3 2 1 4
RD
BU
GN
X1
X2
X3
K1805 Driver Monitoring System Module - Steering Wheel
X6 3
X10 1 2
6051 BK/WH
BU/RD
GN/OG
G200
G208
G209

6847132

Description and Operation

Forward Collision Alert Description and Operation (without UGN)

Forward Collision Alert (UEU)
The forward collision alert system is a convenience feature of the B174W Front View Camera - Windshield that can warn drivers of a possible front-end collision situation with a vehicle they are following. The B174W Front View Camera - Windshield is located behind the windshield, looking out at the road ahead and detecting vehicles directly ahead. When a vehicle is detected ahead, a green icon is displayed. This indicator will turn amber if the driver is following too closely. If the system detects that the driver is seconds away from a possible front-end collision, it sends an alert. The P43 Forward Collision Alert Display, which includes a series of red collision alert LEDs, will flash. An audible alert sound will simultaneously sound. If the vehicle is equipped with safety alert seat (HS1), both sides of the seat will pulse. The forward collision alert system can be set to "far," "medium," or "near" timing using the forward collision alert switch and can be turned off using this control or through the vehicle personalization.

Forward collision alert does not provide a warning to help avoid a crash unless it detects a vehicle. Forward collision alert may not detect a vehicle ahead if the B174W Front View Camera - Windshield is blocked by dirt, snow, or ice, or if the windshield is damaged. It may also not detect a vehicle on winding or hilly roads, or in conditions that can limit visibility such as fog, rain, or snow, or if the headlamps or windshield are not cleaned or in proper condition. Keep the windshield, headlamps, and B174W Front View Camera - Windshield area clean and in good repair.

Forward collision alert may provide unnecessary alerts for turning vehicles, vehicles in other lanes, objects that are not vehicles, or shadows. These alerts are normal operation and the vehicle does not need service.

Forward Automatic Braking (UHY)
Forward automatic braking detects vehicles ahead in your path that are traveling in the same direction and may help reduce crash severity or avoid the crash altogether by applying the brakes automatically or enhancing the driver’s braking in some emergency front-end collision situations . It can provide braking assist, such as brake system pre-fill, or automatically brake the vehicle if an imminent collision is determined. This can help avoid or lessen the severity of crashes when driving in a forward gear. Depending on the situation, the vehicle may automatically brake moderately or hard. Forward automatic braking can only occur if a vehicle is detected. When a vehicle is detected ahead, a green icon is displayed. The forward automatic braking system works when driving in a forward gear between 8 km/h (5 mph) and 60 km/h (37 mph). It can detect vehicles up to approximately 60 m (197 ft) away.

If the system detects that the driver is seconds away from a possible front-end collision with the vehicle it is following, it will first send an alert. If the driver doesn’t respond quickly or the situation happens suddenly, forward automatic braking enhances the driver’s braking or automatically applies the brakes. Drivers can override automatic braking at any time by pressing the accelerator or by braking. If the system slows a vehicle to a complete stop, the electronic parking brake will apply. The electronic parking brake can be release in typical fashion by pressing the electronic parking brake switch.

Through vehicle personalization, the forward automatic braking can be been set to the ALERT setting or turned completely off. This setting disables most automatic braking. The driver information center will display FORWARD COLLISION SYSTEM REDUCED or AUTOMATIC COLLISION PREP REDUCED. This is normal operation when the forward automatic braking or forward collision alert system is set to OFF or ALERT. This message is not present when the forward automatic braking or forward collision alert system are set to ALERT and BRAKE.

Forward Collision Alert/Forward Automatic Braking Components

- B174W Front View Camera - Windshield
- P16 Instrument Panel Cluster Control Module
- P43 Forward Collision Alert Display (without UV6)
- P29 Head-Up Display (with UV6)
- Forward Collision Alert Switch
- Infotainment System
- Safety Alert Seat (with HS1)

B174W Front View Camera - Windshield
The B174W Front View Camera - Windshield detects vehicles in front of the vehicle. The B174W Front View Camera - Windshield communicates with the P16 Instrument Cluster via serial data to illuminate the appropriate amber or green vehicle ahead indicator or P43 Forward Collision Alert Display. The B174W Front View Camera - Windshield also communicates via serial data with the infotainment system to request audible alerts.

P16 Instrument Panel Cluster Control Module
The P16 Instrument Panel Cluster Control Module communicates via serial data with the B174W Front View Camera - Windshield and will illuminate the amber or green vehicle ahead indicator as requested by the B174W Front View Camera - Windshield. The P16 Instrument Panel Cluster Control Module also controls the P43 Forward Collision Alert Display.

P43 Forward Collision Alert Display (without UV6)
The P43 Forward Collision Alert Display are a series of red LEDs that will flash when approaching another vehicle too rapidly. The P43 Forward Collision Alert Display are located in the upper instrument panel area and reflect off the windshield when illuminated.

The P43 Forward Collision Alert Display receive power and ground and are discretely controlled by the P16 Instrument Cluster through a pair of low control circuits. When requested by the B174W Front View Camera - Windshield, the P16 Instrument Cluster will pulse the low control circuits, flashing the LEDs as a visual alert that another vehicle is being approached too rapidly.

P29 Head-Up Display (with UV6)
The P16 Instrument Cluster controls the P29 Head-Up Display via serial data. The P16 Instrument Cluster will command the P29 Head-Up Display to flash the collision alert indicator as a visual alert when approaching another vehicle too rapidly as requested by the B174W Front View Camera - Windshield.

Forward Collision Alert Switch
The forward collision alert switch provides an input to the B174W Front View Camera - Windshield to select the alert timing sensitivity when approaching another vehicle too rapidly. The forward collision alert switch is part of the S70L Cruise Control Switch and provides inputs to the K9 Body Control Module, which then communicates with the B174W Front View Camera - Windshield via serial data.

The K9 Body Control Module applies voltage and monitors a low signal voltage from the normally open switch. When the switch is pressed, the signal circuit is pulled low through a specific series of resistors, indicating that the system has been requested to change the alert timing sensitivity. The first button press will show the current alert timing setting on the driver information center. With every subsequent button press, the alert timing sensitivity is changed.

Infotainment System
The infotainment system controls the audible alerts for the forward collision alert system. If the vehicle is approaching another vehicle too rapidly, the B174W Front View Camera - Windshield will command the infotainment system issue an audible alert to the driver.

Safety Alert Seat (with HS1)
The K9 Body Control Module (without A45) or K40D Driver Seat Adjuster Memory Module (with A45) controls the haptic alert provided by the seats. If the vehicle is approaching another vehicle too quickly, the B174W Front View Camera - Windshield will command the control module to pulse both sides of the seat.

Forward Collision Alert and Forward Automatic Braking Operational Checks

If the forward collision alert system is off, inoperative, or not functioning, check the following:

- Verify there are no active driver information center messages and that no DTCs are set.
- Verify that the system is enabled through vehicle personalization. Vehicle personalization allows the system to be set to “Off,” “Beeps,” ”Alert,” “Safety Alert Seat,” or “Alert & Brake”.
- Attempt to replicate the customer concern. While driving, if the vehicle-ahead telltale display illuminates green when following a vehicle above 8 km/h (5 mph) , forward collision alert is operating properly.

If the driver is receiving false forward collision alerts, check the following:

- Verify the B174W Front View Camera - Windshield is not blocked by dirt, snow, or ice, and the windshield is not damaged.
- The system may be identifying vehicles farther ahead than the customer is expecting. Forward collision alert detects vehicles within a distance of approximately 60 m (197 ft) and operates at speeds above 8 km/h (5 mph).
- Forward collision alert may provide unnecessary alerts to turning vehicles, vehicles in other lanes, objects that are not vehicles, or shadows. These alerts are normal operation and the vehicle does not need service.

If forward collision alert beeps, but the seat does not vibrate, check the following:

- Verify the vehicle is equipped with safety alert seat (RPO HS1).
- Verify there are no active driver information center messages and that no DTCs are set.
- Verify that the system is enabled through vehicle personalization: It may be set to “Beeps” or “Alert Only” instead of “Safety Alert Seat” or “Alert & Brake”.

If FORWARD COLLISION SYSTEM REDUCED or AUTOMATIC COLLISION PRE REDUCED is displayed on the driver information center, check the following:

- Verify that the system is enabled through vehicle personalization: It may be set to “Alert Only” instead of ”Off” or Alert & Brake”.

If SERVICE FRONT CAMERA is displayed on the driver information center, check the following:

- Verify there are no active driver information center messages and that no DTCs are set.

- If the message is only displayed upon startup, check the following:
  - Verify the B174W Front View Camera - Windshield is not blocked by dirt, snow, or ice, and the windshield is not damaged.
  - Verify the vehicle is not parked closed to a wall or the B174W Front View Camera - Windshield is not in an over-temperature condition, such as sitting for long periods in high ambient temperatures and direct sun.
- If the message is displayed beyond startup, check the following:
  - Verify there are no active driver information center messages and that no DTCs are set.

If FRONT CAMERA IS BLOCKED is displayed on the driver information center, check the following:

- Check for any other driver information center service messages.
- Verify the B174W Front View Camera - Windshield is not blocked by dirt, snow, or ice, and the windshield is not damaged.

If SERVICE DRIVER ASSIST is displayed on the driver information center, check the following:

- Check for any other driver information center service messages.
- Verify there are no active driver information center messages and that no DTCs are set.

Forward Collision Alert Description and Operation (with UGN)

On vehicles equipped with RPO UGN, forward collision alert is an integrated of the active safety system. Refer to [Link target (target-id 283825-) not found] .

Lane Keep Assist Description and Operation

The lane keep assist system is a convenience feature that utilizes the B174W Front View Camera - Windshield maintains the vehicle location between identified lane markings. The B174W Front View Camera - Windshield is located behind the windshield, looking out at the road ahead and detecting any lane markings. If the vehicle begins to approach an identified lane marking, automatic correction will be applied by the electric power steering to move the vehicle back toward the center the lane. An integrated function of lane keep assist is lane departure warning. When the vehicle unintentionally leaves a detected lane, visual and audible or haptic (if equipped) alerts are given to the driver. The visual alert cannot be changed, but the driver can select between audible or haptic alerts in the vehicle personalization menus.

Lane Keep Assist System Components

The lane keep assist system is made up of the following components:

- B174W Front View Camera - Windshield
- Driver Information Display
- Multi-axis acceleration sensor (part of the K36 Restraints Control Module)
- Steering wheel angle sensor (part of the K43 Power Steering Control Module)
- K43 Power Steering Control Module
- Lane keep assist switch
- Infotainment system
- Safety alert seat (with HS1)

B174W Front View Camera - Windshield

The B174W Front View Camera - Windshield detects visual queues such as lane markings. When it is determined that the vehicle is approach an identified lane marking, automatic correction will be applied by the electric power steering to move the vehicle back toward the center the lane. Using the multi-axis acceleration sensor and steering wheel angle sensor, the B174W Front View Camera - Windshield determines the vehicles path and compares this to it’s own intended path based on lane markings. The B174W Front View Camera - Windshield will then request the K43 Power Steering Control Module to perform the appropriate steering correction. The B174W Front View Camera - Windshield receives an input via serial data from the lane keep assist switch and controls the lane keep assist switch indicator output.

Driver Information Display

Based on vehicle configuration, the P53 Driver Information Display, P16 Instrument Panel Cluster Control Module, or A105 Instrument Panel Multifunction Human-Machine Interface Control Module contains green and amber lane keep assist indicators. These indicate to the driver the current status of the lane keep assist system and are controlled via serial data by the B174W Front View Camera - Windshield. When the vehicle speed is above the minimum required speed (refer to owner manual) and the system has detected the required lane markings and is ready to assist, the green indicator will be illuminated on the driver information display. If the vehicle has unintentionally left the lane, the amber indicator will flash.

Multi-axis Acceleration Sensor

The steering intervention is based on the forward looking sensor outputs, such as lateral offset of the vehicle, relative yaw angle and time to line crossing. Over that, other vehicle dynamics signals are needed, e.g. velocity, steering angle, yaw rate for the purpose of a driver suppression. The multi-axis acceleration sensor measures vehicle dynamics signals such as velocity and yaw rate for the purpose of determining the vehicles path. The multi-axis acceleration sensor is an integrated part of the K36 Restraints Control Module.

Steering Wheel Angle Sensor
The steering intervention is based on the forward looking sensor outputs, such as lateral offset of the vehicle, relative yaw angle and time to line crossing. Over that, other vehicle dynamics signals are needed, e.g. velocity, steering angle, yaw rate for the purpose of a driver suppression. The steering wheel angle sensor measures vehicle dynamics signals such as steering angle for the purpose of determining the vehicles path. The steering wheel angle sensor is an integrated part of the steering gear and K43 Power Steering Control Module.

K43 Power Steering Control Module
The K43 Power Steering Control Module uses a torque sensor to detect driver inputs and relays that information to the B174W Front View Camera - Windshield. The electric power steering is used to maintain lane centering.

Lane Keep Assist Switch
The lane keep assist switch provides an input to the B174W Front View Camera - Windshield via serial data to turn the lane keep assist system on and off. The B174W Front View Camera - Windshield provides a signal voltage to the normally open momentary switch. When the switch is pressed, the signal circuit is pulled to ground, indicating to the B174W Front View Camera - Windshield that the system has been requested to turn ON or OFF. The lane keep assist switch also contains the lane keep assist switch indicator, which is controlled by the B174W Front View Camera - Windshield to indicate the ON and OFF status of the lane keep assist system. When the system has been enabled by the lane keep assist switch, the B174W Front View Camera - Windshield applies ground to the switch indicator via serial data and illuminates the LED. The location of the lane keep assist switch can vary with different vehicles. For the exact location please refer to the vehicle owner’s manual.

Infotainment system
The radio controls the audible alert for the lane keep assist. If the vehicle has unintentionally left the lane, the radio will command three beeps as an audible alert to the driver.

Safety Alert Seat (with HS1)
The K9 Body Control Module (without A45) or K40D Driver Seat Adjuster Memory Module (with A45) controls the haptic alert provided by the seats. If the vehicle has unintentionally left the lane and the K43 Power Steering Control Module determines the corrective action requires an above threshold amount of effort, three pulses to the left or right side of the seat will be commanded, depending on the lane departure direction.

Lane Keep Assist Operation

Lane keep assist with lane departure warning provides gentle steering wheel input and alerts to help prevent drivers from unintentionally drifting out of their intended lane.

There is two stages of warning/intervention for the driver: The first stage is the steering push back, if the lane keep assist system detects that the vehicle will cross the lane marking despite it is intervening, a second stage warning shall be issued. The second stage warning is a chime or a haptic alert through the safety alert seat (if equipped). If a haptic seat vibration is used as stage 2 warning, the vibration will occur on the side of the seat, where the lane departure occurred.

System operation can be described by the following modes:

- Off State: The system has been turned off by the driver using the lane keep assist switch. The lane keep assist indicator will not be illuminated.
- Not Ready To Assist: The system is enabled and the lane keep assist indicator is illuminated, but not ready to assist when any of the following conditions is true:
  - Vehicle speed is less than required for lane keep assist operation. Refer to Owner’s Manual for operational speed.
  - The system cannot detect lane markings. This may be because there are no lane markings, as on a country road or that the lane markings cannot be determined due to snow, rain, or other driving conditions.
  - The windshield area in front of the camera or the camera lens is blocked by fog, dirt, damage to the windshield or other elements that may prevent the camera from detecting lane markings.
- Ready To Assist: The system is enabled and ready to warn of the unintentional lane crossing. The system is ready to assist when the green lane keep assist indicator is illuminated on the driver information display.

Lane Crossing Alerts
- When one of the following conditions are met, the system will not give alerts:
  - The correct turn signal is activated. An activated turn signal is interpreted as an intentional lane crossing.
  - The operator makes an intentional steering maneuver.

  - The operator makes an intentional accelerating maneuver.
  - The operator makes an intentional braking maneuver.
- Lane crossing alert consists of the following:
  - The amber lane keep assist indicator will flash.
  - “push-back” steering torque input (or nudge) from electric power steering to help prevent a lane departure
  - Three chimes are activated through the radio or three pulses to the left or right side of the active safety seat (if equipped).

Hands On Lane Centering Assist (if equipped)

Hands on Lane Centering Assist operates similar to Lane Keep Assist but provides continuous lateral assistance to help keep the vehicle in the center of the lane while Adaptive Cruise Control is engaged. Hands on Lane Centering Assist utilized the steering wheel touch sensors and driver monitoring camera to ensure the driver actively has their hands on the steering wheel and has eyes on the road.

Hands on Lane Centering Assist must be enabled in infotainment vehicle settings, Adaptive Cruise Control engaged, and road lanes visible by the Front view Camera-Windshield: in order for the Hands on Lane Centering Assist to operate.

System states:

- Standby: (white Hands-On steering wheel icon with white lane keep assist lines) feature not engaged due to possible environmental or driver reasons.
- Active: (green Hands-On steering wheel icon with green lane keep assist lines) feature is active and controlling
- Lane Departure Warning: (amber Hands-On steering wheel icon with flashing amber lane keep assist lines) activated when the vehicle moves outside of a predefined threshold of the lane. The system detects that the vehicle is drifting toward or beyond the lane markings.
- Environmental degrades : (amber Hands-On steering wheel icon with white lane keep assist lines) operation degrades are currently alerting for environmental reasons such as lane line confidence low, exceeds road curvature limit, etc.
- Driver Override: (white Hands-On steering wheel icon with white lane keep assist lines) driver has taken control from Hands On Lane Centering Assist.

If the system senses the driver is not meeting necessary requirements (hands on wheel, eyes on road) driver warnings will escalate and can deactivate Hands On Lane Centering Assist. If this occurs three times, the Hands On Lane Centering Assist will be unavailable for the remainder of the Ignition/Vehicle On cycle.

Safety Alert Seat Description and Operation

The safety alert seat uses pulsing driver seat vibrations to intuitively communicate the direction of a possible crash threat. Two P45 Front Seat Lane Departure Warning Actuators are utilized to create the vibration and are located on the left and right sides of the seat cushion. Utilizing two motors allows the vibration to be localized to the left or right side of the seat, depending on the side of the vehicle generating the alert, or to vibrate both simultaneously.

Note: The following systems may not be available on all vehicles.

The following systems utilize the safety alert seat:

- Lane Departure Warning and Lane Keep Assist – Utilizes left or right-side pulses to alert drivers if they unintentionally drift out of their lane
- Rear Cross Traffic Alert – Utilizes left or right-side pulses to the direction of an approaching vehicle
- Forward Collision Alert – Simultaneously pulses on both sides to warn drivers of a possible collision with the vehicle that they’re following
- Front Pedestrian Braking – Simultaneously pulses on both sides to warn drivers of a possible collision with a pedestrian
- Front Parking Assist, Rear Parking Assist, and Backing Warning (part of the Rear Automatic Braking system) – Simultaneously pulses on both sides to warn drivers of a possible low-speed collision

Safety Alert Seat Components

The active safety seat utilizes the following components:

- K9 Body Control Module (without A45)
- K40D Driver Seat Adjuster Memory Module (with A45)
- P45LR Front Seat Lane Departure Warning Actuator - Left Rear
- P45RR Front Seat Lane Departure Warning Actuator - Right Rear

K9 Body Control Module (without A45)

The K9 Body Control Module receives serial data messages from other modules and provides voltage to control the P45 Front Seat Lane Departure Warning Actuators. The K9 Body Control Module will pulse the left, right, or both P45 Front Seat Lane Departure Warning Actuators with the number of pulses requested over serial data. The K9 Body Control Module monitors the control circuits for open, short to ground, and short to voltage conditions and will set DTCs if a circuit fault is detected.

K40D Driver Seat Adjuster Memory Module (with A45)
The K40D Driver Seat Adjuster Memory Module receives serial data messages from other modules and provides voltage to control the P45 Front Seat Lane Departure Warning Actuators. The K40D Driver Seat Adjuster Memory Module will pulse the left, right, or both P45 Front Seat Lane Departure Warning Actuators with the number of pulses requested over serial data. The K40D Driver Seat Adjuster Memory Module monitors the control circuits for open, short to ground, and short to voltage conditions and will set DTCs if a circuit fault is detected.

P45 Front Seat Lane Departure Warning Actuator
The P45 Front Seat Lane Departure Warning Actuator is DC motor located in the driver’s seat bottom cushion. Two P45 Front Seat Lane Departure Warning Actuators are used in the seat bottom cushion, positioned on the left and right side. An offset weight is attached to the motor. When activated, the spinning offset weight creates a vibration felt by the driver through the seat cushion.

Each P45 Front Seat Lane Departure Warning Actuator receives a constant chassis ground. The motor is controlled by the K9 Body Control Module (without A45) or K40D Driver Seat Adjuster Memory Module (with A45) by providing voltage through a dedicated control circuit. When an alert is required, the control module will apply voltage, activating the P45 Front Seat Lane Departure Warning Actuator

Side Blind Zone Alert Description and Operation

The side blind zone alert system detects and reports “objects of interest" on either side of the vehicle, within a specified “blind spot” zone. The system is designed to alert the driver, with a visual display placed on the side view mirror, to the presence of objects of interest that may not be visible in the inside rearview mirror and outside rear view mirrors. Although this system is intended to help drivers avoid lane change collisions, it does not replace driver vision and therefore should be considered a lane change aid. Even with the side blind zone alert system, the driver must check carefully for objects outside of the reporting zone (e.g., a fast approaching vehicle) before changing lanes. In the event that the system senses a malfunction through its diagnostic routines, the system will be disabled and the driver will be visually notified.

When the system detects a vehicle in the side blind zone while driving forward, an amber warning symbol will light up in the appropriate outside mirror. This indicates that it may be unsafe to change lanes. If the driver then activates the turn signal, the amber warning symbol starts flashing as an extra warning not to change lanes.

Side blind zone alert is active when the vehicle is out of park, or the parking brake is off on manual transmission vehicles, and at any speed up to approximately 140 km/h (87 MPH). If a vehicle is detected in the blind zone, the warning symbols will illuminate on the appropriate side. When the vehicle is started, both outside mirror indicators will briefly illuminate to indicate that the system is operating. The warning symbols will vary brightness based on the ambient light conditions.

Side Blind Zone Alert Components

- B218L Side Obstacle Detection Control Module - Left
- B218R Side Obstacle Detection Control Module - Right
- K9 Body Control Module
- S79D Front Side Door Window Control Switch - Driver
- S79P Front Side Door Window Switch - Passenger
- A9A Outside Rearview Mirror – Driver
- A9B Outside Rearview Mirror – Passenger
- Safety Alert Seat (HS1)

B218 Side Obstacle Detection Control Module
The B218L Side Obstacle Detection Control Module - Left and B218R Side Obstacle Detection Control Module - Right are located on each side of the vehicle behind the rear fascia and are not directly visible from outside the vehicle. The B218 Side Obstacle Detection Control Modules use radar to determine the presence of objects nearby. Both B218 Side Obstacle Detection Control Modules communicates with the vehicle via serial data. The B218L Side Obstacle Detection Control Module - Left and B218R Side Obstacle Detection Control Module - Right also communicate with one another on a private CAN serial data bus. When an object is detected in the side blind zone, the B218L Side Obstacle Detection Control Module - Left and B218R Side Obstacle Detection Control Module - Right will send a CAN message to the K9 Body Control Module to illuminate the appropriate side blind zone alert indicator. Vehicles equipped with Super Cruise (UKL) use the short range radar rear for object detection.

K9 Body Control Module
The B218L Side Obstacle Detection Control Module - Left and the B218R Side Obstacle Detection Control Module - Right will send a CAN message to the K9

Body Control Module when requesting the driver or passenger indicator be illuminated. The K9 Body Control Module then sends a LIN message to the S79D Front Side Door Window Control Switch - Driver or S79P Front Side Door Window Switch - Passenger with the indicator request.

S79 Front Side Door Window Control Switch
The B218L Side Obstacle Detection Control Module – Left and the B218R Side Obstacle Detection Control Module – Right will send a CAN message to the K9 Body Control Module when requesting the driver or passenger indicator be illuminated. The K9 Body Control Module then sends a LIN message to the S79D Front Side Door Window Control Switch - Driver or S79P Front Side Door Window Switch - Passenger with the indicator request. The S79D Front Side Door Window Control Switch - Driver or S79P Front Side Door Window Switch - Passenger will apply voltage to the indicator control circuit to illuminate the appropriate indicator.

A9 Outside Rearview Mirror
The A9A Outside Rearview Mirror – Driver and A9B Outside Rearview Mirror – Passenger each contain an icon that is backlit with high intensity, amber-colored LED’s located on the mirror surface. The display brightness adapts to day/night conditions. The P34D Side Object Detection Indicator – Driver and P34P Side Object Detection Indicator – Passenger in the appropriate A9 Outside Rearview Mirror is illuminated if the specific B218 Side Obstacle Detection Control Module detects a vehicle in the side blind zone to inform the driver that there is a vehicle driving in the blind spot zone.

Safety Alert Seat (HS1)
The K40 Seat Memory Control Module (with A45) or K9 Body Control Module (without A45) controls the P45 Front Seat Lane Departure Warning Actuators. The P45 Front Seat Lane Departure Warning Actuators provide haptic alert to the driver. If an object is detected, the system will command pulses to the P45LR Seat Haptic Movement Motor – Driver Left Rear or P45RR Seat Haptic Movement Motor – Driver Right Rear, depending on the location of the object, as an alert to the driver.

Side Blind Zone Alert Operation

When the vehicle is started, both A9 Outside Rearview Mirror indicators will briefly illuminate to indicate that the system is operating. The system is designed to detect objects of interest as small as a 125cc motorcycle with rider. The detection zone starts at the outside rearview mirror and extends out to 3.5 m (11 ft) at the back corner of the vehicle and 3 m (10 ft) behind the vehicle at a height of 0.5 m (1.5 ft) and 2.0 m (6 ft) above the ground. The system may illuminate an indicator due to guardrails, signs, trees, shrubs, and other non-moving objects. This is normal system operation; the vehicle does not need service.

When the system detects a vehicle in the side blind zone or lane change alert area while driving forward, independent if passing a vehicle or being passed, an amber warning symbol will illuminate in the appropriate A9 Outside Rearview Mirror. This indicates that it may be unsafe to change lanes. If the driver then activates the turn signal, the amber warning symbol starts flashing as an extra warning not to change lanes.

Foul weather may affect the operation of the side blind zone and lane change alert systems. Occasional missed alerts can occur under normal circumstances and will increase in wet conditions. The number of missed alerts will increase with increased rainfall or road spray. Heavy rainfall, as well as mud, dirt, snow, ice, or slush build-up on the rear fascia, can completely disable the system.

If the vehicle is towing a trailer or has an object such as a bicycle rack attached to the rear of the vehicle, the side blind zone and lane change alert systems may not function properly and the indicators may illuminate intermittently or remain illuminated all the time.

Side blind zone may not alert the driver to vehicles rapidly overtaking the vehicle from the rear or if the vehicle is overtaking another vehicle, with a speed difference of more than 8 mph.

If the vehicle is traveling in an open area where another vehicle cannot be detected within 2 minutes, the side object detection may become unavailable and it may take 3-4 hours of driving to establish normal system function.

Lane Change Alert Operation

An integrated function of the side blind zone alert system is lane change alert. Lane change alert supplements the side blind zone alert system by detecting approaching vehicles on either side of the vehicle that may not yet be in the side blind zone alert area. The detection zone for lane change alert starts at the outside rearview mirror and extends out to 3.5 m (11 ft) at the back corner of the vehicle and up to 70 m (230 ft) behind the vehicle at a height between 0.5 m (1.5 ft) and 2.0 m (6 ft) above the ground. The system determines when the indicator will illuminate based on the rate of closure, or approach speed, of an approaching vehicle. As the rate of closure become faster, the indicator will illuminate sooner.

Rear Cross Traffic Alert Operation

Rear cross traffic alert displays a red warning triangle with a left or right pointing arrow on the infotainment display to warn of traffic coming from the left or right. This system detects objects coming from up to 20 m (65 ft) from the left or right side of the vehicle. When an object is detected, either three beeps sound from the left or right or three safety alert seat pulses occur on the left or right side, depending on the direction of the detected vehicle.

Driver Information Center Messages

SIDE BLIND ZONE ALERT OFF or LANE CHANGE ALERT OFF

This message indicates that the system has been disabled through the driver information center. Refer to the vehicle owner’s manual for instructions on how to set personalization options on the driver information center.

SERVICE SIDE DETECTION SYSTEM

This message indicates that the system requires service. When the message is displayed, the indicators will remain illuminated at all times, notifying the driver that the side blind zone system should not be relied upon when changing lanes. Since the sensors are also used for rear cross traffic alert, this feature will also be inoperative.

SIDE DETECTION SYSTEM UNAVAILABLE

This message indicates that the system has been temporarily disabled because the sensor is blocked or can otherwise not accurately detect vehicles or objects. Such instances may be mud, dirt, snow, ice, or slush build-up on the rear fascia, heavy rainfall, excessive road spray, fascia damage or stickers. An over or under-voltage condition or over-temperaure will also cause the message to display.

The rear cross traffic alert system will read the GPS latitude and longitude on the serial data bus and calculate if the vehicle is within a Radio Astronomy zone. These zones are located in Europe and Japan and require the sensors to be turned off. The “Side Detection System Unavailable” message will be displayed to the driver when this occurs.

The system is continuously fine tuning the radar alignment. If the B218 Side Obstacle Detection Control Module is removed or significantly disturbed, such as removing the rear fascia or sensor bracket, an initial alignment is automatically performed by the system to enable system operation. However, the SIDE DETECTION SYSTEM UNAVAILABLE may remain for several hours of driving as the system fine tunes the radar alignment to ensure satisfactory alert performance.

Super Cruise Description and Operation

Note: ONSTAR SERVICE PLAN REQUIRED. An active OnStar service plan that includes Emergency Services is **required** for Super Cruise operation. The terms and conditions must also be signed for OnStar, otherwise **Super Cruise will not operate**.Verify the OnStar system is not damaged and is operating properly. An Onstar Blue Button press is recommended. Refer to: [Link target (target-id 149641-) not found] . The message “Unavailable GPS Signal Lost” may display if OnStar is not completely set up. This includes such details as the OnStar account does not have the Terms and Conditions signed off.

Super Cruise is available only on limited-access freeways that are separated from opposing traffic.

Super Cruise is designed to be available and engage only under the following conditions:

- Adaptive Cruise Control (ACC) is ON

  Refer to [Link target (target-id 283816-) not found]
- Forward Collision System set to alert and brake

  Refer to *Forward Collision Alert Description and Operation (without UGN) 10-19* *Forward Collision Alert Description and Operation (with UGN) 10-21*
- The vehicle is on a limited-access freeway
- Camera or radar sensors are not covered, obstructed, or damaged
- The system detects that the driver appears attentive
- The lane markings are clearly visible – lane markings may be obscured, for example, by glare or poor weather conditions
- Teen Driver is not active

How the System Works

Driver Attention Camera
To ensure safety, drivers must pay attention to the road at all times. Our proprietary head tracking software helps make sure your eyes are on the road, and alerts you when you need to pay more attention or take back control.

Steering Wheel Light Bar
If the steering wheel light bar flashes green, the system has detected that the driver may not be paying sufficiently close attention. Refer to *Driver Monitoring Description and Operation 10-31*

The flashing will stop when the system detects that sufficiently close attention to the road has resumed. Refer to *Lane Keep Assist Description and Operation 10-21*

If the steering wheel light bar flashes green for too long, Super Cruise will alert the driver to take control of steering immediately by flashing the light bar red. Also, either beeps will sound or the Safety Alert Seat will vibrate. See “Collision/Detection Systems” under Vehicle Personalization in the Owner’s Manual. Take over steering, then Super Cruise will disengage. To re-engage Super Cruise, press the Super Cruise button on the steering wheel.

If the steering wheel light bar flashes red for too long, a voice command will tell you to take control of the vehicle.

Take control of the steering immediately; Adaptive Cruise Control and Super Cruise will disengage.

A Driver Information Center (DIC) message will indicate that Super Cruise is locked out. Super Cruise cannot be re-engaged until the next ignition cycle.

Continued failure to take over steering will cause the vehicle to slow in your lane of travel and eventually brake to a stop and an OnStar® advisor will be called. The brake lights and hazard warning flashers will come on.

K179 Automated Driving Mapping Module

Automated Driving Mapping Module Downloads
Map database updates and GPS enhancement data are periodically downloaded to the vehicle using the vehicle’s OnStar Wi-Fi hotspot. If a mobile device with its own Wi-Fi hotspot uses the same SSID and password as the vehicle, the vehicle may connect to the mobile device to download the data. To prevent downloading using a mobile device data plan, use a different SSID and password for the vehicle’s Wi-Fi hotspot and the mobile device, or disable the Wi-Fi hotspot of the mobile device when inside the vehicle. To change the Wi-Fi hotspot SSID and password, go to Settings > Wi-Fi.

Automated Driving Mapping Database
Super Cruise uses a LiDAR-scanned map database, which governs system use and enables it only in areas where appropriate road conditions are detected. The advanced map data restricts Super Cruise use to divided, limited-access freeways with defined entry and exit ramps. MAP UPDATES Super Cruise map updates are automatically downloaded via the vehicle’s OnStar Wi-Fi hotspot. The Wi-Fi option should always be turned on. To turn on Wi-Fi, go to Settings > Wi-Fi.

For more information on Cadillac Super Cruise, refer to: *http://www.cadillac.com/world-of-cadillac/innovation/super-cruise.html*

For more information on GMC Super Cruise, refer to: *https://www.gmc.com/connectivity-technology/super-cruise*

For more information on Chevorlet Super Cruise, refer to: *https://www.chevrolet.com/support/vehicle/driving-safety/driver-assistance/super-cruise*

Super Cruise Messages on the Driver Information Center Summary

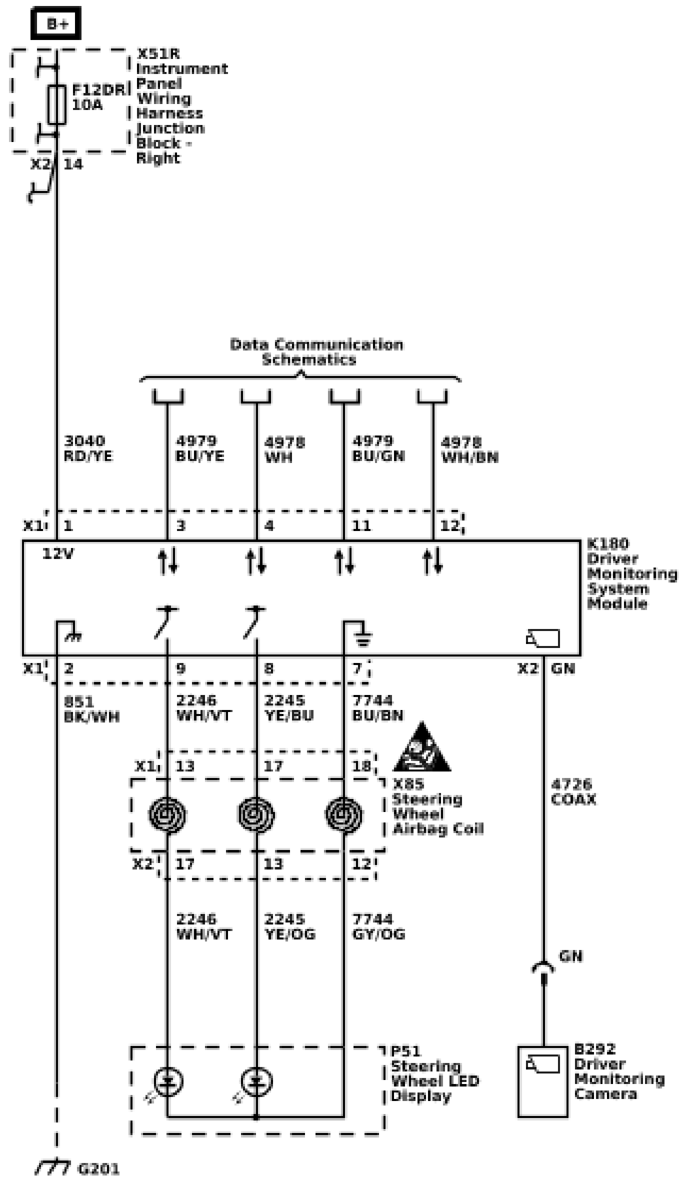
Unavailable Turn on Adaptive Cruise Control	Adaptive Cruise Control must be on before Super Cruise can be enabled. • Set speed is not required before enabling Super Cruise. • Adaptive Cruise Control is not required to be engaged before enabling Super Cruise.
Unavailable Set Forward Collision Setting to Alert and Brake	Super Cruise is disabled unless Alert and Brake is selected. 1. Select the Settings menu, then Vehicle, then Collision/Detection Systems, and then Forward Collision System. 2. Set Forward Collision to Alert and Brake.
Unavailable No Road Information	• There is no map information available for that portion of a controlled access road. Recent road reconstruction may turn off Super Cruise for that section of road until new map information is available. • The vehicle is not on the correct type of road. A controlled access freeway is required for Super Cruise. • There are lanes entering or exiting on both the left and right side of the freeway. • The vehicle is approaching a freeway interchange. The message will appear for 10 seconds or less.

Unavailable Sensors Can't Find Lane Lines	• Rain or snow is inhibiting the system's ability to see lane lines. • Direct sunlight is on the front camera at dawn or dusk. • There are missing or poor lane line markings on the road. • There is sun glare on the road surface. • There is heavy rain, puddles, or road spray.
Unavailable Sensor Can't See Face Clearly	• Sun is shining into the Driver Attention System (DAS) camera. • Dawn or dusk sun glare is on the driver's face. • Cups, food, hands, or other objects are obscuring the DAS view of the driver's face. • The steering column is pointed too high or low for the DAS to see the driver. Adjust the steering column or the seat if the message occurs frequently.
Unavailable Looking Away From Road for Too Long	The driver monitoring system detects that the driver is not looking at the road.
Unavailable Center Vehicle In Lane	The Super Cruise system has determined that the vehicle is not centered in the lane lines. Once the vehicle has been centered in the lane lines, the white 🛞 will display in the instrument cluster indicating that Super Cruise is available.
Unavailable Driving Too Fast	The vehicle is traveling faster than 137 km/h (85 mph). The maximum Super Cruise speed in curves will vary based on how sharp the curve is. The vehicle will automatically decrease speed if needed.
Unavailable Driving in Exit Lane	The Super Cruise system has detected that the vehicle is in an exit lane.
Unavailable GPS Signal Lost	• There is poor reception in isolated areas. • Reception is being blocked by buildings or other large structures.
Unavailable You Have Taken Vehicle Control	• The brake pedal is being pressed. • The Adaptive Cruise Control has been canceled or turned off.
Unavailable Sensor Blocked	Clear snow, ice, dirt, or other contaminants from the front and rear areas of the vehicle.
Unavailable Sharp Curve	Some curves are too sharp to be navigated by the Super Cruise system. Super Cruise will be available after the curve is traveled.
Super Cruise Unavailable	Super Cruise is unavailable for reasons not described in other messages.
Super Cruise Locked Out See Owner's Manual	The driver did not take control of the vehicle when prompted by the Super Cruise system. The Super Cruise system will be disabled until the ignition is turned off and back on.

Driver Monitoring

Schematic and Routing Diagrams

Driver Monitoring Schematics (UKL) (Driver Monitoring System)


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F12DR 10A
X2 14
Data Communication Schematics
3040 RD/YE
4979 BU/YE
4978 WH
4979 BU/GN
4978 WH/BN
X1 1
3
4
11
12
12V
K180 Driver Monitoring System Module
X1 2
9
8
7
X2 GN
851 BK/WH
2246 WH/VT
2245 YE/BU
7744 BU/BN
X1 13
17
18
X85 Steering Wheel Airbag Coil
X2 17
13
12
4726 COAX
2246 WH/VT
2245 YE/OG
7744 GY/OG
GN
P51 Steering Wheel LED Display
B292 Driver Monitoring Camera
G201

6847133

Description and Operation

Driver Monitoring Description and Operation

System Operation

The driver monitoring system is part of the Adaptive Cruise Control with Lane Following (RPO: UKL) feature.

The driver monitoring system (DMS) utilizes an infrared camera located on the steering column, and infrared illumination provided by IR LEDs embedded in the steering wheel to monitor the driver and provide an estimate of the driver’s attention state to the Image Processing Module. The resultant image of the Driver is not visible to the driver or GM Service. The driver monitoring system is used as an input to enable/disable the SuperCruise system; therefore driver monitoring system should only be active when its function is requested by the Image Processing Module. For many drivers, the driver monitoring system IR LEDs may be visible as a dim red glow when the system is active.

The driver monitoring system requires the IR illumination LEDs to be illuminated for operation. The LEDs turned on by K124 Image Processing Module command and will only be illuminated when the Adaptive Cruise Control (ACC) with Lane Following is engaged by the customer.

Additionally, all the video signal circuits are twisted and shielded to prevent any interference that may lead to a loss of video signal resolution and cause a degraded video image. These circuits must not be spliced/ removed from shielding or will cause image degradation.

Driver Monitoring Components

The Driver Monitoring system consists of the following components:

- Driver Monitoring Camera
- Driver Monitoring Control Module
- Driver Monitoring Indicators

Driver Monitoring System Outputs

Driver Monitoring System will monitor driver’s head position and area of interest and notify Image Processing Module of the driver’s attention state. Possible attention states are:

- On Road
- Off Road
- Lap Zone (a special case of Off Road)
- Center Console (a special case of Off Road)
- PVOE (Eyes Closed): eyes closed or eyes not visible
- Unknown: This value indicates that the driver cannot be tracked or driver’s visual attention state cannot be estimated, for whatever reason
- Invalid: This value indicates that the driver monitor system is not presently attempting to determine the driver’s attention state due to, either a fault is present in the system, or the system has not completed a self-diagnostic and therefore cannot provide a trustworthy output

Driver Monitoring System Operation

In order for the driver monitor system to function correctly, the driver’s face must be oriented such the camera can view that facial features from above the eyes to below the mouth. See the driver interaction section below for helping customers understand conditions that might prevent the system from recognizing a driver. When assessing the driver’s area of attention (where the driver is looking), the driver monitor system primarily uses the orientation of the face, and uses the eyes/eyelids as a secondary input. Therefore, if a driver looks at a location with the eyes only (without turning his/her head) driver monitor system will most likely report where the face is oriented as if the eyes are straight forward. This is critical if the driver is required to look at a small area of interest such as the center console; the face must be distinctly oriented towards the center console region for driver monitor system to acknowledge a glance, such as for a driver alertness check glance.

The driver monitor system Control Module receives constant power from a direct connection to battery; a constant ground signal; and a wake-up signal (COMM_ENABLE) and GM_LAN communication from the Image Processing Module. The Control Module supplies power and command signal to the driver monitor system camera, and the camera provides live images and camera exposure information to the Control Module through a co-axial cable connection. The Control Module also provides power and control signals to the IR LEDs located within the steering wheel.

The Image Processing Module wakes/puts to sleep up the driver monitor system system through a COMM_ENABLE signal; a high signal wakes the driver monitor system, and low signal puts the driver monitor system to sleep.

Once the driver monitor system is awake, the Image Processing Module forces the driver monitor system IR LEDs to an OFF state if the driver monitor system function is not required (SuperCruise is not requested by the driver). In this case, driver monitor system will report over GM-LAN that driver monitor system is unavailable (driver monitor system_Available = FALSE).

Once the driver requests SuperCruise function, the Image Processing Module will allow driver monitor system to control the IR LEDs. Once IR LED control is allowed, the driver monitor system will begin to attempt to track the driver, and report driver attention state as described above.

During normal operation of driver monitor system, because of normal, transient behavior of the driver, it will be normal for the driver monitor system to occasionally report “Unknown” driver attention state, such as if the driver turns their face away from the camera, or moves their head out of camera view.

If the driver monitor system is unable to track the head and/or eyes for an extended period of time, which can be due to driver behavior and/or appearance, the driver monitor system may conclude that it is unable to safely track and report the driver attention. In this case, the driver monitor system will report that it is unavailable for use (driver monitor system_Available = FALSE). This will cause the SuperCruise function to disengage, and the IR LEDs will be forced off by the Image Processing Module again. The driver monitor system will not resume operation again until the Image Processing Module once again returns control of the IR LEDs to the driver monitor system.

The video signal is shielded to prevent any interference that may lead to a loss of video signal resolution which could degrade the system performance and cause the driver monitor system to lose track of the driver’s facial features. The video circuit must not be spliced/removed from shielding or the image could be degraded and driver monitor system performance negatively affected

Driver Monitoring – Driver Interaction

If a customer complains that Adaptive Cruise Control (ACC) with Lane Following (LF) is not engaging as they would expect or lighting the steering wheel mounted light bar yellow or red too often, and there are no DTC codes set with any of the related components, the system may be turning off because the driver is not recognized. Careful questioning of the driver about their driving habits and when the condition occurs made aid in resolving the issue to their satisfaction.

For best system performance, follow these guidelines:

- Do not block the driver monitor system camera with personal items
- Do not block the indicators on the steering wheel
- When the driver is seated and using the feature, the driver’s head must be above the steering wheel rim. Driver must also be able to reach the steering wheel to control the vehicle while ACC/LF is in use, driver monitor system will not recognize a driver seated in an excessively reclined seat.
- As noted in the Owner’s Manual, if the driver’s head height is similar to the steering wheel rim, lowering the steering wheel tilt may improve the driver monitor system ability to recognize the driver.
- Driver’s face must not be fully or partially obscured, such as by clothing, hair, hand gestures or held items (food, phone, cigarettes, etc.)
- Sunglasses may reduce the systems ability to track the driver, avoid glasses with reflective lenses. Not all sunglasses will work with the system.
- Avoid apparel that covers the face and/or eyes.

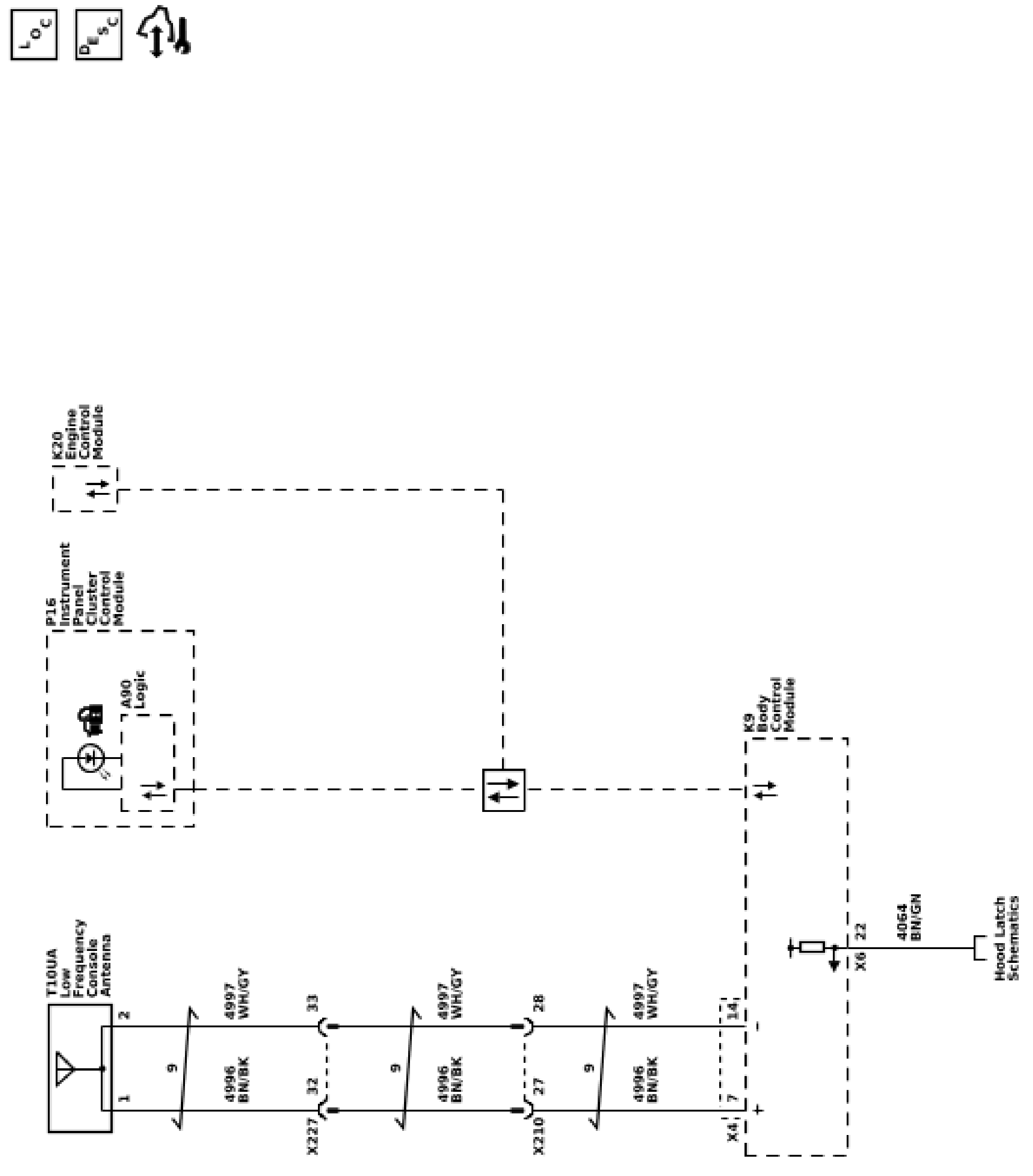
Driver Monitoring Camera Cleaning

The driver monitor system is designed to function without any periodic maintenance. However, over the course of time and normal vehicle use it is possible that the camera lens cover may become dirty and affect camera performance. If the camera lens cover requires cleaning, it may be cleaned with a soft cloth and normal household non-abrasive cleaners, such as glass cleaner. Never use any abrasive cloths and/or abrasive cleaners to clean the camera lens cover. Never use corrosive chemicals of any kind on the camera lens cover.

Immobilizer

Schematic and Routing Diagrams

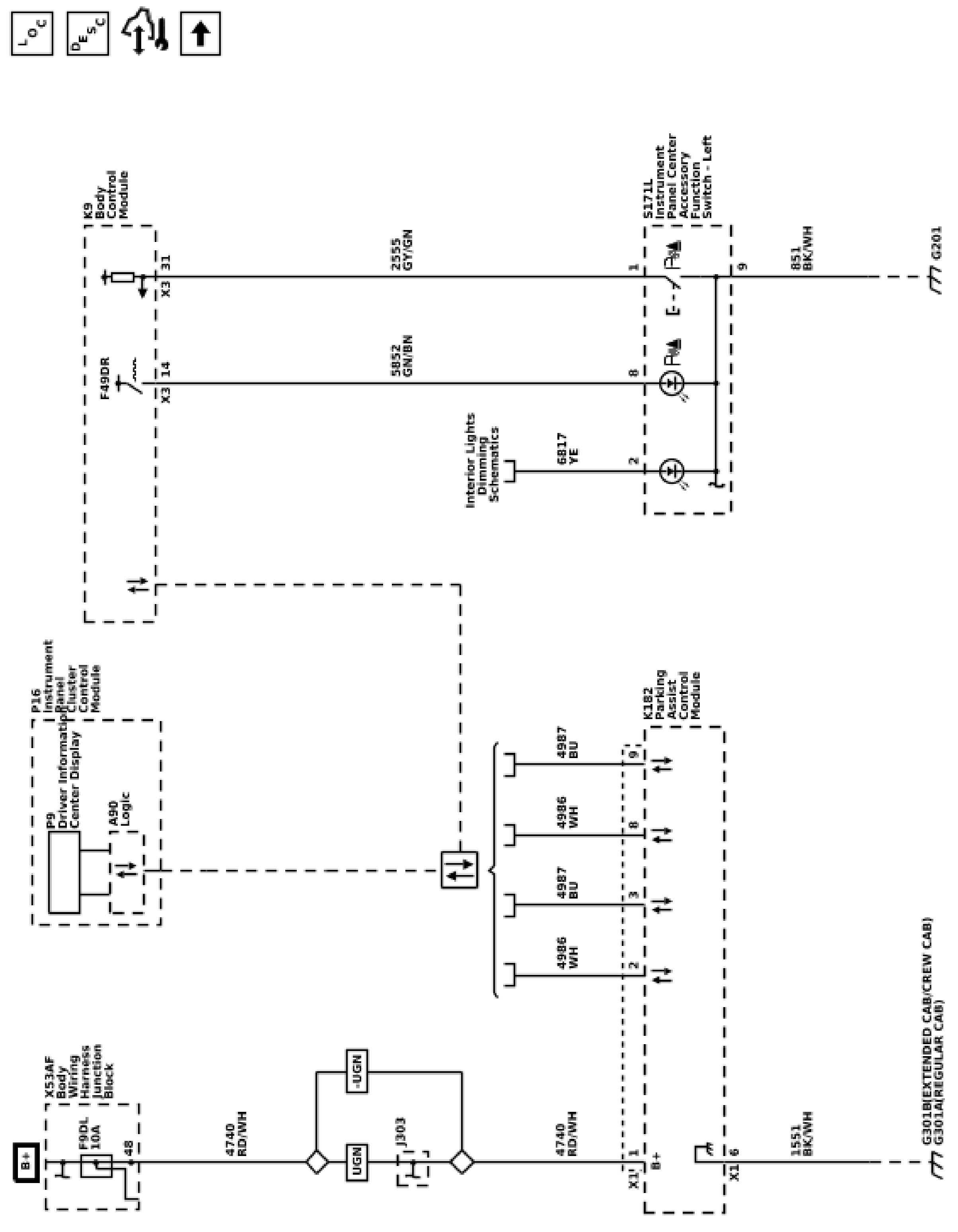
Immobilizer Schematics (Immobilizer)


6847134
T10UA Low Frequency Console Antenna
2
1
9
4997 WH/GY
4996 BN/BK
33
32
X227
28
27
X210
14
7
X4
-
+
K9 Body Control Module
X6
22
4064 BN/GN
Hood Latch Schematics
P16 Instrument Panel Cluster Control Module
A90 Logic
K20 Engine Control Module

Parking Assistance Systems

Schematic and Routing Diagrams

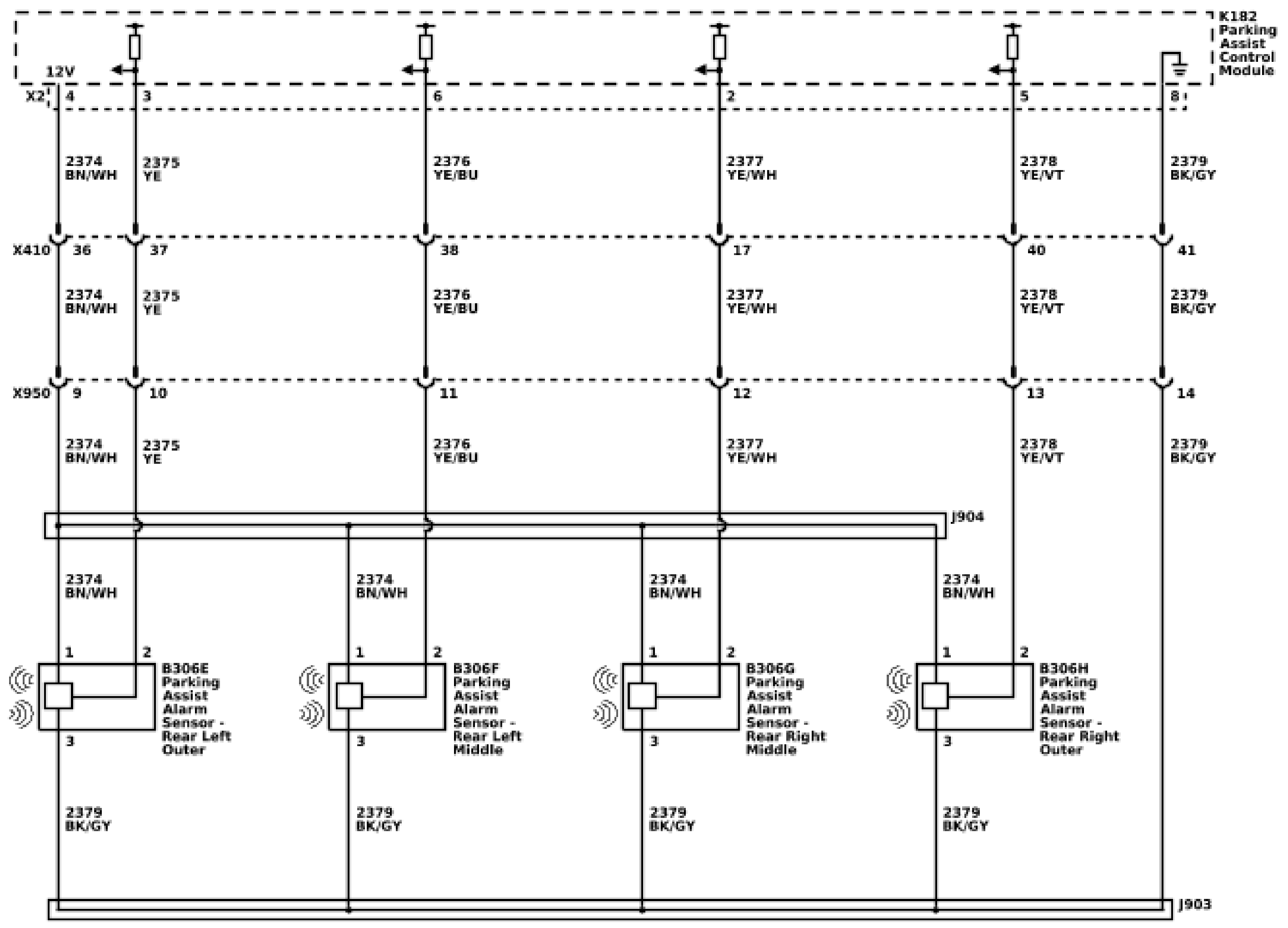
Parking Assistance Systems Schematics (Park Assist - Power, Ground, and Serial Data (UD5))



L O C
D E S C
K9 Body Control Module
X3 31
2555 GY/GN
1
S171L Instrument Panel Center Accessory Function Switch - Left
9
851 BK/WH
G201
F49DR
X3 14
5852 GN/BN
8
Interior Lights Dimming Schematics
6817 YE
2
P16 Instrument Panel Cluster Control Module
P9 Driver Information Center Display
A90 Logic
K182 Parking Assist Control Module
4987 BU
9
4986 WH
8
4987 BU
3
4986 WH
2
X53AF Body Wiring Harness Junction Block
B+
F9DL 10A
48
4740 RD/WH
-UGN
UGN
J303
4740 RD/WH
X1 1
B+
X1 6
1551 BK/WH
G301B(EXTENDED CAB/CREW CAB)
G301A(REGULAR CAB)

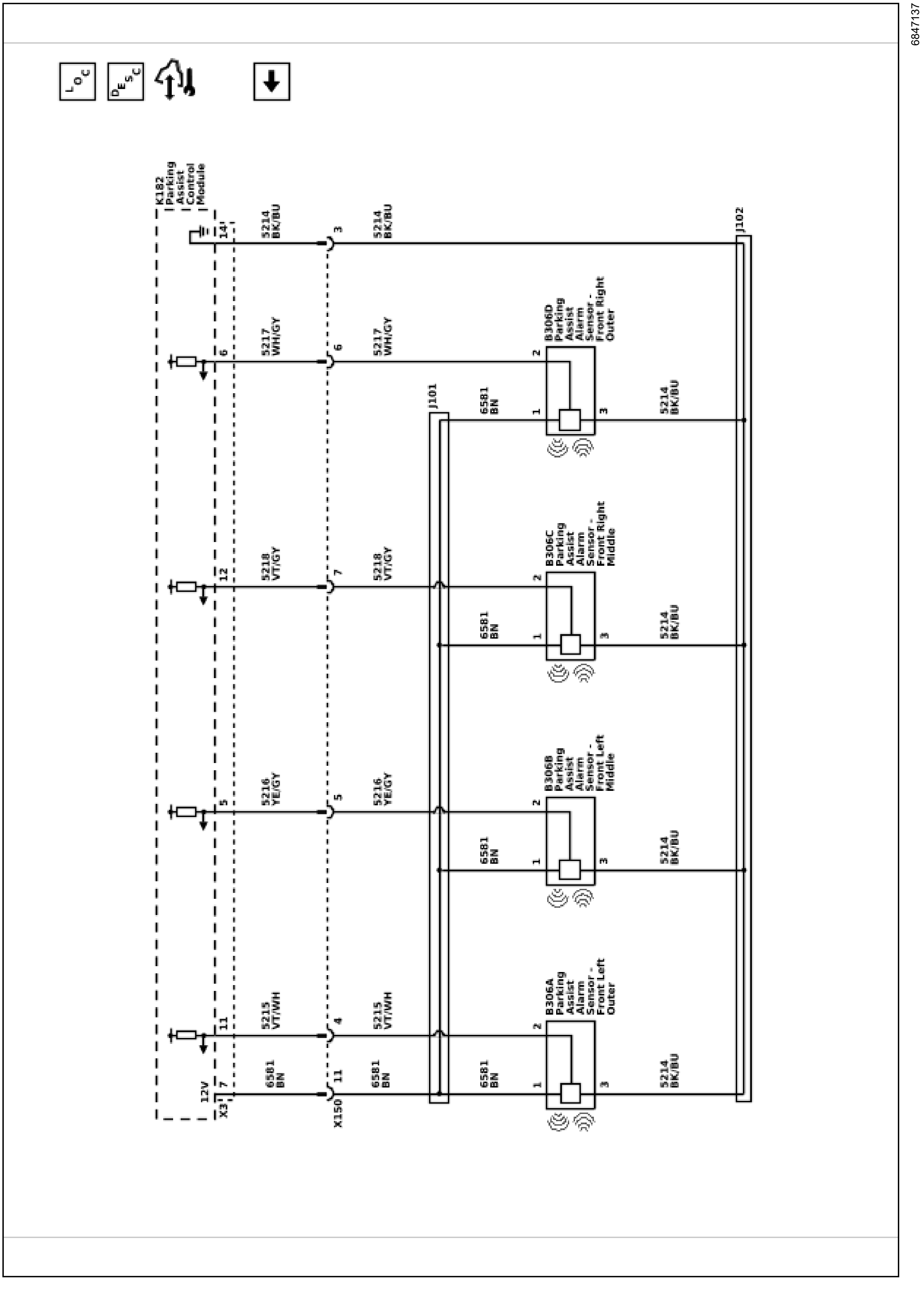
6847135

Parking Assistance Systems Schematics (Park Assist - Rear Sensors (UD5))


K182 Parking Assist Control Module
12V
X2
4
3
6
2
5
8
2374 BN/WH
2375 YE
2376 YE/BU
2377 YE/WH
2378 YE/VT
2379 BK/GY
X410
36
37
38
17
40
41
X950
9
10
11
12
13
14
J904
J903
1
2
3
B306E Parking Assist Alarm Sensor - Rear Left Outer
B306F Parking Assist Alarm Sensor - Rear Left Middle
B306G Parking Assist Alarm Sensor - Rear Right Middle
B306H Parking Assist Alarm Sensor - Rear Right Outer

6847136

Parking Assistance Systems Schematics (Park Assist - Front Sensors (UD5))


6847137
LOC
DESC
K182 Parking Assist Control Module
X3
12V
7
11
5
12
6
14
X150
11
4
5
7
6
3
6581 BN
5215 VT/WH
5216 YE/GY
5218 VT/GY
5217 WH/GY
5214 BK/BU
J101
J102
B306A Parking Assist Alarm Sensor - Front Left Outer
B306B Parking Assist Alarm Sensor - Front Left Middle
B306C Parking Assist Alarm Sensor - Front Right Middle
B306D Parking Assist Alarm Sensor - Front Right Outer
1
2
3

Description and Operation

Parking Assist Description and Operation (UD5)

The parking assist system can help drivers avoid certain objects in their path during low-speed parking. The distance and location of the object is determined by four object sensors located in the rear fascia. The parking assist system may not detect all children, pedestrians, bicyclists, animals or objects below the bumper. Drivers should remember to always check the area around the vehicle before shifting into REVERSE. The parking assist system will not stop or slow down a vehicle. It does not engage a vehicle's throttle or braking. No safety system can take the place of an alert and engaged driver.

The parking assist system is made up of the following components:

- K182 Parking Assist Control Module
- B306 Parking Assist Alarm Sensors
- Infotainment system

K182 Parking Assist Control Module

The K182 Parking Assist Control Module provides a reference voltage and a low reference to the B166/B306 Parking Assist Alarm Sensors. The K182 Parking Assist Control Module receives individual signals from each of the four B166/B306 Parking Assist Alarm Sensors and determines the location and distance of an object based on these inputs. When an object is detected, the K182 Parking Assist Control Module will send a serial data message to the infotainment system requesting an audible alert.

B166/B306 Parking Assist Alarm Sensors

The B166/B306 Parking Assist Alarm Sensors are located in the rear fascia of the vehicle. The sensors are used to determine the distance between an object and the bumper. Each sensor emits an ultrasonic frequency which is reflected off any object located behind the vehicle. These reflections are received by the sensors. The time difference between the emission of the frequency and when the reflection is received is known as sensor echo time; it is used to determine the distance to the object. The sensors report this information to the K182 Parking Assist Control Module.

Infotainment System

The infotainment system controls the audible alert for the parking assist system. If the an object is detected the infotainment system will command beeps as an audible alert to the driver.

Rear Parking Assist Operation

The rear parking assist system uses four B166/B306 Parking Assist Alarm Sensors located on the rear fascia and functions when the transmission is in REVERSE. When a driver is backing up at a low speed, up to about 11 km/h (7 mph), the B166/B306 Parking Assist Alarm Sensors may detect objects up to 1.8 m (6 ft) behind the vehicle. When an object is within the measuring range of the B166/B306 Parking Assist Alarm Sensors, the ultrasonic pulse is reflected and is received by the sending or a neighboring sensor. The sensor converts this signal into a voltage signal and sends this signal to the K182 Parking Assist Control Module. The K182 Parking Assist Control Module evaluates the received sensor signals.

When an object is within 0.6 m (2 ft) of the rear bumper, 5 repeating low-pitched beeps are played from the rear speakers, followed by a continuous tone. If the vehicle is equipped with the Safety Alert Seat (HS1), it will pulse 5 times on both sides.

Some vehicles may have a park assist display on the P16 Instrument Panel Cluster Module with bars that show "distance to object," driving direction, and object location information for the parking assist system. As the vehicle gets closer to the detected object, distance-to-object information and caution triangles may be displayed that changes from yellow to amber to red.

The parking assist system can be turned on and off using the parking assist switch.

The K182 Parking Assist Control Module carries out a self test and monitors the sensors for electrical and mechanical faults. Monitored is the power supply of each sensor and the sensor signals. Mud, ice and snow may cause obstruction of the function of the sensors. The K182 Parking Assist Control Module also determines if the correct type of sensor is installed. If any of these tests fails, a DTC with corresponding symptom is set and the parking assist system is deactivated.

Parking Assist System Messages

SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST

The driver information center displays SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST when the K182 Parking Assist Control Module detects a malfunction in the parking assist system and the system is disabled.

PARK ASSIST OFF

The PARK ASSIST OFF message is displayed in the driver information center when the parking assist system is disabled due to conditions that disable or inhibit the system. The K182 Parking Assist Control Module requests the driver information center display PARK ASSIST OFF when it detects such a condition.

Parking Assist System Operational Checks

The scan tool Parking Assist Disable History 1–8 data can be used to diagnose a malfunction within the parking assist system or an intermittent concern. The following is a brief description of potential causes which may aid in diagnosis. For each potential issue, perform an appropriate inspect of the component or system and refer to the specific service information subsection related to that system for further diagnosis:

- Disable by Switch – The parking assist system has been disabled through the parking assist switch.
- Disabled by Customization Menu – The parking assist system has been disabled through the vehicle personalization menu.
- Vehicle Speed Too High – The vehicle is travelling too fast in reverse at speeds of greater than 8 km/h (5 mph).
- Vehicle Speed Invalid – The vehicle is unable to determine the vehicle speed.
- Steering Angle Signal Invalid – The vehicle is unable to determine the steering angle.
- Front Attached Object Detected – An object has been determined to be attached to the front of the vehicle. Common items such as a brush guards, light bars, and license plates may cause this concern. Additionally, damage to the front of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).
- Rear Attached Object Detected – An object has been determined to be attached to the rear of the vehicle. Common items such as a hitch receiver, trailer, or a bicycle rack may cause this concern. Additionally, damage to the rear of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).
- Front And Rear Attached Object Detected – An object has been determined to be attached to the front and rear of vehicle.
- Parking Assist Alarm Sensor Blocked – One of the following conditions may be present:
    - One or more of the sensors may be blocked by snow, mud, ice, or other debris. This might happen after going through a car wash in cold weather.
    - Silicone insulator surrounding sensor maybe missing, cut, or twisted.
    - Improperly installed sensor, sensor maybe be crooked due to a tight wire harness.
    - One or more of the sensors may be scratched or the paint maybe chipped.
    - Excessive paint thickness on a sensor may cause an excessive sensor ring time. When replacing or refinishing a sensor, do not apply an excessive amount of paint or clear coat.
- Haptic Seat Malfunction – A fault exists with the safety alert seat. Check for DTCs.
- Chime Malfunction – A fault exists with the vehicle chime. Check for DTCs.
- Parking Assist Switch Malfunction – A fault exists with the parking assist switch. Check for DTCs.
- Invalid Gear – The vehicle has determine a plausibility fault exists with the transmission range.
- Incorrect Power Mode – The vehicle is in an incorrect power mode for parking assist operation.

Parking Assist Description and Operation (UKZ)

Note: The automatic parking assist system can steer the vehicle automatically. Be aware that, in some unlikely situations, the vehicle steering wheel and wheels/tires may move without warning. Please be especially aware of situations when vehicle front tires are lifted above the ground on a vehicle hoist as the wheels could move without warning. Please exercise special care if any work is performed with the vehicle running and in gear while elevated on a hoist.

In addition to the eight B166/B306 Parking Assist Alarm Sensors used for front and rear park assist, the automatic parking assist system uses two additional B166/B306 Parking Assist Alarm Sensors located on the front fascia and two additional B166/B306 Parking Assist Alarm Sensors located on the rear fascia. These sensors face toward the side of the vehicle and are used to aid the driver in positioning the vehicle in a parallel parking maneuver.

Note: Any malfunction in the parking assist system may disable automatic parking assist. Automatic parking assist will not operate if the parking assist system is disabled.

Automatic Parking Assist Components

The parking assist system is made up of the following components:

- K182 Parking Assist Control Module
- K124 Image Processing Module
- B166/B306 Parking Assist Alarm Sensors
- K9 Body Control Module
- Parking Assist Switch
- Parking Assist Switch Indicator
- Automatic Parking Assist Switch
- Safety Alert Seat (with HS1)
- Infotainment System

K182 Parking Assist Control Module

The K182 Parking Assist Control Module provides a reference voltage and a low reference to the B166/B306 Parking Assist Alarm Sensors. The K182 Parking Assist Control Module receives individual signals from each of the four B166/B306 Parking Assist Alarm Sensors and determines the location and distance of an object based on these inputs. When an object is detected, the K182 Parking Assist Control Module will send a serial data message to the infotainment system requesting an audible alert.

B166/B306 Parking Assist Alarm Sensors

The B166/B306 Parking Assist Alarm Sensors are located in the front and rear fascia of the vehicle. The sensors are used to determine the distance between an object and the bumper. Each sensor emits an ultrasonic frequency which is reflected off any object located behind the vehicle. These reflections are received by the sensors. The time difference between the emission of the frequency and when the reflection is received is known as sensor echo time; it is used to determine the distance to the object. The sensors report this information to the K182 Parking Assist Control Module.

K9 Body Control Module

The K9 Body Control Module monitors the parking assist switch and control the parking assist switch indicator. When the parking assist switch is pressed, a serial data message is sent to the K182 Parking Assist Control Module indicating the driver is requesting the system be enabled or disabled. The K182 Parking Assist Control Module responds with a message that the system has been enabled or disabled. The K9 Body Control Module will respond by turning the parking assist switch indicator on or off.

The K9 Body Control Module also monitors the automatic parking assist switch. When the automatic parking assist switch is pressed, a serial data message is sent to the K182 Parking Assist Control Module indicating the driver is requesting the advance parking assist function. The K182 Parking Assist Control Module responds by beginning to search for a suitable parking space if conditions are correct.

On vehicles with HS1, without A45, the K9 Body Control Module also controls the P45 Seat Haptic Movement Motors for Safety Alert Seat operation.

Parking Assist Switch

The parking assist system can be activated and deactivated by pressing the parking assist switch. The K9 Body Control Module applies voltage and monitors the parking assist switch signal circuit. The parking assist switch is a normally open switch. With the switch open, voltage seen at the K9 Body Control Module is high. When the parking assist switch is pressed, the switch is closed and the signal circuit is pulled to ground. With the switch closed, voltage seen at the K9 Body Control Module is low. The K9 Body Control Module will respond to this by sending a serial data message to the K182 Parking Assist Control Module to enable or disable the system.

Parking Assist Switch Indicator

When the parking assist system is enabled, the K124 Image Processing Module will illuminate the indicator on the switch. The indicator is controlled through a low control circuit by the K124 Image Processing Module.

Automatic Parking Assist Switch

The automatic parking assist system can be activated and deactivated by pressing the automatic parking assist switch. The K9 Body Control Module applies voltage and monitors the automatic parking assist switch signal circuit. The automatic parking assist switch is a normally open switch. With the switch open, voltage seen at the K9 Body Control Module is high. When the automatic parking assist switch is pressed, the switch is closed and the signal circuit is pulled to ground. With the switch closed, voltage seen at the K9 Body Control Module is low. The K9 Body Control Module will respond to this by sending a serial data message to the K182 Parking Assist Control Module to enable or disable the system.

Safety Alert Seat (with HS1, without A45)

The K9 Body Control Module controls the P45 Seat Haptic Movement Motors. The P45 Seat Haptic Movement Motors provide haptic alert to the driver. If an object is detected, the K9 Body Control Module will command pulses to the P45 Seat Haptic Movement Motors as an alert to the driver.

Safety Alert Seat (with HS1 and A45)

The K40D Driver Seat Adjuster Memory Module controls the P45 Seat Haptic Movement Motors. The P45 Seat Haptic Movement Motors provide haptic alert to the driver. If an object is detected, the K40D Driver Seat Adjuster Memory Module will command pulses to the P45 Seat Haptic Movement Motors as an alert to the driver.

Infotainment System
The infotainment system controls the audible alert for the parking assist system. If the an object is detected the infotainment system will command beeps as an audible alert to the driver.

Parking Assist Operation

The rear parking assist system uses four B166/B306 Parking Assist Alarm Sensors located on the rear fascia and functions when the transmission is in REVERSE. When a driver is backing up at a low speed, up to about 11 km/h (7 mph), the B166/B306 Parking Assist Alarm Sensors may detect objects up to 1.8 m (6 ft) behind the vehicle. When an object is within the measuring range of the B166/B306 Parking Assist Alarm Sensors, the ultrasonic pulse is reflected and is received by the sending or a neighboring sensor. The sensor converts this signal into a voltage signal and sends this signal to the K182 Parking Assist Control Module. The K182 Parking Assist Control Module evaluates the received sensor signals.

When an object is within 0.6 m (2 ft) of the rear bumper, 5 repeating low-pitched beeps are played from the rear speakers, followed by a continuous tone. If the vehicle is equipped with the Safety Alert Seat (HS1), it will pulse 5 times on both sides.

The front parking assist system uses four B306 Parking Assist Alarm Sensors located on the front fascia and functions when the vehicle is moving forward at low speeds. When a driver is driving forward at a low speed, up to about 11 km/h (7 mph), the B166/B306 Parking Assist Alarm Sensors may detect objects up to 1.8 m (6 ft) in front of the vehicle. When an object is within the measuring range of the B166/B306 Parking Assist Alarm Sensors, the ultrasonic pulse is reflected and is received by the sending or a neighboring sensor. The sensor converts this signal into a voltage signal and sends this signal to the K182 Parking Assist Control Module. The K182 Parking Assist Control Module evaluates the received sensor signals.

When an object is within 0.3 m (1 ft) of the front bumper, 5 repeating low-pitched beeps are played from the front speakers, followed by a continuous tone. If the vehicle is equipped with the Safety Alert Seat (HS1), it will pulse 5 times on both sides. The tone for front parking assist is higher pitched than the tone for rear parking assist.

Some vehicles may have a park assist display on the P16 Instrument Panel Cluster Module with bars that show "distance to object," driving direction, and object location information for the parking assist system. As the vehicle gets closer to the detected object, distance-to-object information and caution triangles may be displayed that changes from yellow to amber to red.

The parking assist system can be turned on and off using the parking assist switch.

The K182 Parking Assist Control Module carries out a self test and monitors the sensors for electrical and mechanical faults. Monitored is the power supply of each sensor and the sensor signals. Mud, ice and snow may cause obstruction of the function of the sensors. The K182 Parking Assist Control Module also determines if the correct type of sensor is installed. If any of these tests fails, a DTC with corresponding symptom is set and the parking assist system is deactivated.

Automatic Parking Assist Operation

The automatic parking assist system aids the driver when attempting a parking maneuver. The K182 Parking Assist Control Module uses the four additional side-facing B306 Parking Assist Alarm Sensors located in the front and rear fascia, along with the eight typical forward and rearward-facing B306 Parking Assist Alarm Sensors, to guide the driver into a parking space.

Note: The driver seat belt must be buckled for the Automatic Parking Assist to operate. Unbuckling the seat belt during Automatic Parking Assist operation can cause the system to stop and not complete the parking maneuver.

The automatic parking assist switch is used to initiate the parking assist system when traveling at speeds below approximately 30 km/h (18 mph) (refer to owners manual for exact speed). While driving along a row of vehicles in which the driver wishes to park, the parking assist is activated by a switch or the infotainment screen. This will enable the automatic parking assist system and the K182 Parking Assist Control Module will begin seeking potential parking spots using the B306 Parking Assist Alarm Sensors.

When a parking spot of suitable size is found, the K182 Parking Assist Control Module will display a stop message on the driver information center. The driver accepts the decision by stopping the vehicle. The system calculates the optimal path into the parking spot and will then guide the vehicle into the chosen spot by taking over the shifting, steering, and braking control from the driver. Once in the parking spot, the K182 Parking Assist Control Module will center the vehicle in the spot.

If the automatic parking assist system is unable to complete a parking maneuver, a message indicating that the maneuver has been aborted will be displayed on the driver information center. Vehicle control will be given back to the driver once the brake or parking brake is applied.

Parking Assist System Messages

SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST

The driver information center displays SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST when the K182 Parking Assist Control Module detects a malfunction in the parking assist system and the system is disabled.

PARK ASSIST OFF

The PARK ASSIST OFF message is displayed in the driver information center when the parking assist system is disabled due to conditions that disable or inhibit the system. The K182 Parking Assist Control Module requests the driver information center display PARK ASSIST OFF when it detects such a condition.

Parking Assist System Operational Checks

The scan tool Parking Assist Disable History 1–8 data can be used to diagnose a malfunction within the parking assist system or an intermittent concern. The following is a brief description of potential causes which may aid in diagnosis. For each potential issue, perform an appropriate inspect of the component or system and refer to the specific service information subsection related to that system for further diagnosis:

- Disable by Switch – The parking assist system has been disabled through the parking assist switch.
- Disabled by Customization Menu – The parking assist system has been disabled through the vehicle personalization menu. Note: the Parking Assist system customization menu may not be available on all vehicles based on vehicle option content.
- Vehicle Speed Too High – The vehicle is travelling too fast in reverse at speeds of greater than 8 km/h (5 mph).
- Vehicle Speed Invalid – The vehicle is unable to determine the vehicle speed.
- Steering Angle Signal Invalid – The vehicle is unable to determine the steering angle.
- Front Attached Object Detected – An object has been determined to be attached to the front of the vehicle. Common items such as a brush guards, light bars, and license plates may cause this concern. Additionally, damage to the front of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).
- Rear Attached Object Detected – An object has been determined to be attached to the rear of the vehicle. Common items such as a hitch receiver, trailer, or a bicycle rack may cause this concern. Additionally, damage to the rear of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).
- Front And Rear Attached Object Detected – An object has been determined to be attached to the front and rear of vehicle.
- Parking Assist Alarm Sensor Blocked – One of the following conditions may be present:
  - One or more of the sensors may be blocked by snow, mud, ice, or other debris. This might happen after going through a car wash in cold weather.
  - Silicone insulator surrounding sensor maybe missing, cut, or twisted.
  - Improperly installed sensor, sensor maybe be crooked due to a tight wire harness.
  - One or more of the sensors may be scratched or the paint maybe chipped.
  - Excessive paint thickness on a sensor may cause an excessive sensor ring time. When replacing or refinishing a sensor, do not apply an excessive amount of paint or clear coat.
- Haptic Seat Malfunction – A fault exists with the safety alert seat. Check for DTCs.
- Chime Malfunction – A fault exists with the vehicle chime. Check for DTCs.
- Parking Assist Switch Malfunction – A fault exists with the parking assist switch. Check for DTCs.
- Invalid Gear – The vehicle has determine a plausibility fault exists with the transmission range.
- Incorrect Power Mode – The vehicle is in an incorrect power mode for parking assist operation.

Automatic Parking Assist System Operational Checks

The scan tool Automatic Parking Assist Disable History 1–8 data can be used to diagnose a malfunction within the parking assist system or an intermittent concern. The following is a brief description of potential causes which may aid in diagnosis. For each potential issue, perform an appropriate inspect of the component or system and refer to the specific service information subsection related to that system for further diagnosis:

- Automatic Parking Assist Switch Pressed – The automatic parking assist switch has been pressed a second time, aborting the function.
- Automatic Parking Assist Switch Malfunction – The automatic parking assist is stuck closed or has been held down.
- Interrupted by Driver – The Automatic parking assist operation has been aborted by the driver by interfacing with the steering, brake, or accelerator.
- Info Display Control Malfunction – The Automatic parking assist system is not able to provide instructions on the driver information center
- Door Open – A door has been opened.
- Parking Brake Malfunction – A malfunction has been detected in the electric parking brake system.
- Vehicle Dynamics System Status Not Plausible – An implausible scenario between the steering angle sensor, yaw sensor, and lateral/longitudinal accelerometer has been determined.
- Steering Response Malfunction – The steering system has not responded as expected to a steering command.
- Automatic Brake Response Malfunction
- Transmission Response Malfunction – The transmission has not responded as expected to a shift command.
- Automatic Braking Apply Response Not Plausible – An implausible scenario between a brake apply command and vehicle deceleration has been determined.
- Vehicle Movement Detected During Brake Applied Request – Vehicle movement has occurred while the brakes are commanded to apply.
- Chime Malfunction – A fault exists with the vehicle chime. Check for DTCs.
- Wheel Speed Direction Signal Invalid – Identified wheel directional travel does not match intended travel direction.
- Vehicle Speed Invalid – The vehicle is unable to determine the vehicle speed.
- Attached Object Detected – An object has been determined to be attached to the front and rear of vehicle.
- Parking Maneuver Vehicle Speed Exceeded – The vehicle has exceeded the maximum allowable speed for the parking maneuver.
- Vehicle Speed Too High to Search for a Parking Space – The vehicle has exceeded the maximum allowable speed to search for a suitable parking spot.
- Number of Parking Maneuvers Exceeded – The maximum number of parking attempts for a single maneuver has been exceeded.
- Parking Space Too Small – The vehicle has determined the space for the attempted parking maneuver is too small.
- Vehicle Not Following Parking Space Path – The vehicle is unable to follow the intended path of the parking maneuver.
- Yaw Angle Above Threshold – The expected yaw angle for the parking maneuver has been exceeded.
- Steering Angle Deviation Above Threshold – The expected steering angle for the parking maneuver has been exceeded.
- Object Detected on Both Sides of Vehicle – An object has been detected on both the left and right side of the vehicle.
- Object Detected in Alert Zone – An object has been detected in the vehicle’s path.
- Sensor Blocked – One of the following conditions may be present:
    - One or more of the sensors may be blocked by snow, mud, ice, or other debris. This might happen after going through a car wash in cold weather.
    - Silicone insulator surrounding sensor maybe missing, cut, or twisted.
    - Improperly installed sensor, sensor maybe be crooked due to a tight wire harness.
    - One or more of the sensors may be scratched or the paint maybe chipped.
    - Excessive paint thickness on a sensor may cause an excessive sensor ring time. When replacing or refinishing a sensor, do not apply an excessive amount of paint or clear coat.
- Steering Angle Signal Invalid – The vehicle is unable to determine the steering angle.
- Invalid Gear – The vehicle has determine a plausibility fault exists with the transmission range.
- Incorrect Power Mode – The vehicle is in an incorrect power mode for parking assist operation.

Parking Assist Description and Operation (UD7)

The parking assist system can help drivers avoid certain objects in their path during low-speed parking. The distance and location of the object is determined by four object sensors located in the rear fascia. The parking assist system may not detect all children, pedestrians, bicyclists, animals or objects below the bumper. Drivers should remember to always check the area around the vehicle before shifting into REVERSE. The parking assist system will not stop or slow down a vehicle. It does not engage a vehicle's throttle or braking. No safety system can take the place of an alert and engaged driver.

The parking assist system is made up of the following components:

- K182 Parking Assist Control Module
- B306 Parking Assist Alarm Sensors
- K9 Body Control Module
- Parking Assist Switch
- Parking Assist Switch Indicator
- Safety Alert Seat (with HS1)
- Infotainment system

K182 Parking Assist Control Module

The K182 Parking Assist Control Module provides a reference voltage and a low reference to the B306 Parking Assist Alarm Sensors. The K182 Parking Assist Control Module receives individual signals from each of the four B306 Parking Assist Alarm Sensors and determines the location and distance of an object based on these inputs. When an object is detected, the K182 Parking Assist Control Module will send a serial data message to the infotainment system requesting an audible alert.

B306 Parking Assist Alarm Sensors

The B306 Parking Assist Alarm Sensors are located in the rear fascia of the vehicle. The sensors are used to determine the distance between an object and the bumper. Each sensor emits an ultrasonic frequency which is reflected off any object located behind the vehicle. These reflections are received by the sensors. The time difference between the emission of the frequency and when the reflection is received is known as sensor echo time; it is used to determine the distance to the object. The sensors report this information to the K182 Parking Assist Control Module.

K9 Body Control Module

The K9 Body Control Module monitors the parking assist switch and control the parking assist switch indicator. When the parking assist switch is pressed, a serial data message is sent to the K182 Parking Assist Control Module indicating the driver is requesting the system be enabled or disabled. The K182 Parking Assist Control Module responds with a message that the system has been enabled or disabled. The K9 Body Control Module will respond by turning the parking assist switch indicator on or off.

On vehicles with HS1, without A45, the K9 Body Control Module also controls the P45 Seat Haptic Movement Motors for Safety Alert Seat operation.

Parking Assist Switch

The parking assist system can be activated and deactivated by pressing the parking assist switch. TheK9 Body Control Module applies voltage and monitors the parking assist switch signal circuit. The parking assist switch is a normally open switch. With the switch open, voltage seen at the K9 Body Control Module is high. When the parking assist switch is pressed, the switch is closed and the signal circuit is pulled to ground. With the switch closed, voltage seen at the K9 Body Control Module is low. The K9 Body Control Module will respond to this by sending a serial data message to the K182 Parking Assist Control Module to enable or disable the system.

Parking Assist Switch Indicator

When the parking assist system is enabled, the K9 Body Control Module will illuminate the indicator on the switch. The indicator receives a constant ground and is controlled through a PWM voltage control circuit by the K9 Body Control Module.

Safety Alert Seat (with HS1, without A45)

The K9 Body Control Module controls the P45 Seat Haptic Movement Motors. The P45 Seat Haptic Movement Motors provide haptic alert to the driver. If an object is detected, the K9 Body Control Module will command pulses to the P45 Seat Haptic Movement Motors as an alert to the driver.

Safety Alert Seat (with HS1 and A45)

The K40D Driver Seat Adjuster Memory Module controls the P45 Seat Haptic Movement Motors. The P45 Seat Haptic Movement Motors provide haptic alert to the driver. If an object is detected, the K40D Driver Seat Adjuster Memory Module will command pulses to the P45 Seat Haptic Movement Motors as an alert to the driver.

Infotainment System

The infotainment system controls the audible alert for the parking assist system. If the an object is detected the infotainment system will command beeps as an audible alert to the driver.

Rear Parking Assist Operation

The rear parking assist system uses four B306 Parking Assist Alarm Sensors located on the rear fascia and functions when the transmission is in REVERSE. When a driver is backing up at a low speed, up to about 11 km/h (7 mph), the B306 Parking Assist Alarm Sensors may detect objects up to 1.8 m (6 ft) behind the vehicle. When an object is within the measuring range of the B306 Parking Assist Alarm Sensors, the ultrasonic pulse is reflected and is received by the sending or a neighboring sensor. The sensor converts this signal into a voltage signal and sends this signal to the K182 Parking Assist Control Module. The K182 Parking Assist Control Module evaluates the received sensor signals.

When an object is within 0.6 m (2 ft) of the rear bumper, 5 repeating low-pitched beeps are played from the rear speakers, followed by a continuous tone. If the vehicle is equipped with the Safety Alert Seat (HS1), it will pulse 5 times on both sides.

Some vehicles may have a park assist display on the P16 Instrument Panel Cluster Module with bars that show "distance to object," driving direction, and object location information for the parking assist system. As the vehicle gets closer to the detected object, distance-to-object information and caution triangles may be displayed that changes from yellow to amber to red.

The parking assist system can be turned on and off using the parking assist switch.

The K182 Parking Assist Control Module carries out a self test and monitors the sensors for electrical and mechanical faults. Monitored is the power supply of each sensor and the sensor signals. Mud, ice and snow may cause obstruction of the function of the sensors. The K182 Parking Assist Control Module also determines if the correct type of sensor is installed. If any of these tests fails, a DTC with corresponding symptom is set and the parking assist system is deactivated.

Parking Assist System Messages

SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST

The driver information center displays SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST when the K182 Parking Assist Control Module detects a malfunction in the parking assist system and the system is disabled.

PARK ASSIST OFF

The PARK ASSIST OFF message is displayed in the driver information center when the parking assist system is disabled due to conditions that disable or inhibit the system. The K182 Parking Assist Control Module requests the driver information center display PARK ASSIST OFF when it detects such a condition.

Parking Assist System Operational Checks

The scan tool Parking Assist Disable History 1–8 data can be used to diagnose a malfunction within the parking assist system or an intermittent concern. The following is a brief description of potential causes which may aid in diagnosis. For each potential issue, perform an appropriate inspect of the component or system and refer to the specific service information subsection related to that system for further diagnosis:

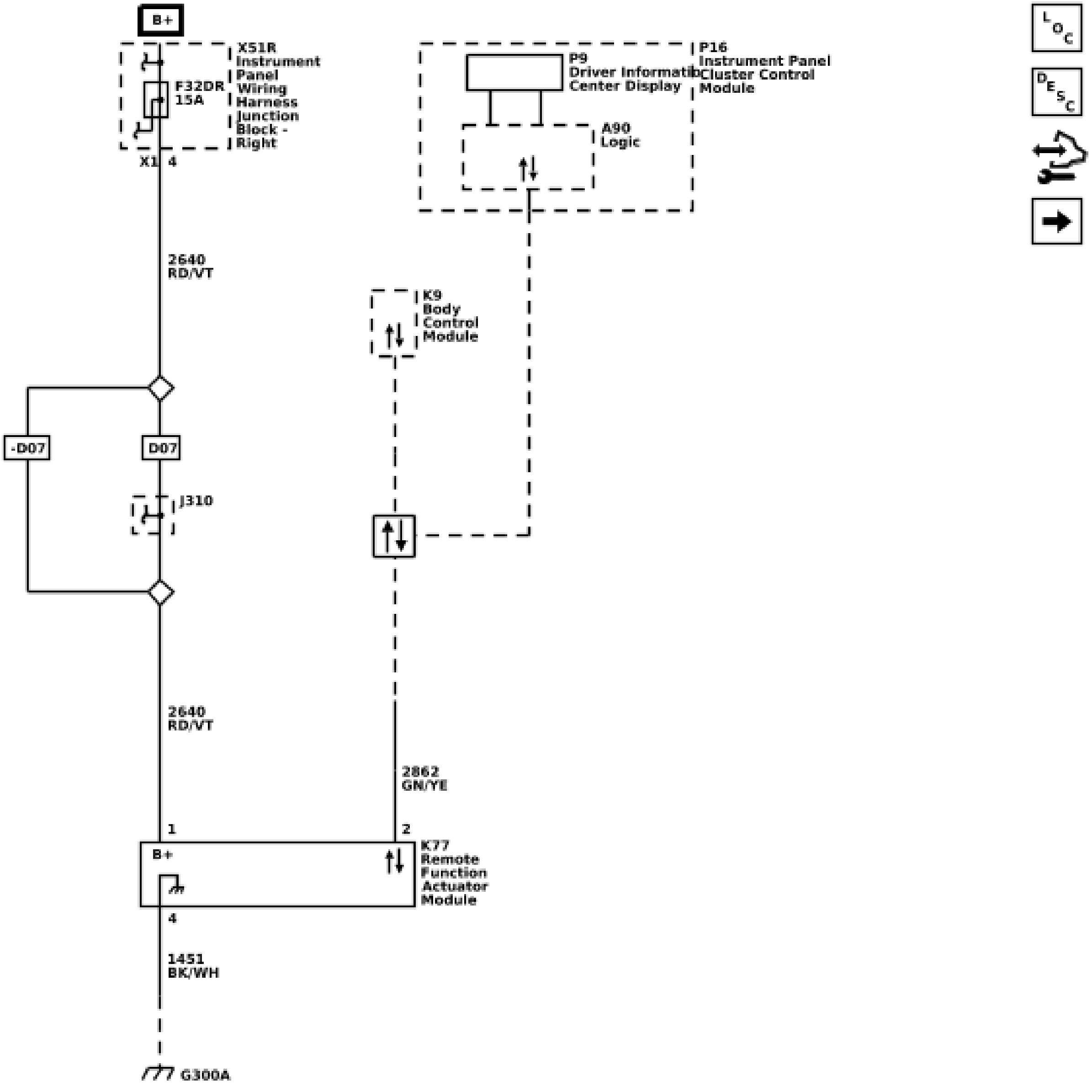
- Disable by Switch – The parking assist system has been disabled through the parking assist switch.
- Disabled by Customization Menu – The parking assist system has been disabled through the vehicle personalization menu. Note: the Parking Assist system customization menu may not be available on all vehicles based on vehicle option content.
- Vehicle Speed Too High – The vehicle is travelling too fast in reverse at speeds of greater than 8 km/h (5 mph).
- Vehicle Speed Invalid – The vehicle is unable to determine the vehicle speed.
- Steering Angle Signal Invalid – The vehicle is unable to determine the steering angle.
- Front Attached Object Detected – An object has been determined to be attached to the front of the vehicle. Common items such as brush guards, light bars, and license plates may cause this concern. Additionally, damage to the front of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).
- Rear Attached Object Detected – An object has been determined to be attached to the rear of the vehicle. Common items such as a hitch receiver, trailer, or a bicycle rack may cause this concern. Additionally, damage to the rear of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).

- Front And Rear Attached Object Detected – An object has been determined to be attached to the front and rear of vehicle.
- Parking Assist Alarm Sensor Blocked – One of the following conditions may be present:
    - One or more of the sensors may be blocked by snow, mud, ice, or other debris. This might happen after going through a car wash in cold weather.
    - Silicone insulator surrounding sensor maybe missing, cut, or twisted.
    - Improperly installed sensor, sensor maybe be crooked due to a tight wire harness.
    - One or more of the sensors may be scratched or the paint maybe chipped.
    - Excessive paint thickness on a sensor may cause an excessive sensor ring time. When replacing or refinishing a sensor, do not apply an excessive amount of paint or clear coat.
- Haptic Seat Malfunction – A fault exists with the safety alert seat. Check for DTCs.
- Chime Malfunction – A fault exists with the vehicle chime. Check for DTCs.
- Parking Assist Switch Malfunction – A fault exists with the parking assist switch. Check for DTCs.
- Invalid Gear – The vehicle has determine a plausibility fault exists with the transmission range.
- Incorrect Power Mode – The vehicle is in an incorrect power mode for parking assist operation.

Remote Functions

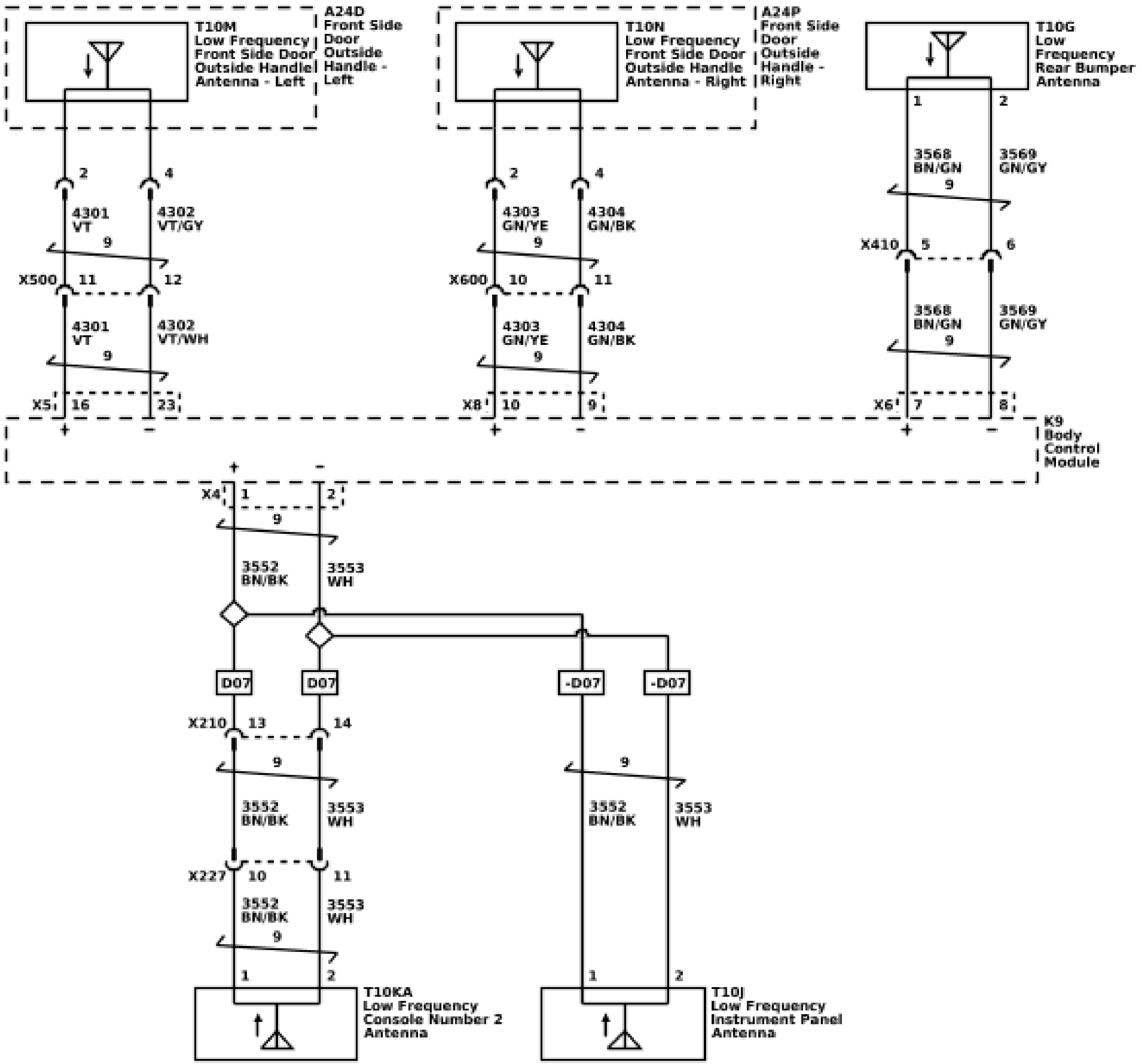
Schematic and Routing Diagrams

Remote Function Schematics (Keyless Entry - Active)


B+
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
F32DR
15A
X1 4
2640
RD/VT
-D07
D07
J310
2640
RD/VT
1
B+
4
1451
BK/WH
G300A
P9
Driver Informatio
Center Display
P16
Instrument Panel
Cluster Control
Module
A90
Logic
K9
Body
Control
Module
2862
GN/YE
2
K77
Remote
Function
Actuator
Module
L O C
D E S C

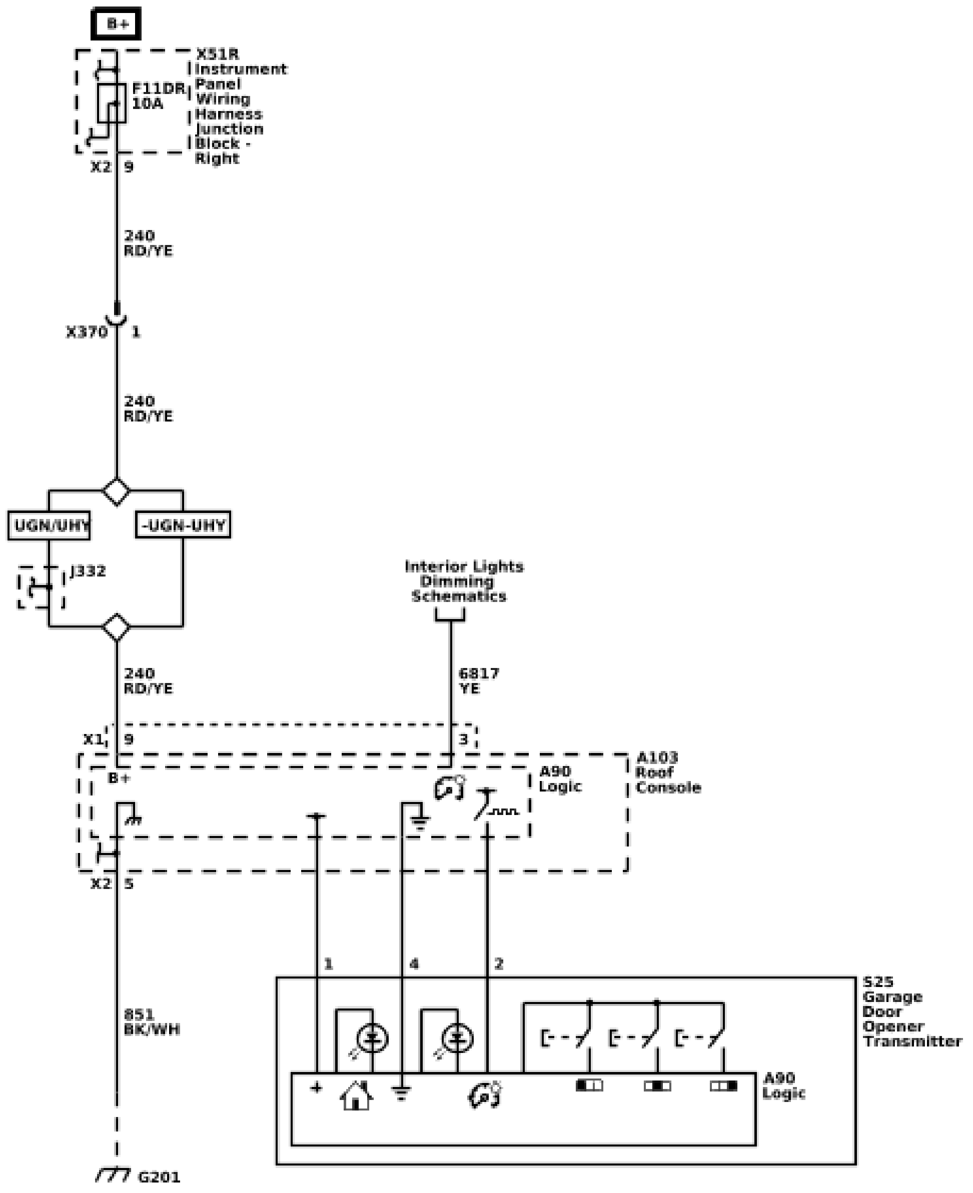
6847138

Remote Function Schematics (Keyless Entry - Passive and Keyless Start)


T10M
Low Frequency
Front Side Door
Outside Handle
Antenna - Left
A24D
Front Side
Door
Outside
Handle -
Left
T10N
Low Frequency
Front Side Door
Outside Handle
Antenna - Right
A24P
Front Side
Door
Outside
Handle -
Right
T10G
Low
Frequency
Rear Bumper
Antenna
2
4
4301
VT
4302
VT/GY
9
X500
11
12
4301
VT
4302
VT/WH
X5
16
23
4303
GN/YE
4304
GN/BK
X600
10
11
X8
10
9
1
2
3568
BN/GN
3569
GN/GY
X410
5
6
X6
7
8
+
-
K9
Body
Control
Module
X4
1
2
3552
BN/BK
3553
WH
D07
D07
-D07
-D07
X210
13
14
X227
10
11
T10KA
Low Frequency
Console Number 2
Antenna
T10J
Low Frequency
Instrument Panel
Antenna

6847139

Remote Function Schematics (Garage Door Opener (UG1))


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F11DR 10A
X2 9
240 RD/YE
X370 1
240 RD/YE
UGN/UHY
-UGN-UHY
J332
240 RD/YE
Interior Lights Dimming Schematics
6817 YE
X1 9
3
B+
A90 Logic
A103 Roof Console
X2 5
851 BK/WH
G201
1
4
2
S25 Garage Door Opener Transmitter
A90 Logic
+

6847140

Description and Operation

Front Side Door Access Control Transmitter Description and Operation

Front Side Door Access Control Transmitter Description and Operation

The Front Side Door Access Control Transmitter is an accessory offered to be used as a vehicle entry device. Similar to the Keyless Entry Transmitter, the Front Side Door Access Control Transmitter will send a radio frequency signal to the Remote Function Actuator. Next, the Remote Function Actuator sends a signal to the Body Control Module via LIN communication. The BCM will interpret this signal and either lock or unlock the vehicle as a result. A low transmitter battery or radio frequency interference from aftermarket devices, such as 2-way radios, power inverters, computers, etc., may cause a system malfunction. High radio frequency traffic areas, such as gas stations that use pay-at-the-pump radio frequency transponders, may also cause interference that could lead to a malfunction.

Like the Keyless Entry Transmitter, the Front Side Door Access Control Transmitter is programmed to the vehicle's Body Control Module. This means the Front Side Door Access Control Transmitter will populate one of the 8 programmable spaces in the BCM for Keyless Entry Transmitters. The Front Side Door Access Control Transmitter will need to be reprogrammed in the event of BCM replacement. This can only be achieved with the Master Code. If the Master Code is not retrievable, a new Front Side Door Access Control Transmitter with accompanying wallet card will need to be programmed to the new BCM.

The Front Side Door Access Control Transmitter has 5 buttons depicting numbers from 0 to 9. Each button represents a character of a 5 digit code that the vehicle owner may program, which will be referred to as a personal code. The user has 3 attempts to input the correct access code before the Front Side Door Access Control Transmitter enters lockout mode for 1 minute. This will occur up to 2 more times if the incorrect access code is entered repeatedly. After that, any additional 3 attempts will cause the Front Side Door Access Control Transmitter to enter lockout mode for 23 minutes. There is an LED light at the top of the Front Side Door Access Control Transmitter that provides feedback to the user. Each Front Side Door Access Control Transmitter is sold with a wallet card that contains a master code that may be used for keyless entry as well as programming a personal code. The master code will always allow operation of the Front Side Door Access Control Transmitter and may be used to program a new personal code. Entering the 5 digit access code will unlock the driver door. Pressing the 3/4 key within 5 seconds of entering the 5 digit access code with unlock all doors. Pressing the 7/8 and 9/0 button will lock all doors. To change the personal code, refer to the wallet card included with the Front Side Door Access Control Transmitter.

The Front Side Door Access Control Transmitter contains a button cell battery that is not serviceable. Once the battery exceeds the expected lifetime, the Front Side Door Access Control Transmitter will need to be replaced. A new Front Side Door Access Control Transmitter will come with new wallet card.

Garage Door Opener Description and Operation

The garage door opener is fixed and rolling code capable. Rolling code is a system that allows the code that the customers receiver receives from the garage door opener to change every time the garage door opener is used within operating range of the receiver. Rolling code programming requires the customer to push a learn/program button on the garage door opener receiver at their home. This button is usually located on the receiver unit under a cover (light cover) on one end of the unit. The customer must follow the garage door opener manufacturers instructions to program/learn the receiver to accept the Universal Home Remote System as an authorized opener for their unit . When the receiver and the garage door opener are initially programmed together, a code is established and a new code is created for every new transmission. The software in the receiver recognizes the garage door opener and accepts the new code.

The garage door opener is compatible with most, but not all types and brands of transmitters.

The garage door opener is a transmitter operating between 288–434 MHz. The power and range of the transmitter is limited to comply with laws governing the generation of radio frequency interference. The transmitter is programmed by the user to accept the signal generated by the user's transmitters.

The garage door opener has 3 buttons that may be programmed for individual transmitter/receiver combinations to control up to 3 garage door openers, security gates, lighting systems, etc. Each button represents a transmitter code section of the transmitter, which operates separately from any other button, and may be considered a separate transmitter. Operation consists of simply pressing a button to activate the corresponding transmitter.

The garage door opener does not need any programming after it is replaced. However, for the opener function it must be programmed to the customer’s garage door or other devices such as a gate. The programming can only be performed at the device being programmed, it cannot be programmed at a service facility. Instructions for programming are listed in the Garage Door Opener Malfunction document in a Diagnostic Aid.

Note: Do not use the garage door opener (GDO) with any garage door opener that does not have the stop and reverse safety feature. This includes any garage door opener model manufactured before April 1, 1982.

Keyless Entry System Description and Operation

Keyless Entry System Description and Operation – Active

The keyless entry system is a vehicle entry device. The keyless entry system is used in conjunction with the door locks to unlock the vehicle. Keyless entry will lock/ unlock a door or open the rear compartment lid when a corresponding button on the keyless entry transmitter is pressed. This is accomplished by the transmitter sending a radio frequency to the remote control door lock receiver that has a direct link to the body control module (BCM). The BCM interprets the signal and activates the requested function or requests the appropriate ECU to activate the function via a serial data message. A low transmitter battery or radio frequency interference from aftermarket devices, such as 2-way radios, power inverters, computers, etc., may cause a system malfunction. High radio frequency traffic areas, such as gas stations that use pay-at-the-pump radio frequency transponders, may also cause interference that could lead to a malfunction. Keyless entry allows you to operate the following features:

- Door lock/unlock
- Rear compartment lid release
- Illuminated entry lamps
- Panic alarm/vehicle locator
- Remote vehicle start
- Passive keyless entry able/disable
- Automatic window express down, if equipped
- Automatic window express up, if equipped
- Automatic power mirror folding/unfolding, if equipped

Keyless Entry System Description and Operation – Passive

Passive keyless entry allows entry to a locked vehicle without pressing any buttons on the keyless entry transmitter. The passive entry system uses low frequency antennas in several different areas on the vehicle to determine the location of the transmitter. When passively opening a locked door or the rear compartment, you must have a programmed transmitter with you in your pocket, purse, or briefcase within a one meter range.

When an exterior door handle button is pressed or the rear compartment touch pad is pressed, the body control module activates the low frequency antenna which sends out a challenge to the keyless entry transmitter. Because of the low frequency, communication range is limited. The antenna will emit the challenge in a one meter range. The transmitter must be within this range to receive the challenge. The transmitter receives this challenge and emits it's response as an RF message, which is received by the remote control door lock receiver. If the response is correct, entry into the vehicle will be allowed.

As a customer convenience feature, the keyless entry system will notify the driver if the transmitter has been left in the vehicle after exiting by chirping the vehicle horn three times and displaying a message on the DIC. This may be turned off using vehicle personalization. Also, if the transmitter is left in the vehicle after the central door lock switch has been used to lock the vehicle, the driver door will remain unlocked after exiting the vehicle. This is intended to prevent locking the transmitter in the vehicle and being unable to access it.

Keyless Entry System Description and Operation – Keyless Start

The keyless start portion of the keyless entry system allows vehicle starting, having only the transmitter as your key. The keyless start system uses low frequency antennas in three different locations on the vehicle to determine the location of the transmitter. Multiple antenna are used to ensure complete coverage of the vehicle interior and rear compartment. When using the keyless start system, a programmed transmitter must be in the vehicle's interior, in the driver's pocket, purse, or briefcase.

When the ignition mode switch is pressed, the low frequency antennas emit a challenge to the keyless entry transmitter. The transmitter receives this challenge and emits it's response as an RF message, which is received by the remote control door lock receiver. If the response is correct, vehicle starting will be allowed. If RF communication is interrupted, a “No Remote Detected” message will be displayed on the DIC. In these cases, the transmitter can be placed in the transmitter pocket located in the center console. The immobilizer antenna coil is located directly beneath the transmitter pocket. Placing the transmitter in the pocket will create a low powered coupling between the transmitter and immobilizer antenna, allowing communications to occur and enabling vehicle starting. If the key has been idle the DIC may display “Key In Sleep Mode, Move Key, Then Start”. In this case move the vehicle key to start the vehicle.

The keyless entry system has the following components:

- Keyless entry integrated key/transmitter
- Driver and passenger side antennas
- Driver and passenger door handle switches (part of the door handle assembly)
- Rear fascia antenna
- Immobilizer antenna coil (front console antenna function)
- Rear console antenna
- Rear Compartment Antenna (If Equipped)
- Body control module (BCM)
- Remote control door lock receiver

Keyless Entry Transmitters

By operating any of the exterior door handle buttons or the start/stop switch, a nearby transmitter is challenged by a keyless entry antenna. The transmitter will send an RF response to the remote control door lock receiver, which communicates with the BCM. The BCM will interpret this communication and either allow or deny vehicle entry or starting.

Side Antennas

The keyless entry side antennas are used to transmit low frequency communications to the keyless entry transmitters.

The keyless entry side antennas are located in the driver and passenger body sides. The antennas are controlled by the body control module. When the exterior door handle button is pressed, the respective antenna will send out a challenge to the keyless entry transmitter, which begins the passive entry communications.

Rear Fascia Antenna

The rear fascia antenna is used to transmit low frequency communication to the keyless entry transmitters for entry to rear compartment.

The rear fascia antenna is located behind the rear fascia. The antenna is controlled by the body control module. When the rear compartment touch pad is pressed, the antenna sends out a challenge to the keyless entry transmitter, which begins the passive entry communications.

Immobilizer Coil Antenna

This antenna is located in the front of the center console.

The Immobilizer antenna coil is used for vehicle starting functions and for learning vehicle keys. When the ignition mode switch is pressed, the antenna is energized or "pinged". This emits a low frequency challenge signal that is received by the keyless entry transmitter. The transmitter will then reply to this challenge with a response and, if correct, vehicle starting will occur. If the transmitter battery is dead, weak, or the RF signal is being interrupted, the transmitter may be placed in the pocket to create a low powered coupling between the transmitter and immobilizer coil antenna, allowing communications to occur and enabling vehicle starting.

Rear Console Antenna

This antenna is located in the rear of the center console.

The rear console antenna is used for vehicle starting functions. When the ignition mode switch is pressed, the antenna is energized or "pinged". This emits a low frequency challenge signal that is received by the keyless entry transmitter. The transmitter will then reply to this challenge with a response and, if correct, vehicle starting will occur.

Rear Compartment Antenna (If Equipped)

This antenna is located near the center of the rear compartment area.

The rear compartment antenna is used for vehicle starting functions. When the ignition mode switch is pressed, the antenna is energized or "pinged". This emits a low frequency challenge signal that is received by the keyless entry transmitter. The transmitter will then reply to this challenge with a response and, if correct, vehicle starting will occur.

OnStar® Remote Link

A vehicle operator may have the ability to perform some of the keyless entry functions using applications on personal devices such as smart phones. Refer to *OnStar Description and Operation 5-21*.

Body Control Module (BCM)

The BCM is a multi-function module that performs the following functions:

- Receive and authenticate active transmitter and keyless start/entry signals from the remote control door lock receiver
- Determines the function requested by the transmitter signal
- Performs the function requested by the transmitter signal
- Activating vehicle antennas for passive keyless entry functions
- Activating vehicle antennas for keyless start functions
- Backup control for the ECM accessory wakeup and the run/crank relay
- If equipped, controls the electronic steering column lock
- Receiver of the exterior door handle switch inputs and door open switch (not the door ajar switch)
- Ignition mode switch monitoring

Unlock Driver Door Only – Active

Momentarily press the transmitter UNLOCK button in order to perform the following functions:

- Unlock only the driver door or all doors, if enabled through personalization
- Illuminate the interior lamps for a determined length of time, or until the ignition is turned ON
- Flash the exterior lights, if enabled through personalization
- Disarm the Content Theft Deterrent (CTD) system
- Deactivate the CTD system when in the alarm mode

Unlock All Doors – Second Operation – Active

Momentarily press the transmitter UNLOCK button a second time, within 5 seconds of the first press, to perform the following function:

Unlock the remaining doors

Unlock Driver Door Only – Passive

If enabled through personalization, approach the driver door with a valid keyless entry transmitter and press the door handle button to perform the following functions:

- Unlock and open only the driver door
- Disarm the CTD system, if equipped
- Deactivate the CTD system when in the alarm mode

Unlock All Doors – Passive

Approach any non driver door (front or rear) or, if enabled through personalization, the driver door with a valid keyless entry transmitter and press the door handle button to perform the following functions:

- Unlock all vehicle doors
- Disarm the CTD system, if equipped
- Deactivate the CTD system when in the alarm mode

Lock All Doors – Active

Press the transmitter LOCK button to perform the following functions:

- Lock all vehicle doors
- Immediately turn off the interior lamps
- Flash the exterior lights, if enabled through personalization
- Chirp the horn, if enabled through personalization
- Arm the CTD system

Lock All Doors – Passive

Exit the vehicle (with ignition off) with the keyless entry transmitter to automatically perform the following functions, if equipped.

- Lock all vehicle doors after a delay
- Flash the exterior lights, if enabled through personalization
- Chirp horn, if enabled through personalization
- Arm the CTD system

When all doors are closed, they can also be locked from the exterior by operating a front door handle button or touch pad while having a valid transmitter within range. Vehicles equipped with a rear door button can also lock all doors from the rear doors.

Rear Compartment Lid Release – Active (If Equipped)

If the vehicle transaxle is in PARK or NEUTRAL, a double press of the transmitter rear compartment release button will open the rear compartment lid.

Rear Compartment Lid Release – Passive (If Equipped)

Approach the rear of a locked vehicle with a valid keyless entry transmitter. Press the rear compartment lid release touch pad. The rear compartment lid will open.

Tailgate Release – Passive (If Equipped)

Approach the rear of a locked vehicle with a valid keyless entry transmitter. Press the tailgate release touch pad. The rear tailgate will open.

Vehicle Locator/Panic Alarm/Active

A single press of the panic button performs the following functions. Some functions may be dependent on personalization settings:

- Pulses the horn three times
- Flashes the exterior lamps three times

A press and hold of the panic button performs the following functions:

- Pulses the horn and flashes the parking lamps for 30 second or until the following conditions occur:
  - The panic button is pressed
  - The ignition switch is turned to the RUN position with a valid key

Remote Vehicle Start/Active (If Equipped)

The remote vehicle start function allows engine starting while not in the vehicle. It also allows the vehicle HVAC system and other vehicle systems to enable, providing a comfortable vehicle upon entry. The remote vehicle start sequence begins by pressing and releasing the remote vehicle start button on the keyless entry transmitter twice. The turn signal lamps will illuminate to indicate the vehicle has received the remote start request. Each time a remote vehicle start is performed, the vehicle doors are locked, however they may then be unlocked/locked with the transmitter at any time. Once activated, the engine is allowed to run for 15 minutes. The remote start operation can be repeated as many times as desired up to a total run time of 30 minutes. The remote vehicle start event may be cancelled at any time by pressing only the remote vehicle start button on the transmitter or by entering the vehicle and turning ON the hazard lamps.

Hood Ajar Switch/Active

The hood switch provides status of the hood to the BCM for remote vehicle start purposes. The switch is integrated into the hood latch assembly. The hood ajar switch provides 2 separate inputs to the BCM. These separate inputs allow the BCM to actively monitor for a hood ajar switch fault.

Remote Vehicle Start Circuit Description/Active

The BCM receives a signal from the keyless entry transmitter indicating a remote vehicle start request. The BCM and ECM use the following inputs to verify the system is ready to enable a remote vehicle start event:

- Vehicle is not in valet mode
- Vehicle is in park
- Keyless entry transmitter is not in the vehicle
- The hood is closed
- The hazard switch is OFF
- Vehicle power mode is OFF
- The malfunction indicator lamp (MIL) is not commanded ON by the ECM
- Remote start timer does not equal 0 (the 30 minute maximum time has not been used)

When the BCM determines all conditions meet those required for a remote vehicle start event, a message is sent via serial data to the ECM. While the ECM is in remote vehicle start mode it will cut fuel to the engine if any of the following monitored conditions occur:

- Vehicle speed is greater than 0
- Transmission is not in P
- Excessive engine coolant temperature
- Low oil pressure
- Engine crank time is greater than 30 seconds
- Excessive engine speed
- Accelerator pedal position too high
- Immobilizer system indicates a theft attempt

If any conditions prevent a remote start or cause a remote start operation to be cancelled there is a record of the cause in the scan tool.

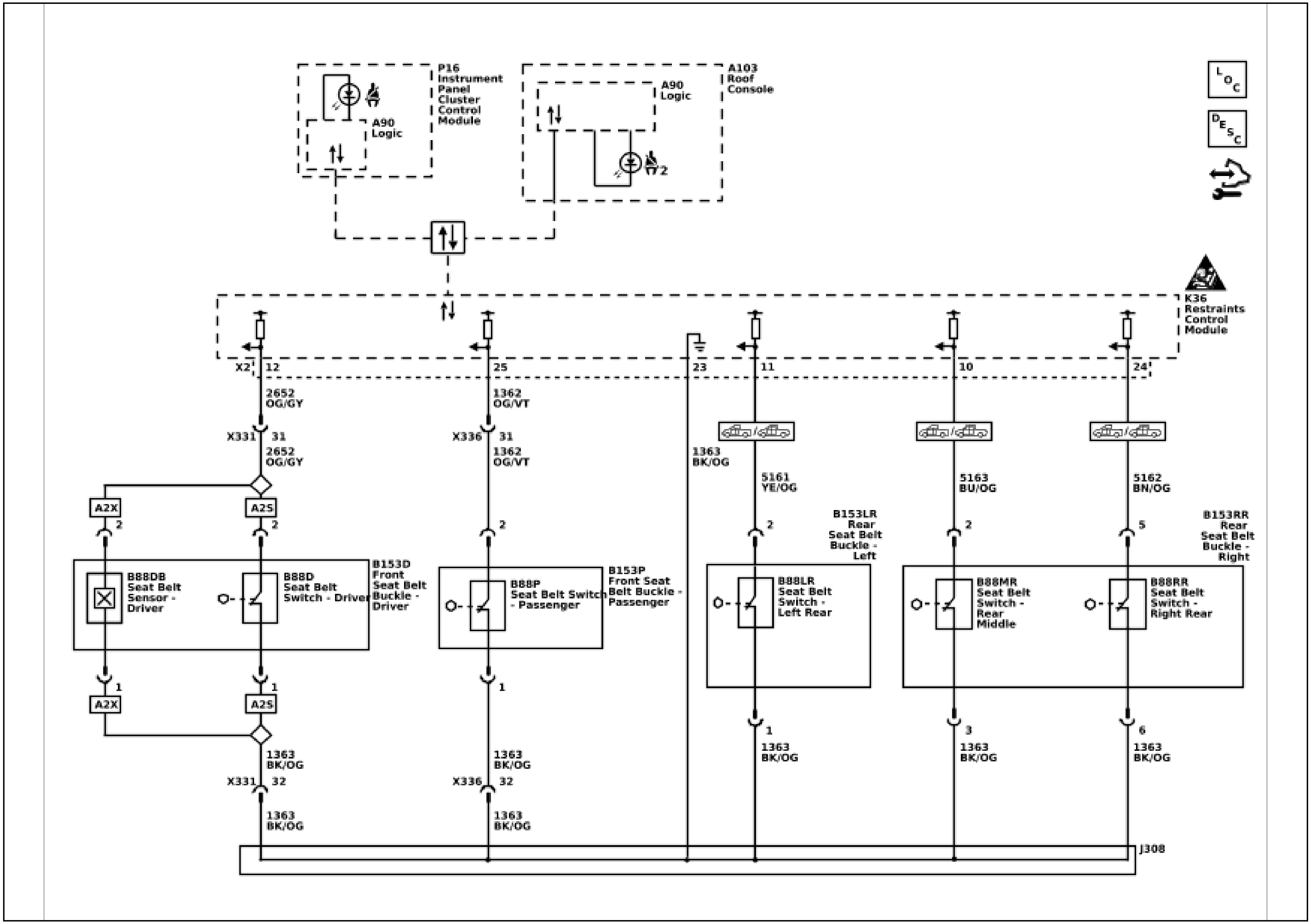
Keyless Entry Personalization

Vehicle lock/unlock functions and remote vehicle start settings may be personalized for the vehicle. This includes the capability of turning the passive entry system completely off. For functional descriptions and programming instructions, refer to the vehicle owners manual.

Seat Belts

Schematic and Routing Diagrams

Seat Belt Schematics (Seat Belt Switches and Indicator)


P16 Instrument Panel Cluster Control Module
A90 Logic
A103 Roof Console
A90 Logic
2
L O C
D E S C
K36 Restraints Control Module
X2
12
25
23
11
10
24
2652 OG/GY
X331
31
2652 OG/GY
1362 OG/VT
X336
31
1362 OG/VT
1363 BK/OG
5161 YE/OG
5163 BU/OG
5162 BN/OG
A2X
A2S
2
2
2
2
2
5
B153LR Rear Seat Belt Buckle - Left
B153RR Rear Seat Belt Buckle - Right
B88DB Seat Belt Sensor - Driver
B88D Seat Belt Switch - Driver
B153D Front Seat Belt Buckle - Driver
B88P Seat Belt Switch - Passenger
B153P Front Seat Belt Buckle - Passenger
B88LR Seat Belt Switch - Left Rear
B88MR Seat Belt Switch - Rear Middle
B88RR Seat Belt Switch - Right Rear
1
1
1
1
3
6
A2X
A2S
1363 BK/OG
X331
32
1363 BK/OG
1363 BK/OG
X336
32
1363 BK/OG
1363 BK/OG
1363 BK/OG
1363 BK/OG
J308

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Description and Operation

Seat Belt System Description and Operation

Restraint System

The primary means of occupant restraint are the front and rear seat belts. Seat belts help to keep the occupants inside the passenger compartment and gradually reduce the impact forces during the following events:

- Frontal impact
- Rear impact
- Side impact
- Rollover event

All seat belt retractors have emergency locks. The retractors remain unlocked during normal operation and under normal driving conditions to allow free movement of the upper body of each occupant. The seat belt webbing is locked into position by a pendulum, which causes a locking bar to engage a cog on the spool of the retractor mechanism, when the following conditions occur:

- Rapid extraction of the seat belt webbing from the retractor
- Abrupt change in vehicle velocity
- Operation of the vehicle on a steep slope

The seat belts have an automatic locking (cinch) feature. The cinch feature is activated when the seat belt webbing is completely extended from the retractor. It prevents the webbing from extending beyond the position at which it can retract. Use of the cinch feature is recommended for securing a child seat. The cinch feature may be cancelled by allowing the webbing to wind back completely into the retractor. After the cinch feature is cancelled, the webbing is unlocked. This vehicle is also equipped with a Supplemental Inflatable Restraint (SIR) system. Refer to *Supplemental Inflatable Restraint System Description and Operation 10-66*.

Motorized Seat Belts

A motorized seat belt is a seat belt with a motor coupled to the shoulder belt retractor. The motor performs a reversible, pretightening action (retraction) to reduce the slack in the seat belt. The motorized seat belt provides the driver and passenger a sense of safety and, in the case of severe braking or a crash, more quickly couples the occupant to the vehicle, enhancing the safety to the occupant.

Motorized seat belts monitor vehicle information to determine when to perform each of the following retractions

- Full retraction for such situations but not limited to: panic braking and or skidding
- Dynamic support for lateral and longitudinal dynamics
- Slack removal when the vehicle speed above enable speed

Preconditions for motorized seat belt retractions

- Seat belt buckle is latched
- Vehicle speed greater than or equal to 25 kph (16 mph)
- All messages on serial data are received as valid

Triggers that may cause motorized seat belt retractions

- Emergency Braking
- Sudden Emergency / Panic Braking
- High Vehicle Deceleration Detection
- Ice Braking Detection
- Oversteer and Understeer

Motorized seat belt inputs

- Vehicle Power Mode
- Transmission Gear
- Wheel Speeds
- Vehicle Acceleration
- Accelerator Pedal Position
- Steering Wheel Angle and Gradient
- Yaw Rate and Lat/Long Acceleration
- Brake Pedal Position, Gradient, Pressure, Initial Travel
- Vehicle Stability

Motorized seat belt output signals

- Driver information center message – motorized seat belt Failed “Service Automatic Seatbelt Tightening”
- Driver information center message – motorized seat belt Unavailable “Automatic Seatbelt Tightening Unavailable”

Motorized seat belt retractions are inhibited when seat belt unbuckled.

Driver and passenger motorized seat belts operate independently.

Front Seat Belt System

The front seat belt system includes the driver and passenger seat belts, seat belt reminder indicators, retractors, and anchor pretensioners. They are all part of the SIR system, refer to *Supplemental Inflatable Restraint System Description and Operation 10-66* . The driver seat belt reminder indicator is controlled by a switch in the driver seat belt buckle. The passenger seat belt reminder indicator is controlled by a switch in the passenger seat belt buckle and the Restraint Occupant Classification System Module. For more on the Restraint Occupant Classification System Module, refer to *Supplemental Inflatable Restraint System Description and Operation 10-66*. When the vehicle is on, the seat belt reminder indicator and tone alarm will operate in the following cases:

- The driver seat belt is unbuckled.
- The passenger seat belt is unbuckled while the seat is occupied.

Rear Seat Belt System

The rear seat belt system includes the following components:

- The rear seat belt retractor located at the wheelhouse panel and attached to the floor panel.
- The rear seat belt buckles and the center seat belt buckle attached to the seat.

Child Seat Restraint System

Warning: A child in a rear-facing child restraint can be seriously injured if the front passenger air bag inflates, because the back of a rear-facing child restraint would be very close to the inflating air bag. NEVER use a rear-facing child restraint in this vehicle. If a forward-facing child restraint is suitable for your child, ALWAYS move the front passenger seat as far back as it will go and then install the child restraint. Be sure the child restraint position does not conflict with any additional requirements provided by the manufacturer. For more information, refer to the vehicle owner's manual and the instructions that came with the child restraint.

All vehicles are equipped with a dual-mode type retractor with emergency and automatic locking features. The automatic locking feature is for the restraint of a child seat. The child seat can be secured by pulling the seat belt all the way out to lock it, then tightening the seat belt around the child seat. If the child seat has a top strap, the child seat should be anchored. This applies to the seats designed with the top strap provision and for the vehicles sold in Canada. To ensure the correct top strap angle, the child seat is only to be used at the seating position for which the top strap anchor is installed. The child seat should be installed and secured according to the manufacturer's directions.

Seat Belt Reminder Indicators

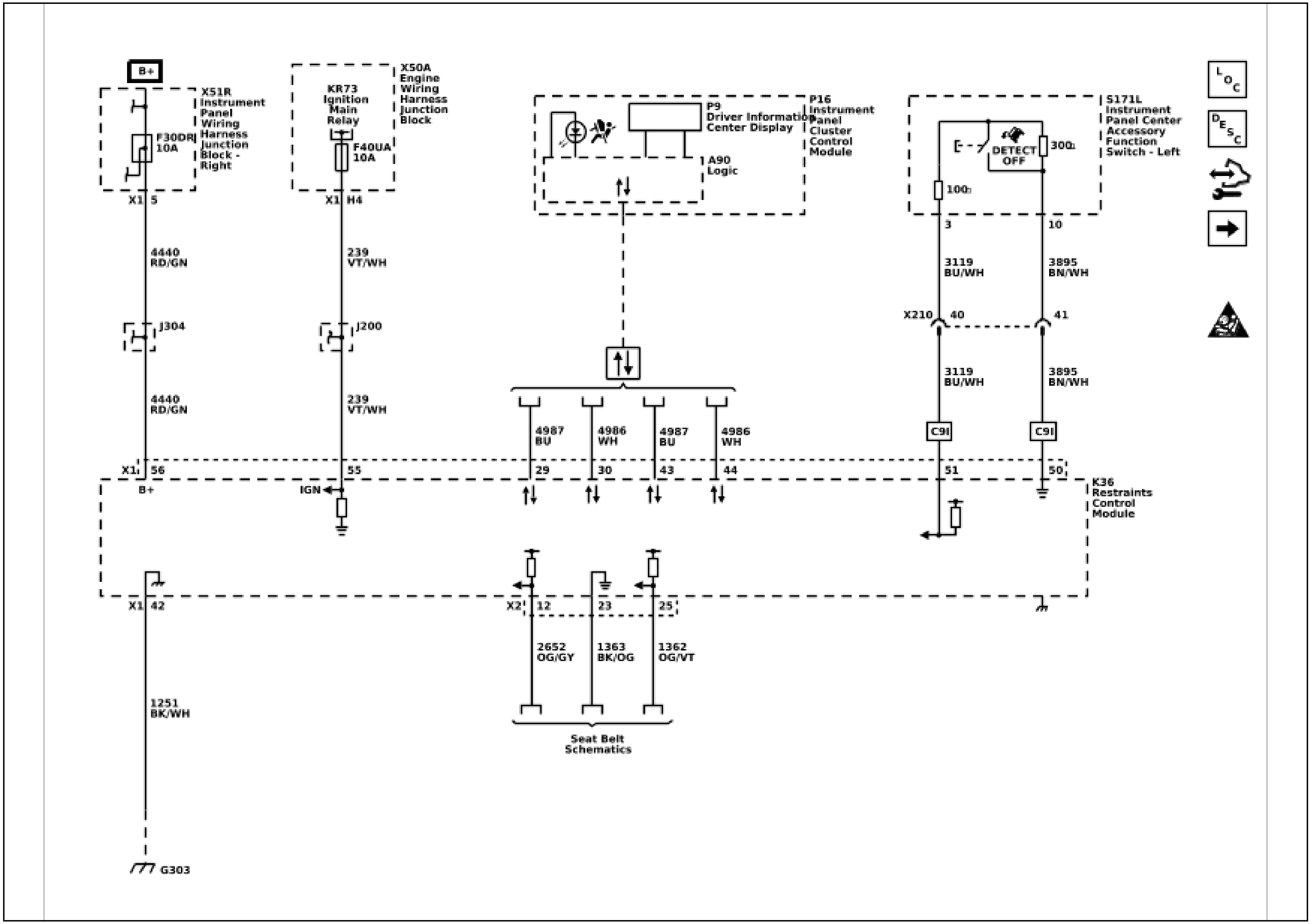
There is a driver seat belt reminder indicator located on the instrument cluster and a passenger seat belt reminder located on the overhead console. There also may have a rear seat belt reminder located in the instrument cluster. The state of the seat belt reminder indicators is determined by the Restraints Control Module. The seat belt reminder indicator illuminates under the following conditions:

- The Restraints Control Module sends the status of the driver seat belt to the instrument cluster via serial data. The passenger seat belt status is sent to the driver information center via serial data. The rear seat belt status is sent to the driver information center via serial data. If any of the seat belts are unfastened, the instrument cluster will send a message requesting a chime sound to be turned ON after a system check.

Supplemental Restraints

Schematic and Routing Diagrams

SIR Schematics (Module Power, Ground, Serial Data, Controls, Indicators, and Subsystem References)


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F30DR 10A
X1 5
4440 RD/GN
J304
4440 RD/GN
X1 56
B+
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F40UA 10A
X1 H4
239 VT/WH
J200
239 VT/WH
55
IGN
P16 Instrument Panel Cluster Control Module
P9 Driver Information Center Display
A90 Logic
4987 BU
4986 WH
4987 BU
4986 WH
29
30
43
44
S171L Instrument Panel Center Accessory Function Switch - Left
DETECT OFF
100Ω
300Ω
3
10
3119 BU/WH
3895 BN/WH
X210 40
41
3119 BU/WH
3895 BN/WH
C9I
C9I
51
50
K36 Restraints Control Module
X1 42
1251 BK/WH
G303
X2 12
23
25
2652 OG/GY
1363 BK/OG
1362 OG/VT
Seat Belt Schematics
L O C
D E S C
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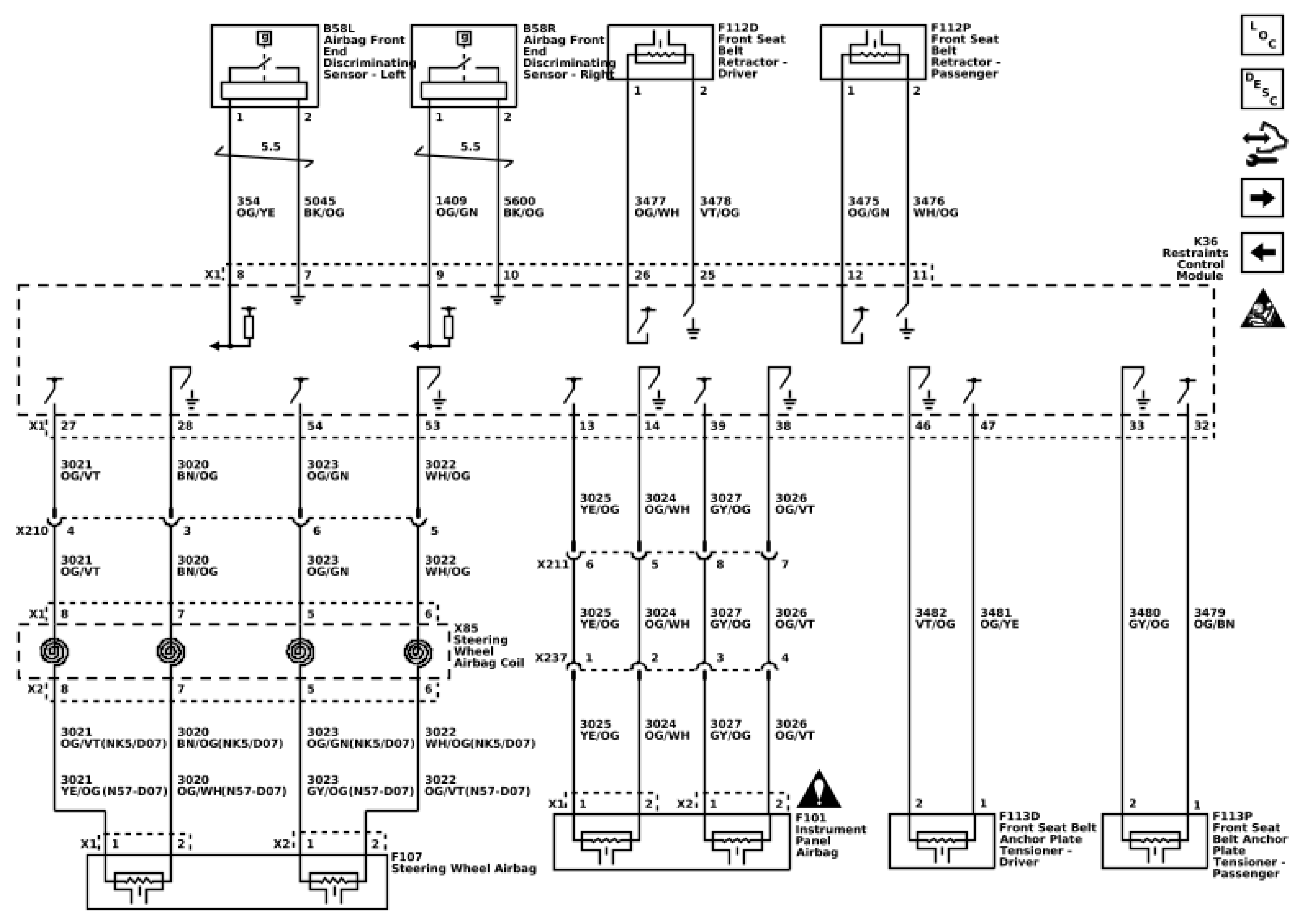
SIR Schematics (Frontal Impact Sensing and Deployment)


B58L Airbag Front End Discriminating Sensor - Left
B58R Airbag Front End Discriminating Sensor - Right
F112D Front Seat Belt Retractor - Driver
F112P Front Seat Belt Retractor - Passenger
K36 Restraints Control Module
5.5
5.5
354 OG/YE
5045 BK/OG
1409 OG/GN
5600 BK/OG
3477 OG/WH
3478 VT/OG
3475 OG/GN
3476 WH/OG
X1 8 7 9 10 26 25 12 11
X1 27 28 54 53 13 14 39 38 46 47 33 32
3021 OG/VT
3020 BN/OG
3023 OG/GN
3022 WH/OG
X210 4 3 6 5
3025 YE/OG
3024 OG/WH
3027 GY/OG
3026 OG/VT
X211 6 5 8 7
X237 1 2 3 4
3482 VT/OG
3481 OG/YE
3480 GY/OG
3479 OG/BN
X1 8 7 5 6
X85 Steering Wheel Airbag Coil
X2 8 7 5 6
3021 OG/VT(NK5/D07)
3020 BN/OG(NK5/D07)
3023 OG/GN(NK5/D07)
3022 WH/OG(NK5/D07)
3021 YE/OG (N57-D07)
3020 OG/WH(N57-D07)
3023 GY/OG(N57-D07)
3022 OG/VT(N57-D07)
X1 1 2
X2 1 2
F107 Steering Wheel Airbag
F101 Instrument Panel Airbag
F113D Front Seat Belt Anchor Plate Tensioner - Driver
F113P Front Seat Belt Anchor Plate Tensioner - Passenger
LOC
DESC

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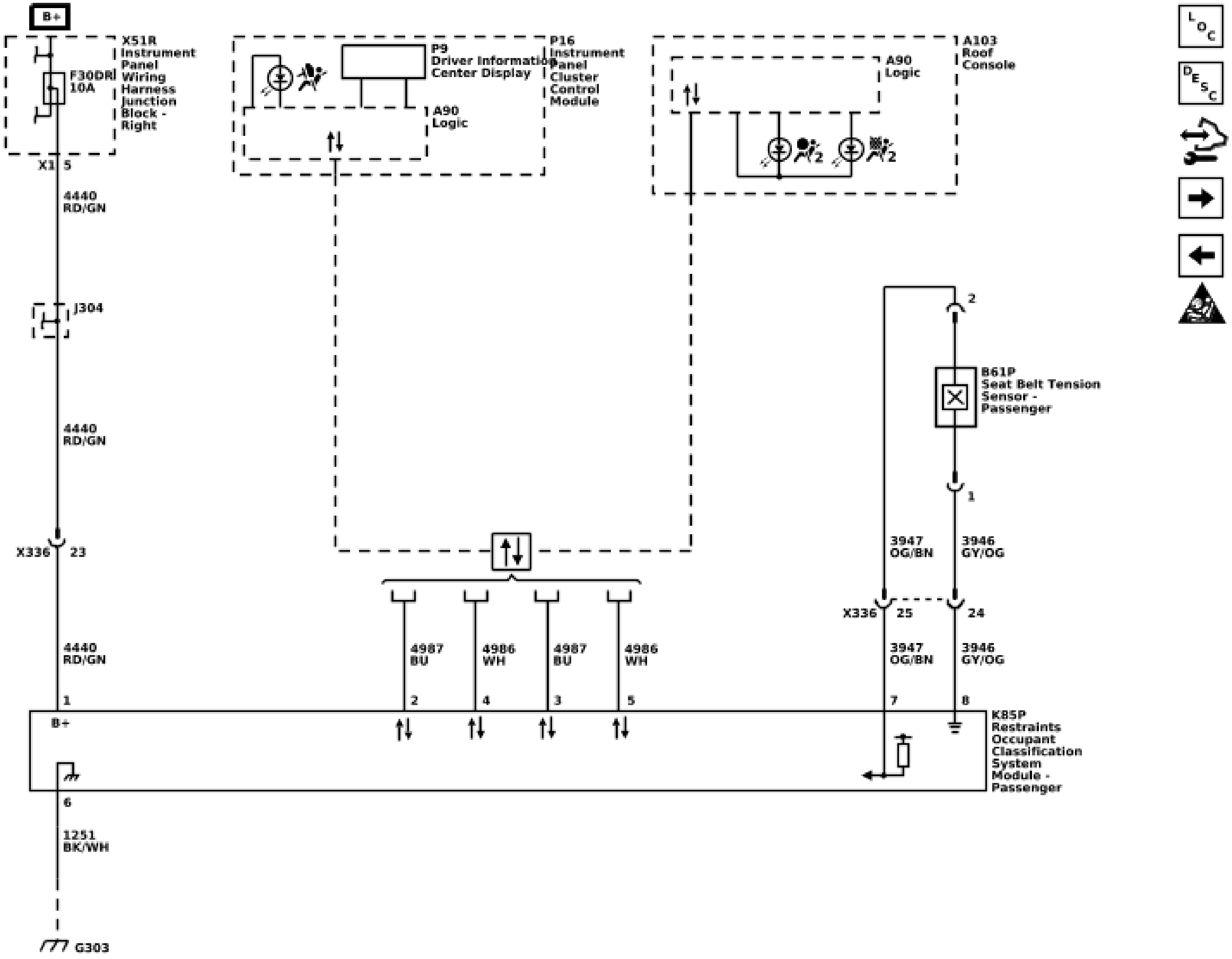
SIR Schematics (Passenger Presence Module)


B+
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
F30DR
10A
X1 5
4440
RD/GN
J304
4440
RD/GN
X336 23
4440
RD/GN
1
B+
6
1251
BK/WH
G303
P9
Driver Information
Center Display
A90
Logic
P16
Instrument
Panel
Cluster
Control
Module
A103
Roof
Console
A90
Logic
2
2
4987
BU
4986
WH
4987
BU
4986
WH
2
4
3
5
2
B61P
Seat Belt Tension
Sensor -
Passenger
1
3947
OG/BN
3946
GY/OG
X336 25
24
3947
OG/BN
3946
GY/OG
7
8
K85P
Restraints
Occupant
Classification
System
Module -
Passenger

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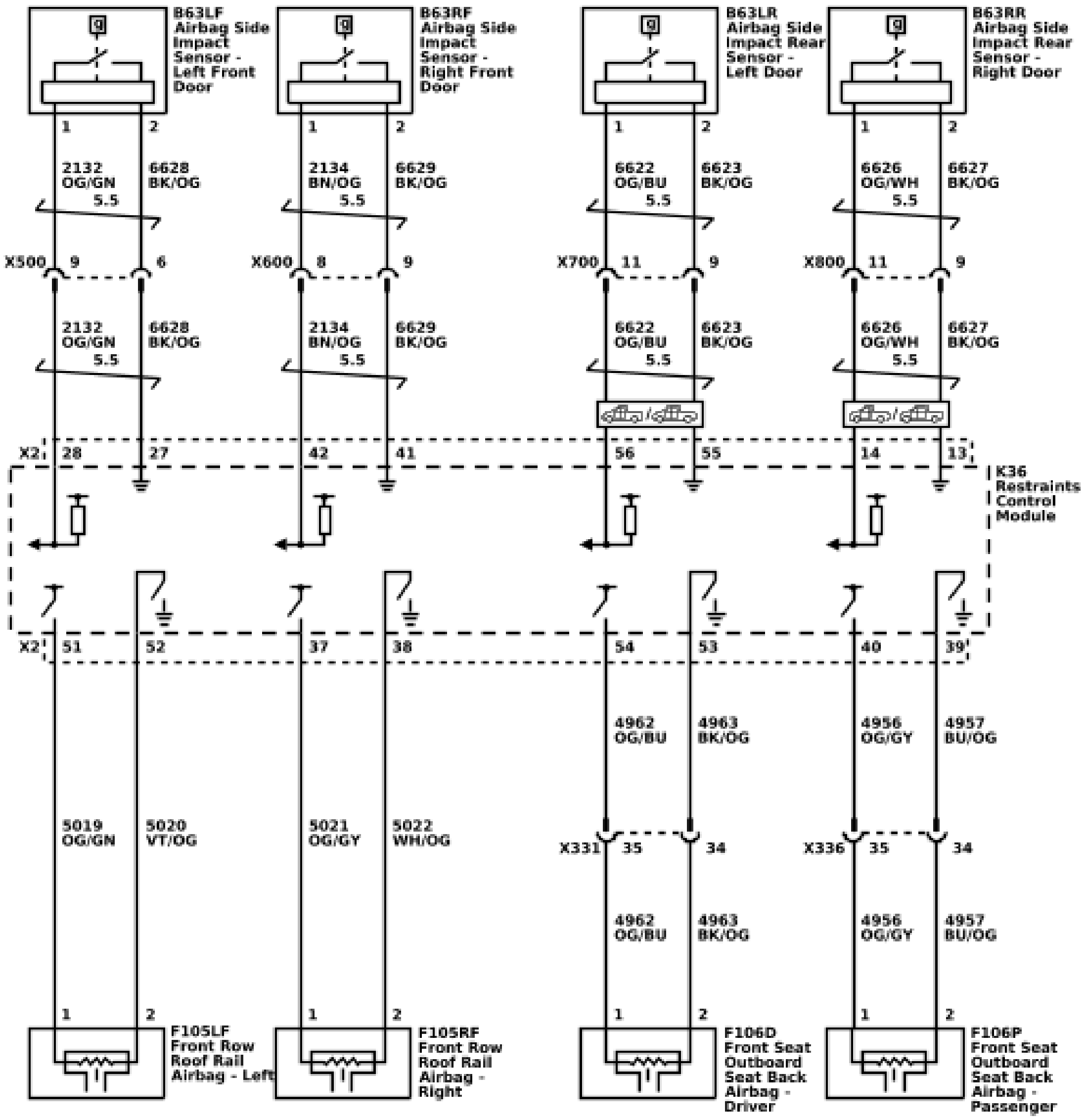
SIR Schematics (Side Impact Sensing and Deployment)


B63LF Airbag Side Impact Sensor - Left Front Door
B63RF Airbag Side Impact Sensor - Right Front Door
B63LR Airbag Side Impact Rear Sensor - Left Door
B63RR Airbag Side Impact Rear Sensor - Right Door
1
2
2132 OG/GN 5.5
6628 BK/OG
2134 BN/OG 5.5
6629 BK/OG
6622 OG/BU 5.5
6623 BK/OG
6626 OG/WH 5.5
6627 BK/OG
X500
9
6
X600
8
9
X700
11
9
X800
11
9
X2
28
27
42
41
56
55
14
13
K36 Restraints Control Module
X2
51
52
37
38
54
53
40
39
4962 OG/BU
4963 BK/OG
4956 OG/GY
4957 BU/OG
5019 OG/GN
5020 VT/OG
5021 OG/GY
5022 WH/OG
X331
35
34
X336
35
34
F105LF Front Row Roof Rail Airbag - Left
F105RF Front Row Roof Rail Airbag - Right
F106D Front Seat Outboard Seat Back Airbag - Driver
F106P Front Seat Outboard Seat Back Airbag - Passenger

6847145

Description and Operation

Supplemental Inflatable Restraint System Description and Operation

The supplemental inflatable restraint (SIR) system, comprised of the Restraints Control module (RCM), impact sensors, Airbags, Restraint Occupant Classification System Module, and seat belt Pretensioners, supplements the protection offered by the seat belts. The RCM determines the severity of a collision using data collected from impact sensors located at strategic points on the vehicle. The RCM processes the information provided by the sensors to provide the safest combination of Airbag and pretensioner deployment. The RCM will deploy the Airbags and Pretensioners if it detects a collision of sufficient force. If the force of the impact is not sufficient to warrant Airbag deployment, the RCM may still deploy the seat belt Pretensioners. The RCM contains a sensing device that translates vehicle acceleration to an electrical signal. The RCM compares these signals to the threshold values stored in memory. If the signals exceed the stored threshold value, the RCM will determine the severity of the event and may deploy restraints. The RCM continuously monitors the deployment loops and electrical components for malfunctions. Upon detection of a circuit malfunction, the RCM will set a DTC and illuminate the SIR system Airbag indicator.

Note: The SIR System may be active up to 30 seconds after the ignition transitions to OFF.

The supplemental inflatable restraint system utilizes the following components:

- Restraints Control Module
- Airbag Indicator
- Airbags
- Seat Belt Pretensioners
- Impact Sensors
- Restraints Occupant Classification System Module (AL0)
- Passenger Airbag Indicator (C99 / AL0)
- Passenger Airbag Disable Switch (C99)
- Seat Belt Tension Sensor
- Seat Belt Indicators
- Event Data Recorder (EDR) Data
- Non-locked event storage overwrite mechanism and over writable event types

Restraints Control Module

The RCM is the control unit for the SIR system. The RCM contains internal sensors in addition to the external impact sensors. The RCM contains sensors which translate vehicle acceleration into an electrical signal, which may be used by other modules. In the event of a collision, the RCM compares the signals from the internal and external impact sensors to a threshold value stored in memory. When the generated signals exceed the stored value, the RCM will cause current to flow through the appropriate deployment loops to deploy the restraints. The RCM records the SIR system status when a deployment occurs and illuminates the SIR system Airbag indicator. The RCM performs continuous diagnostic monitoring of the SIR system electrical components and circuitry when the ignition is ON. If the RCM detects a malfunction, a DTC will set and the RCM will command the instrument cluster to illuminate the SIR system Airbag indicator, notifying the driver that a malfunction exists. If power is lost during a collision, the RCM maintains a limited energy reserve for deployment of the Airbags. It is important when disabling the SIR system for servicing or rescue operations to allow the limited energy reserve to dissipate, which could take up to 2 minutes.

Airbag Indicator

The SIR system Airbag indicator, located in the instrument cluster, is used to notify the driver of SIR system malfunctions and verify that the RCM is communicating with the instrument cluster. When the ignition is turned ON, the RCM is active. The instrument cluster will momentarily turn on the SIR system Airbag indicator. While the indicator is on, the RCM conducts tests on all SIR system components and circuits. If no malfunctions are detected the RCM will communicate with the instrument cluster through the serial data circuit and command the SIR system Airbag indicator to turn OFF. The RCM provides continuous monitoring of the SIR system components and circuits by conducting a sequence of checks. If a malfunction is detected the RCM will set a DTC and command the instrument cluster to illuminate the SIR system Airbag indicator via serial data. The presence of an SIR system malfunction could result in non-deployment of the inflatable restraints or deployment in conditions that normally would not warrant deployment. The SIR system Airbag indicator will remain on for the duration of the malfunction or until the system has been repaired.

Airbags

The vehicle will contain a number of Airbags, depending on vehicle available and optional equipment:

- Steering wheel
- Instrument panel
- Driver seat
- Passenger seat
- Instrument Panel Lower Airbag
- Passenger knee
- Left roof rail
- Right roof rail

To view the locations of the Airbags refer to: *Master Electrical Component List 8-1032*.

Airbags contain a housing, inflatable Airbag, an initiating device, a canister of gas generating material and, in some cases, stored compressed gas. Each Airbag has a discrete deployment loop to supply current and deploy the Airbag. The current passing through the Airbags ignite the material in the canister producing a rapid generation of gas and is some cases, the release of compressed gas. The gas produced from this reaction rapidly inflates the Airbag. Once the Airbag is inflated, it deflates through the Airbag vent holes and/or the bag fabric.

The steering wheel and instrument panel Airbag will either be a dual-stage or a single stage design. A dual-stage Airbag uses two stages of deployment, which varies the amount of restraint to the occupant according to the collision severity. For moderate frontal collisions, the Airbag deploys at less than full deployment which consists of stage 1 of the Airbag. During a more severe frontal collision, a full deployment is initiated which consists of stage 1 and stage 2 of the Airbag.

Seat Belt Pretensioners

The vehicle will contain a number of seat belt Pretensioners, depending on vehicle available and optional equipment:

- Driver – Seat belt anchor
- Driver – Seat belt retractor
- Passenger – Seat belt anchor
- Passenger – Seat belt retractor
- Rear Outboard Left/Right Passenger – Seat belt retractor

To view the locations of the Airbags refer to: *Master Electrical Component List 8-1032*.

The seat belt Pretensioners consist of a housing, seat belt retractor, seat belt anchor, seat belt webbing, initiator, and a canister of gas generating materials. The initiator is part of the seat belt pretensioner deployment loop. When the vehicle is involved in a collision of sufficient force, the RCM causes current to flow through the seat belt deployment loops to the initiator. Current passing through the initiator ignites the material in the canister producing a rapid generation of gas. The gas produced from this reaction deploys the seat belt Pretensioners which removes the slack in the seat belts. Depending on the severity of the collision, the seat belt Pretensioners may deploy without the frontal inflator modules deploying, or they will deploy immediately before the frontal inflator modules deploy.

Impact Sensors

The vehicle will contain a number of impact sensors, depending on vehicle available and optional equipment:

- Front Impact Sensor — Left
- Front Impact Sensor — Right
- Side Impact Sensor — Left Front
- Side Impact Sensor — Right Front
- Side Impact Sensor — Left Middle
- Side Impact Sensor — Right Middle
- Side Impact Sensor — Left Rear
- Side Impact Sensor — Right Rear

To view the locations of the Airbags refer to: *Master Electrical Component List 8-1032*.

The impact sensors contain a sensing device which monitors vehicle acceleration or pressure to detect collisions that are severe enough to warrant Airbag deployment. The impact sensors are not part of the deployment loop, but instead provide input to the RCM.

Restraints Occupant Classification System Module

The Restraints Occupant Classification System Module is used to monitor the type of occupant that is sitting in the front passenger seat and communicate the status to the RCM. The RCM then uses this information to determine whether to enable or suppress the deployment of the passenger instrument panel Airbag. The Restraints Occupant Classification System Module consists of an electronic control module, a sensor mat in the seat, Seat Belt Tension Sensor (if equipped), and a harness.

Passenger Airbag Indicator

The passenger Airbag indicator identifies the status of the instrument panel Airbag. The RCM will momentarily turn on the passenger Airbag indicators after ignition is turned ON. If an occupant is not detected in the passenger seat or the occupant type is not suitable for Airbag deployment, the Restraints Control module will illuminate the passenger Airbag OFF indicator. If an occupant is detected in the passenger seat, the Restraints Control module will illuminate the passenger Airbag ON indicator.

Seat Belt Tension Sensor

The seat belt tension sensor (if equipped) is mounted on the passenger seat belt retractor to measure the seat belt tension. If the shoulder portion of a passenger seat belt is fully extended, the infant car seat restraint locking feature may be engaged, disabling the passenger Airbag.

Passenger Airbag Disable Switch

The passenger Airbag disable switch provides the means to manually disable the ability for the passenger instrument panel Airbag to deploy. The vehicle has a passenger Airbag status indicator to inform the driver when the passenger Airbag is on or off based on the disable switch position.

Seat Belt Indicators

The seat belt indicators are controlled by the RCM. For further information on seat belt indicators refer to: *Seat Belt System Description and Operation 10-59*.

Event Data Recorder (EDR) Data

The vehicle is equipped with an event data recorder (EDR). When a specific collision or similar condition occurs (such as airbag deployment or hitting a road obstacle), the recorder records the data related to vehicle dynamics and safety systems within a short period of time, such as the status of occupant safety components, status of accelerator/brake pedals, vehicle speed, etc., helping understand the operating conditions of vehicle systems.

The data elements recorded by EDR mainly include the following data:

No.	Data Element	Data Source	Collection Method
A1	Longitudinal delta V	EDR acceleration sensor in EDR controller	None
A2	Maximum recorded longitudinal delta V	EDR acceleration sensor in EDR controller	None
A3	Time to maximum recorded longitudinal delta V	EDR acceleration sensor in EDR controller	None
A4	Clipping flag	Since B1 lateral acceleration has been recorded, it is not necessary to record the clipping flag	None
A5	Vehicle velocity	Wheel speed sensor, transmitted via CAN bus after calculation	CAN bus
A6	Service brake, on or off	Brake pedal position sensor, transmitted via CAN bus after calculation	CAN bus
A7	Driver safety belt status	Driver seat belt buckle	Hard wire
A8	Accelerator pedal position, percentage of fully open position	Accelerator pedal position sensor, transmitted via CAN bus after calculation	CAN bus
A9	Revolution Per Minute (RPM)	Engine crankshaft position sensor, transmitted via CAN bus after calculation *Not required for electric vehicles	CAN bus *Not required for electric vehicles
A10	Power-on cycle at event	EDR controller	None
A11	Power-on cycle at reading	EDR controller	None
A12	Complete status of event data record	EDR controller	None
A13	Time interval from this event to the last event	EDR controller	None
A14	Vehicle Identification Number(VIN)	EDR controller	None
A15	ECU hardware number	EDR controller	None
A16	ECU serial number	EDR controller	None
A17	ECU software number	EDR controller	None
B1	Longitudinal acceleration	EDR acceleration sensor in EDR controller	None

No contents related to intelligent control are available now for Level A elements above.

The recorded vehicle speed data is obtained from the on-board CAN bus. They are obtained by a vehicle speed sensor connected to other modules on the vehicle (such as engine control or transmission control module or new energy control, etc.), and transmitted and released via CAN bus after calculation.

The above data can be extracted by purchased general on-board diagnostic tools that meet the requirements in SAE J1962 and ISO 15765 and their referenced standards.

Non-locked event storage overwrite mechanism and over writable event types

Locking Conditions:

- Deployment event of irreversible restraints will be permanently locked.

- Non-deployment events will be locked, but become non-locked events after 255 ignition cycles.

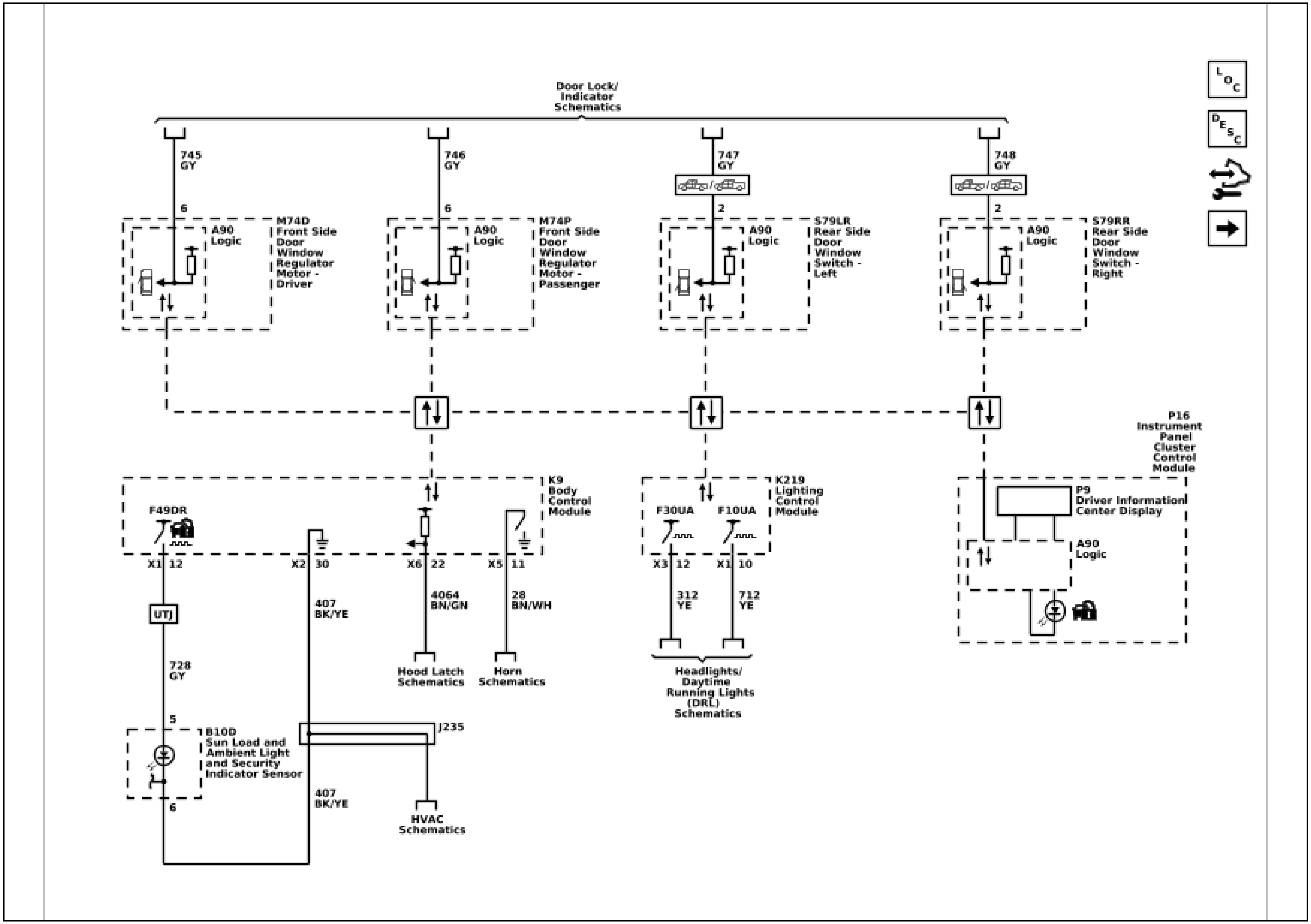
Overwrite Mechanism:

- Permanently locked events will not be overwritten. Only the non-locked EDR events can be overwritten, overwriting the earliest event first.
- If the EDR storage space is insufficient, the deployment events of irreversible restraints can overwrite any non-deployment events.
- If the EDR storage space is insuficcient, the non-deployment events can overwrite any non-deployment events that become non-locked after 255 ignition cycles.

Theft Deterrent

Schematic and Routing Diagrams

Theft Deterrent System Schematics (Content Theft Deterrent Indicator, Inputs, and Outputs)


Door Lock/ Indicator Schematics
745 GY
746 GY
747 GY
748 GY
6
6
2
2
A90 Logic
M74D Front Side Door Window Regulator Motor - Driver
A90 Logic
M74P Front Side Door Window Regulator Motor - Passenger
A90 Logic
S79LR Rear Side Door Window Switch - Left
A90 Logic
S79RR Rear Side Door Window Switch - Right
P16 Instrument Panel Cluster Control Module
P9 Driver Information Center Display
A90 Logic
K9 Body Control Module
F49DR
X1 12
X2 30
X6 22
X5 11
K219 Lighting Control Module
F30UA
F10UA
X3 12
X1 10
UTJ
728 GY
407 BK/YE
4064 BN/GN
28 BN/WH
312 YE
712 YE
Hood Latch Schematics
Horn Schematics
Headlights/ Daytime Running Lights (DRL) Schematics
5
B10D Sun Load and Ambient Light and Security Indicator Sensor
6
J235
407 BK/YE
HVAC Schematics

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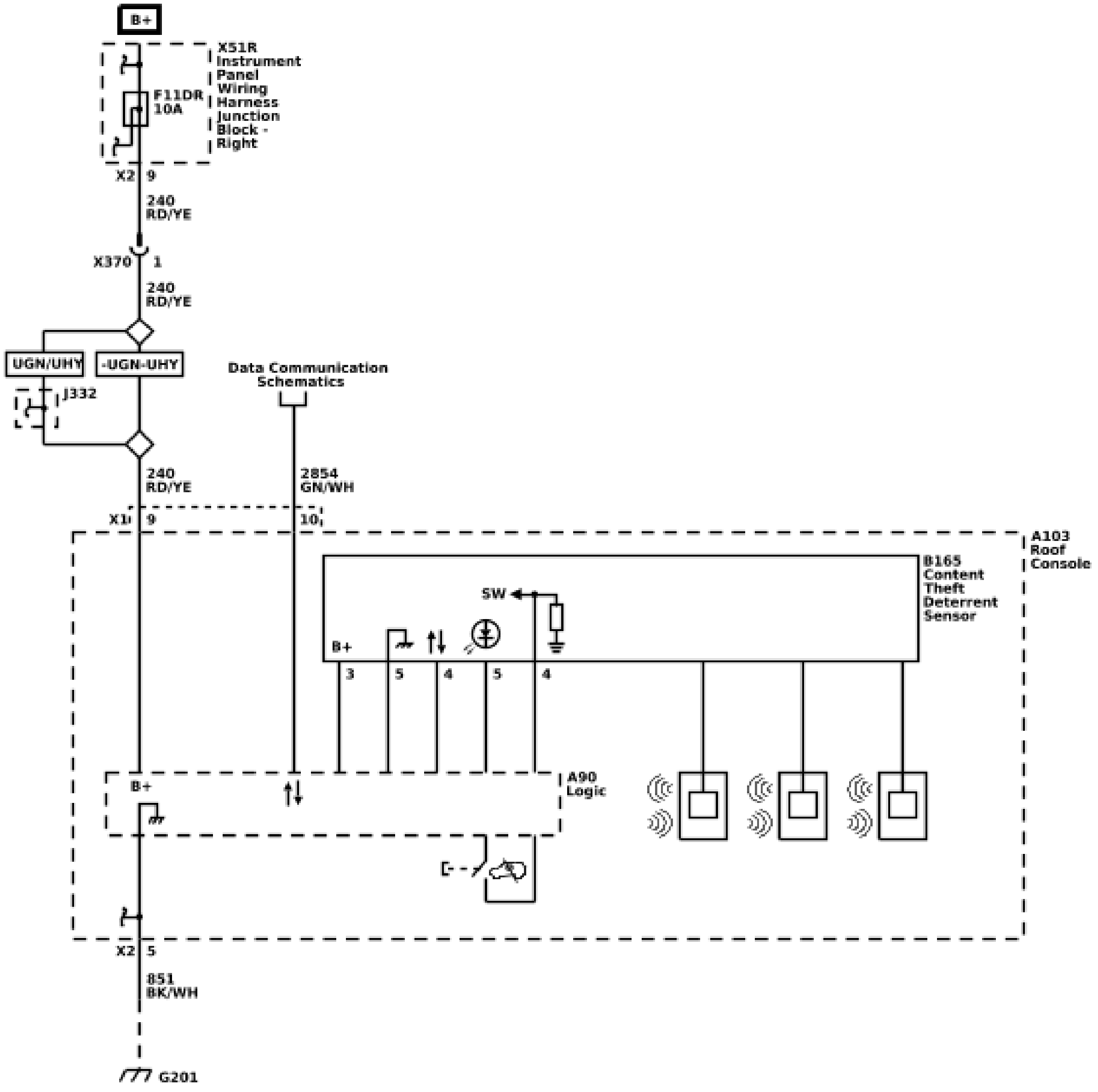
Theft Deterrent System Schematics (Content Theft Deterrent Sensor)


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F11DR 10A
X2 9
240 RD/YE
X370 1
240 RD/YE
UGN/UHY
-UGN-UHY
J332
Data Communication Schematics
240 RD/YE
2854 GN/WH
X1 9
10
A103 Roof Console
B165 Content Theft Deterrent Sensor
SW
B+
3
5
4
5
4
A90 Logic
B+
X2 5
851 BK/WH
G201

6847147

Description and Operation

Theft Systems Description and Operation

When armed, the content theft deterrent system is designed to deter vehicle content theft by pulsing the horns and exterior lamps for approximately 30 seconds when an unauthorized vehicle entry is detected. However, the content theft deterrent system does not affect engine starting.

An unauthorized entry can be any of the following with the content theft deterrent system armed:

- Unauthorized entry into the engine area
- Unauthorized entry into the vehicle compartments
- When any door is opened without using the UNLOCK command from a keyless entry transmitter
- After a battery reconnect, if the battery was disconnected with the content theft deterrent system armed

The components of the content theft deterrent system are:

- Body Control Module (BCM)
- Remote control door lock receiver
- Security indicator
- Door ajar switches
- Hood ajar switch
- Liftgate ajar switch, if equipped
- Intrusion sensor, if equipped
- Intrusion sensor disable switch, if equipped
- Glass breakage sensor, if equipped
- Alarm siren, if equipped

Arming the Content Theft Deterrent System

Use the following procedure in order to arm the system:

1. Place the vehicle in P (park).
2. Ignition OFF/Vehicle OFF.
3. Open any door.

Note: The system is not armed if the doors are locked manually; the power door lock switch or remote keyless entry transmitter must be used to arm the content theft deterrent system.

4. Lock the doors with the power door lock switch or by pressing the LOCK button on the transmitter. The system is in standby mode and will not start the arming timer until all doors are closed.
5. The system will begin the arm sequence immediately after the last door is closed. If the keyless entry transmitter is used to arm the system after the vehicle doors are closed, the arm sequence will begin as soon as the LOCK command is received from the transmitter.
6. Pressing the LOCK button on the keyless entry transmitter a second time will bypass the delayed arming function and force the system to arm.

Locking the Vehicle Without Arming the Content Theft Deterrent System

Locking the vehicle may be accomplished without arming the content theft deterrent system. Use of the manual door locks will lock the vehicle, but will not arm the content theft deterrent system.

Disarming an Armed System/Silencing an Alarm

If system arming has been requested by the power door lock switch or the keyless entry transmitter, it must be disarmed.

Note: Disconnecting the battery or removing fuses does not disable the arm or alarm modes, since the BCM stores the content theft deterrent mode status in memory.

- To disarm the content theft deterrent system in standby mode, perform one of the following:
  - Press the UNLOCK button on the keyless entry transmitter.
  - Approach the vehicle with a valid keyless entry transmitter and pull the vehicle door handle.
  - Turn the ignition ON/Vehicle ON.
- To disarm the content theft deterrent system in the armed mode (non-event) or when activated (during an alarm event):
  - Press the UNLOCK button on the keyless entry transmitter.
  - Turn the ignition ON/Vehicle ON.

Content Theft Deterrent Circuit Description

The following is a description of each component used in the content theft deterrent system:

Body Control Module

The content theft deterrent system is an internal function of the BCM which utilizes serial data and various switch inputs information to perform content theft deterrent functions. When the BCM detects an unauthorized entry, it activates the horns and exterior lamps. The BCM has 4 basic modes (disarmed, standby, armed, and alarm) for operating the content theft deterrent system. The different modes are described below.

1. The BCM has the content theft deterrent system in a disarmed mode until the following conditions are detected:

   - Ignition OFF/Vehicle OFF.
   - Doors locked by either the power door lock switch or the LOCK button on the transmitter.
2. The BCM enters the standby mode when the above conditions are detected. If a door was already opened when the arm mode was requested, the standby mode does not start the timer until the last door is closed.
3. When the last door is closed, a 15 second timer is activated. Once the timer has expired, the BCM enters the armed mode. After this delay, any unauthorized entry will activate the alarm mode.
4. When the BCM detects an unauthorized entry, the BCM enters the alarm mode. The BCM activates the horns and exterior lamps for 30 seconds. This is followed by a three minute time-out with the horn no longer active. If no new intrusions are detected after the time-out, the horn is not active. The system must be disarmed or the intrusion condition removed after the time-out for the system to exit alarm mode.

Remote Control Door Lock Receiver
The keyless entry system can arm and disarm the content theft deterrent system. When the remote control door lock receiver receives a door lock or unlock signal from the transmitter, the remote control door lock receiver sends a message to the BCM via serial data to perform the appropriate arm/disarm functions.

Security Indicator
The security LED is illuminated on the upper I/P by the BCM. The content theft deterrent system uses the security LED to inform the driver of system status prior to arming.

Door Ajar Switches
The content theft deterrent system uses the door ajar switches as a status indicator to activate the alarm. The door ajar switches are monitored by the body control module via a discrete input from each door ajar switch. If the BCM receives a signal indicating a door is opened when the content theft deterrent system is armed, the BCM activates the alarm.

Hood Ajar Switch
The content theft deterrent system uses the hood ajar switch as a status indicator to activate the alarm. The BCM monitors the hood ajar switch via a discrete input from the switch. If the BCM receives a signal indicating the hood has been opened when the content theft deterrent system is armed, the BCM activates the alarm.

Liftgate Ajar Switch
The content theft deterrent system uses the liftgate ajar switch as a status indicator to activate the alarm. The BCM monitors the liftgate ajar switch via a discrete input from the switch. If the BCM receives a signal indicating the liftgate has been opened when content theft deterrent system is armed, the BCM activates the alarm.

Intrusion Sensor
The intrusion sensor is located in the overhead console and uses two ultrasonic sensors to detect any motion inside the vehicle. If motion is detected inside the vehicle while the content theft deterrent system is armed, the system will transition to the alarm mode. The intrusion sensor also acts as an inclination sensor. The inclination sensor determines the vehicles level when the content theft deterrent system is armed. If the vehicle level is changed while the system is armed, such as being lifted by a tow truck or raised with a jack, the alarm will be activated. The intrusion sensor can be disabled using the intrusion sensor disable switch. The intrusion sensor disable switch also shows the intrusion sensor status using a status LED.

Glass Breakage Sensor
The glass breakage sensors (if equipped) are located on the rear side windows and are supplied battery voltage at all times. The BCM monitors the glass breakage sensor signal circuit. If the rear side glass is broken, the glass breakage sensor signal circuit will open and the BCM will enter the alarm mode.

Alarm Siren
The content theft deterrent system uses the alarm siren as an audible alert device to alert individuals near the vehicle that a vehicle intrusion is occurring. The siren is supplied battery voltage and ground for operation and communicates with the body control module (BCM) via a dedicated LAN circuit.

Inputs
The BCM monitors the following inputs for content theft deterrent:

- Door ajar switches
- Keyless entry transmitter LOCK/UNLOCK buttons; a message from the remote control door lock receiver
- Immobilizer status—The BCM uses the immobilizer status for disarming the system or silencing an alarm when the correct vehicle key is used to start the vehicle
- Liftgate ajar switch
- Hood ajar switch
- Intrusion sensor
- Glass breakage sensor

Outputs
The BCM controls the following for content theft deterrent:

- Horn relay
- Exterior lamps
- Alarm siren

Section 11

Seats

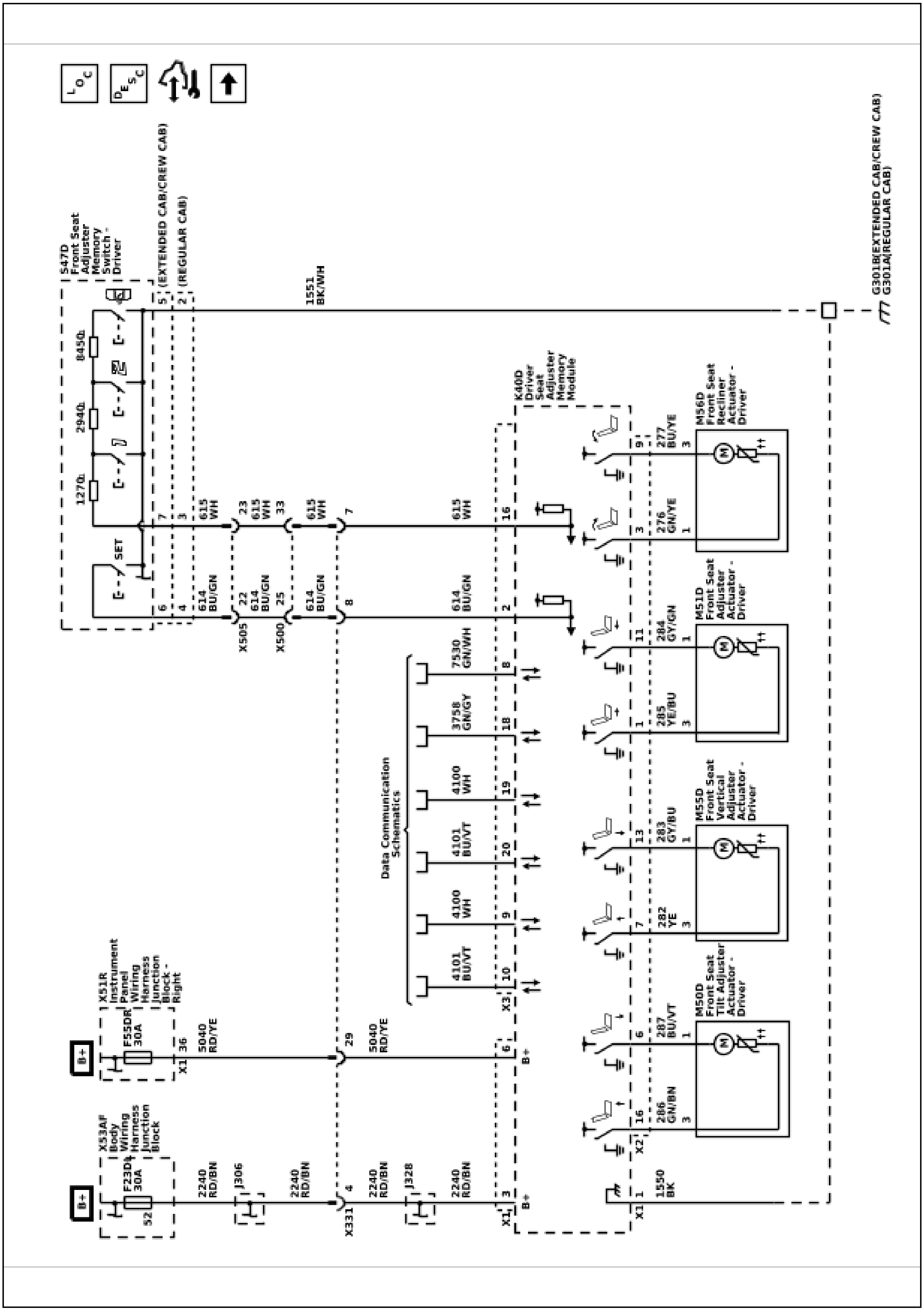
Power Seats 11-2
Schematic and Routing Diagrams 11-2
Driver Seat Schematics 11-3
Passenger Seat Schematics 11-9
Description and Operation 11-15
Lumbar Support/Massage Description and Operation (4-Way) 11-15
Lumbar Support/Massage Description and Operation (2-Way) 11-15
Lumbar Support/Massage Description and Operation (With Seat Bolster Memory Control Module) 11-15
Memory Seats Description and Operation 11-16
Power Seats System Description and Operation (Driver Without Memory or Passenger Without Seat Bolster Memory Control Module) 11-19
Power Seats System Description and Operation (Passenger With Seat Bolster Memory Control Module) 11-19
Power Seats System Description and Operation (3rd Row) 11-20
Power Seats System Description and Operation (2nd Row) 11-22
Seat Heating and Cooling 11-23
Schematic and Routing Diagrams 11-23
Heated/Cooled Seat Schematics 11-24
Description and Operation 11-29
Heated/Vented Seat Description and Operation 11-29
Rear Heated Seats Description and Operation 11-30

Seats

Power Seats

Schematic and Routing Diagrams

Driver Seat Schematics (Module Power, Ground, Serial Data, Motors, and Memory Controls (A45))


L O C
D E S C
S47D Front Seat Adjuster Memory Switch - Driver
(EXTENDED CAB/CREW CAB)
(REGULAR CAB)
1270Ω
2940Ω
8450Ω
SET
5
2
7
3
6
4
1551 BK/WH
615 WH
614 BU/GN
23
22
33
25
X505
X500
7
8
16
2
K40D Driver Seat Adjuster Memory Module
7530 GN/WH
3758 GN/GY
4100 WH
4101 BU/VT
8
18
19
20
9
10
X3
Data Communication Schematics
X53AF Body Wiring Harness Junction Block
F23DA 30A
52
X51R Instrument Panel Wiring Harness Junction Block - Right
F55DR 30A
X1 36
B+
5040 RD/YE
29
6
2240 RD/BN
J306
J328
X331
4
3
X1
1550 BK
1
G301B(EXTENDED CAB/CREW CAB)
G301A(REGULAR CAB)
9
277 BU/YE
276 GN/YE
M56D Front Seat Recliner Actuator - Driver
11
284 GY/GN
1
285 YE/BU
M51D Front Seat Adjuster Actuator - Driver
13
283 GY/BU
282 YE
M55D Front Seat Vertical Adjuster Actuator - Driver
6
287 BU/VT
16
286 GN/BN
X2
M50D Front Seat Tilt Adjuster Actuator - Driver
M

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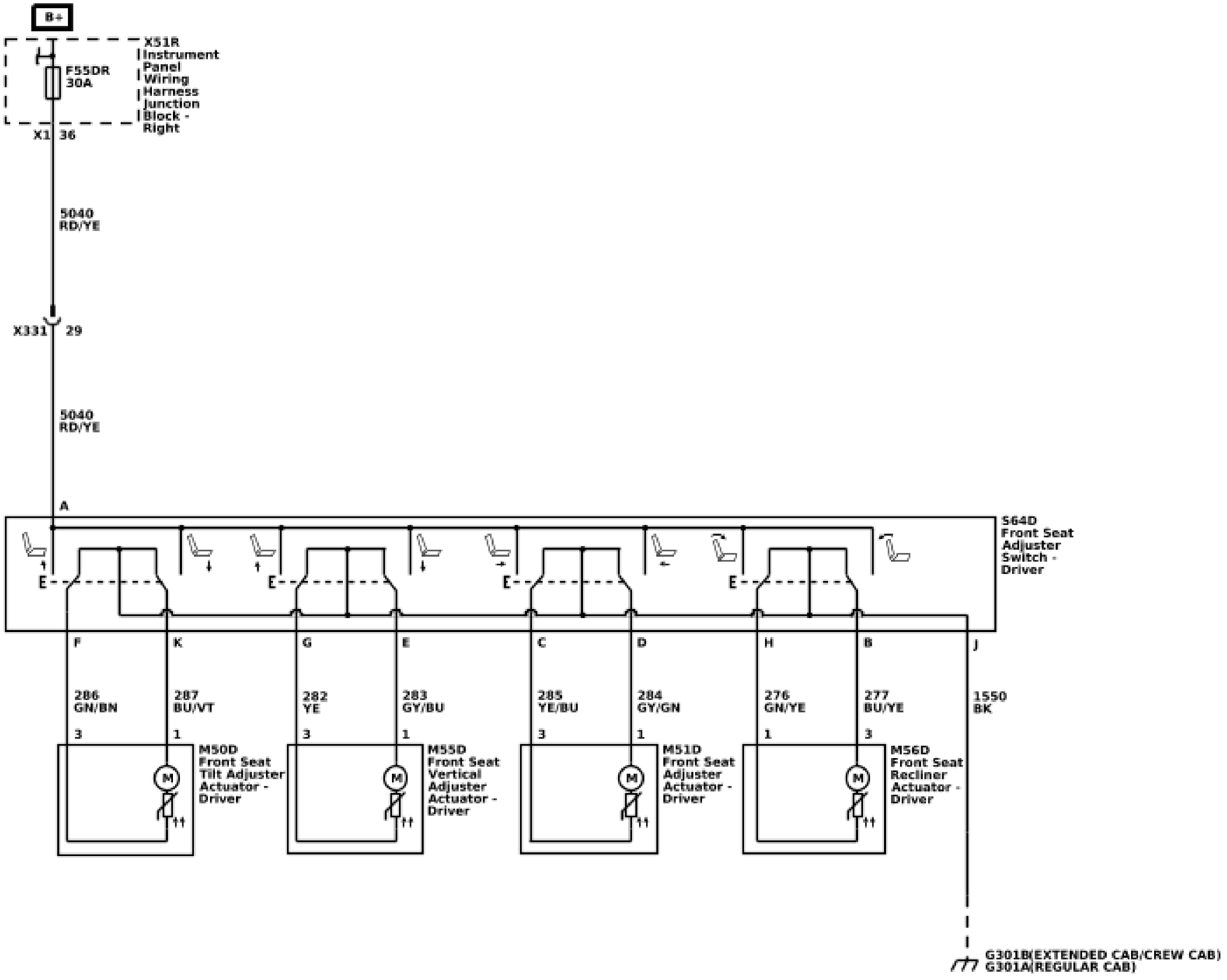
Driver Seat Schematics (Power Seat (- A45))


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F55DR 30A
X1 36
5040 RD/YE
X331 29
5040 RD/YE
A
S64D Front Seat Adjuster Switch - Driver
E
E
E
E
F
K
G
E
C
D
H
B
J
286 GN/BN
287 BU/VT
282 YE
283 GY/BU
285 YE/BU
284 GY/GN
276 GN/YE
277 BU/YE
1550 BK
3
1
3
1
3
1
1
3
M
M
M
M
M50D Front Seat Tilt Adjuster Actuator - Driver
M55D Front Seat Vertical Adjuster Actuator - Driver
M51D Front Seat Adjuster Actuator - Driver
M56D Front Seat Recliner Actuator - Driver
G301B(EXTENDED CAB/CREW CAB)
G301A(REGULAR CAB)

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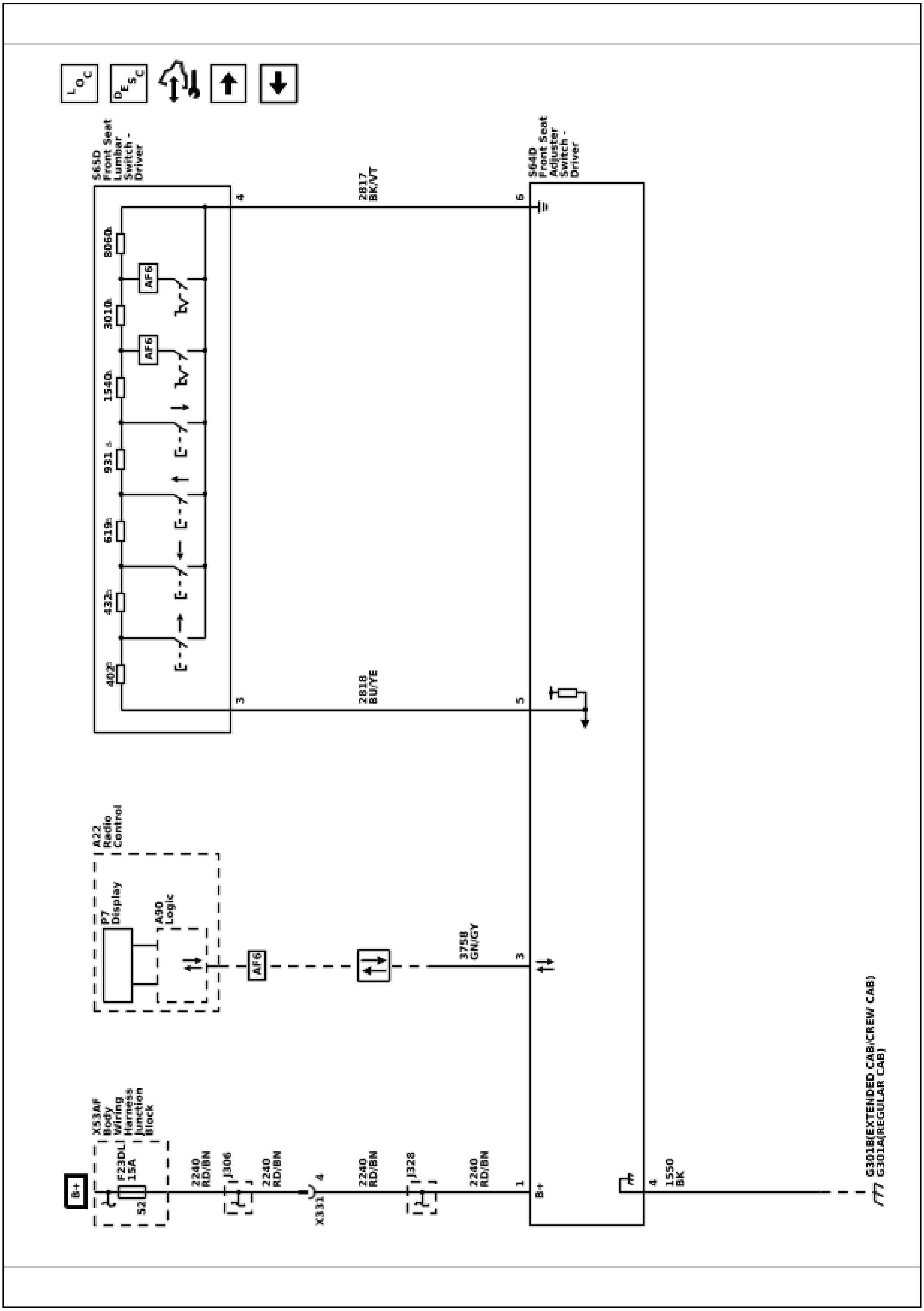
Driver Seat Schematics (Seat Controls (A45))


LOC
DESC
S65D Front Seat Lumbar Switch - Driver
8060Ω
3010Ω
1540Ω
931Ω
619Ω
432Ω
402Ω
AF6
AF6
4
3
2817 BK/VT
2818 BU/YE
S64D Front Seat Adjuster Switch - Driver
6
5
A22 Radio Control
P7 Display
A90 Logic
AF6
3758 GN/GY
3
X53AF Body Wiring Harness Junction Block
B+
F23DL 15A
52
2240 RD/BN
J306
2240 RD/BN
X331
4
2240 RD/BN
J328
2240 RD/BN
1
B+
4
1550 BK
G301B(EXTENDED CAB/CREW CAB)
G301A(REGULAR CAB)

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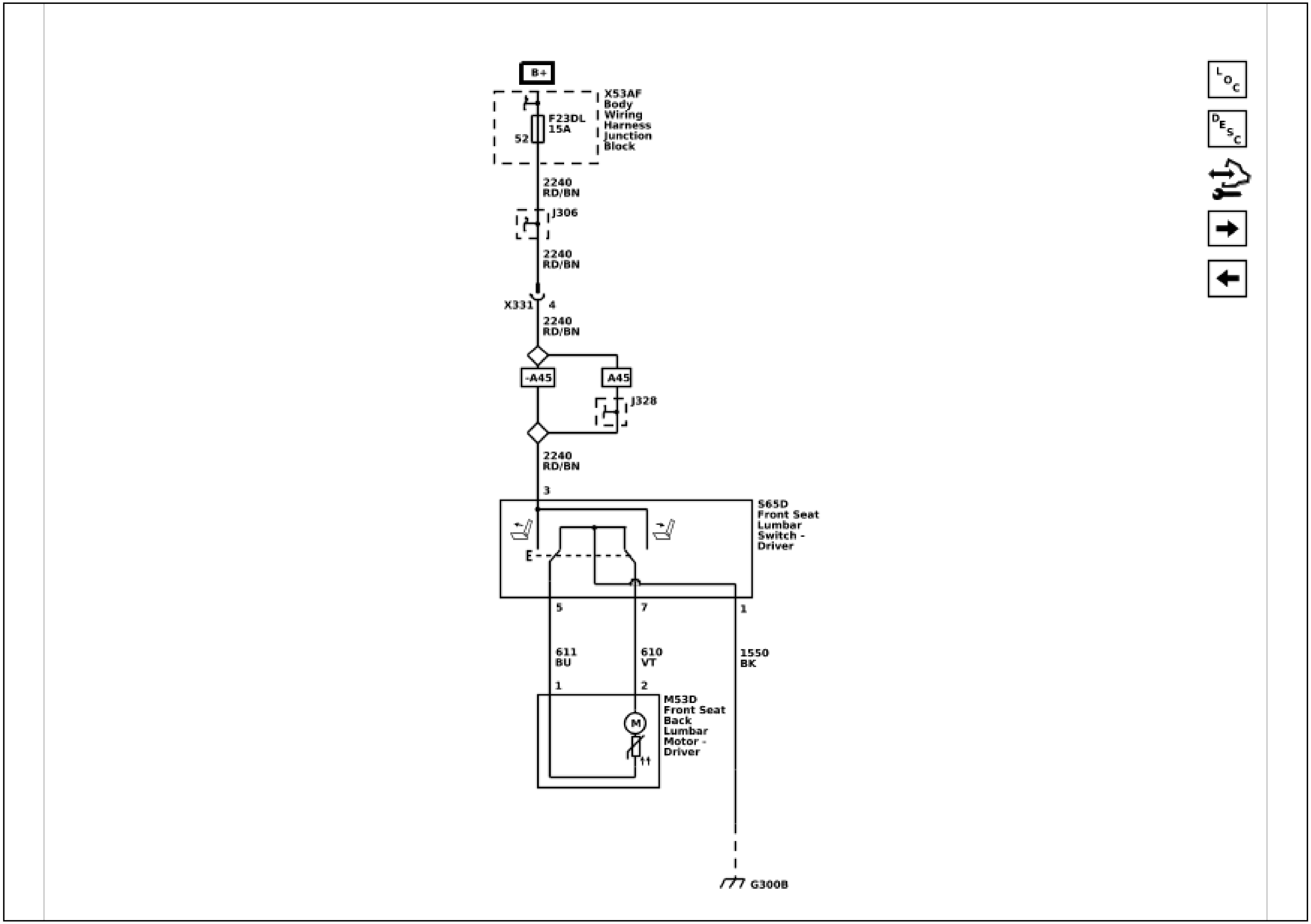
Driver Seat Schematics (Seat Lumbar (-AVK))


B+
X53AF Body Wiring Harness Junction Block
F23DL 15A
52
2240 RD/BN
J306
2240 RD/BN
X331
4
2240 RD/BN
-A45
A45
J328
2240 RD/BN
3
S65D Front Seat Lumbar Switch - Driver
E
5
7
1
611 BU
610 VT
1550 BK
1
2
M53D Front Seat Back Lumbar Motor - Driver
M
G300B

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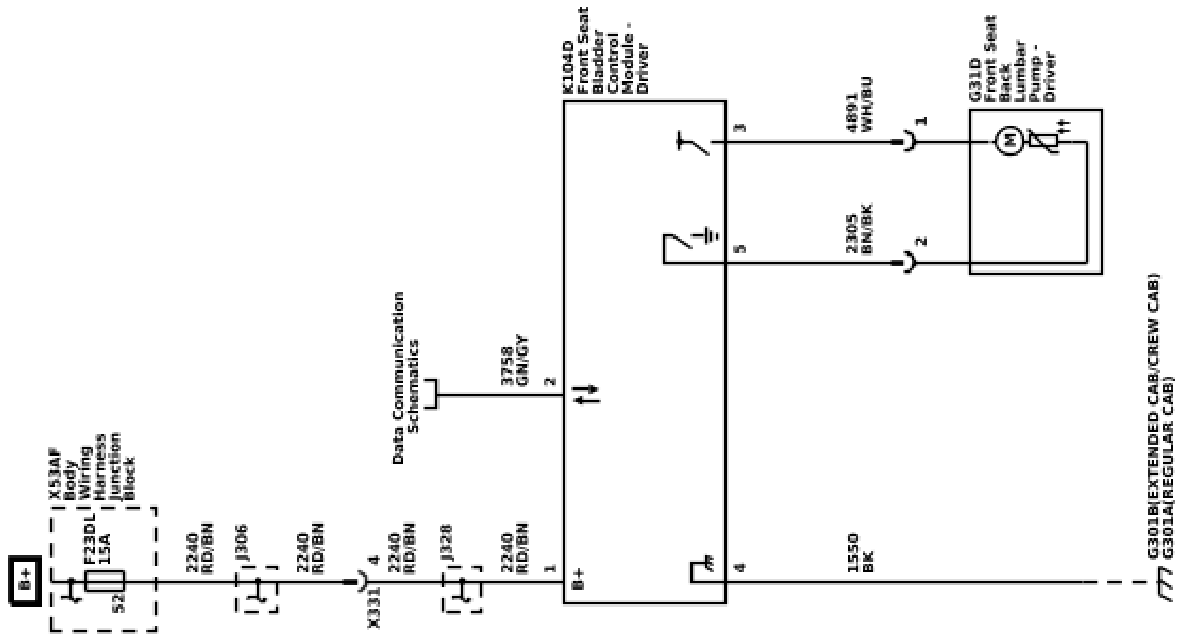
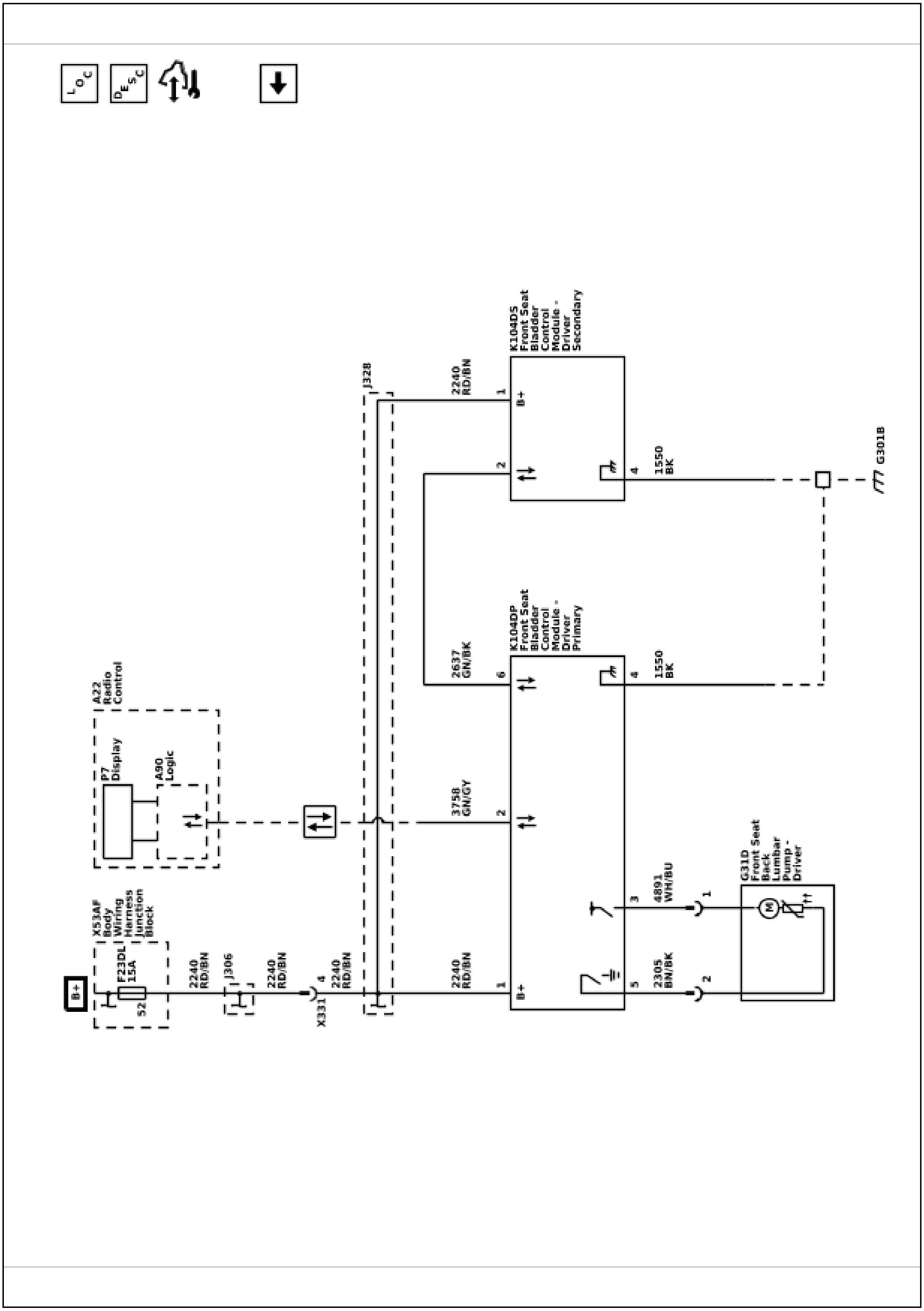
Driver Seat Schematics (Seat Lumbar (AVK - AF6))


6847152
B+
X53AF Body Wiring Harness Junction Block
F23DL 15A
52
2240 RD/BN
J306
2240 RD/BN
X331
4
2240 RD/BN
J328
2240 RD/BN
1
B+
Data Communication Schematics
3758 GN/GY
2
K104D Front Seat Bladder Control Module - Driver
3
4891 WH/BU
1
5
2305 BN/BK
2
G31D Front Seat Back Lumbar Pump - Driver
M
4
1550 BK
G301B(EXTENDED CAB/CREW CAB)
G301A(REGULAR CAB)

Driver Seat Schematics (Seat Lumbar and Massage (AF6))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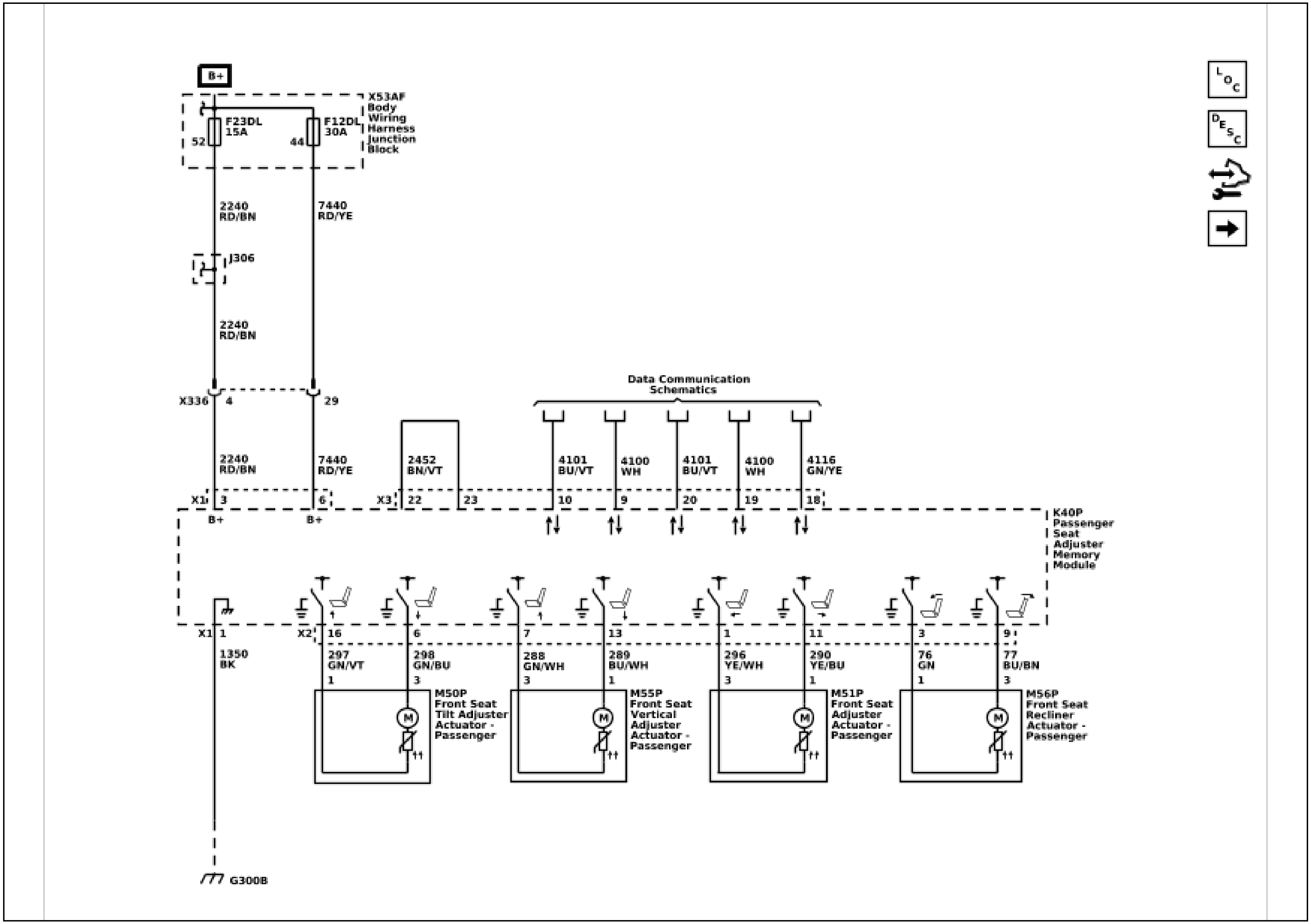
B+
F23DL
15A
52
X53AF
Body
Wiring
Harness
Junction
Block
2240
RD/BN
J306
2240
RD/BN
X331
4
2240
RD/BN
J328
A22
Radio
Control
P7
Display
A90
Logic
2240
RD/BN
1
B+
3758
GN/GY
2
2637
GN/BK
6
1550
BK
4
3
4891
WH/BU
5
2305
BN/BK
1
2
K104DP
Front Seat
Bladder
Control
Module -
Driver
Primary
2240
RD/BN
1
B+
2
4
1550
BK
K104DS
Front Seat
Bladder
Control
Module -
Driver
Secondary
G301B
G31D
Front Seat
Back
Lumbar
Pump -
Driver
M

Passenger Seat Schematics (Module Power, Ground, Serial Data, and Motors (AKE))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X53AF Body Wiring Harness Junction Block
F23DL 15A
52
F12DL 30A
44
2240 RD/BN
7440 RD/YE
J306
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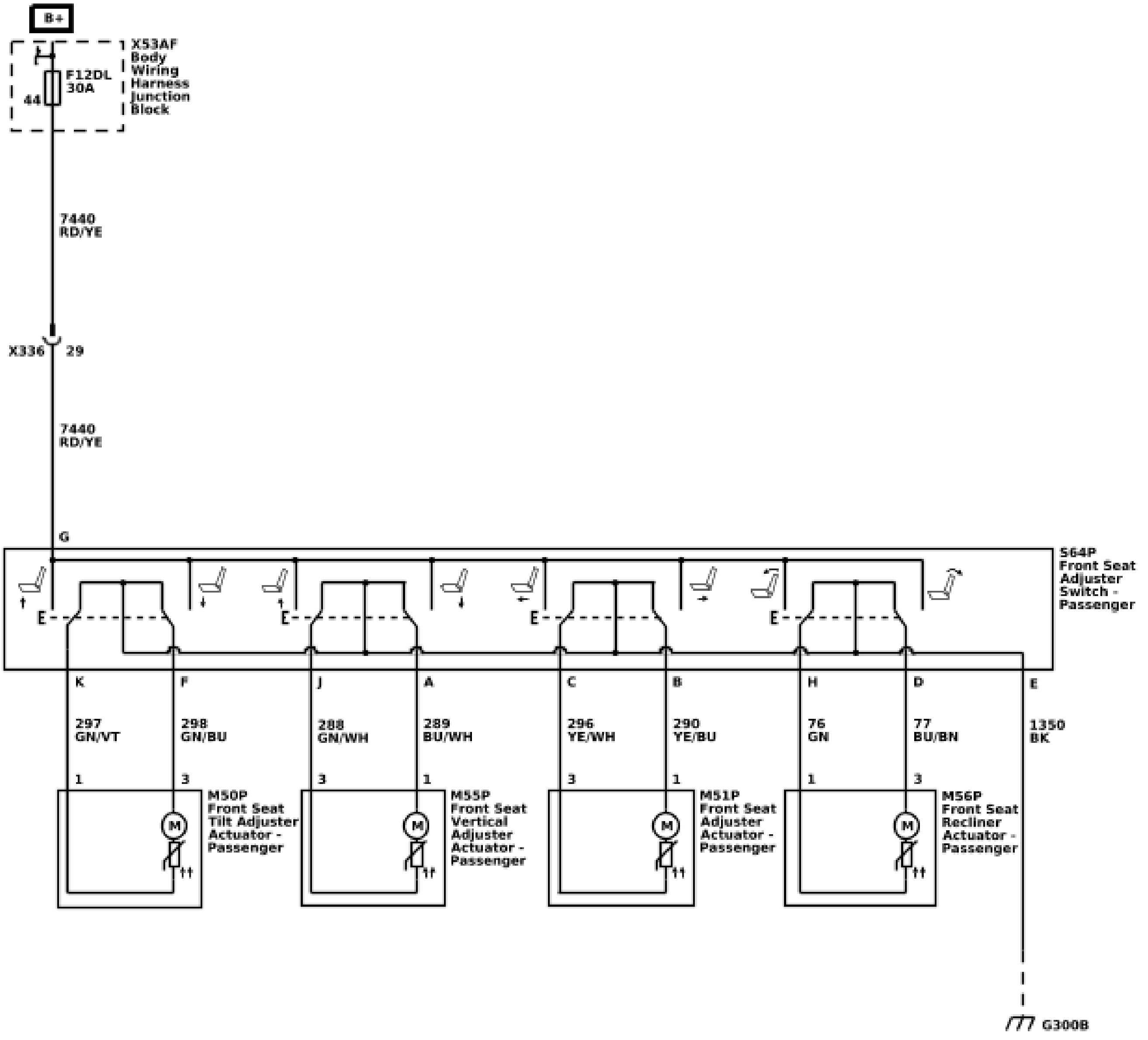
X336
4
29
2240 RD/BN
7440 RD/YE
2452 BN/VT
Data Communication Schematics
4101 BU/VT
4100 WH
4101 BU/VT
4100 WH
4116 GN/YE
X1
3
6
X3
22
23
10
9
20
19
18
B+
B+
K40P Passenger Seat Adjuster Memory Module
X1
1
1350 BK
X2
16
6
7
13
1
11
3
9
297 GN/VT
298 GN/BU
288 GN/WH
289 BU/WH
296 YE/WH
290 YE/BU
76 GN
77 BU/BN
1
3
3
1
3
1
1
3
M
M50P Front Seat Tilt Adjuster Actuator - Passenger
M55P Front Seat Vertical Adjuster Actuator - Passenger
M51P Front Seat Adjuster Actuator - Passenger
M56P Front Seat Recliner Actuator - Passenger
G300B
6847154

Passenger Seat Schematics (Power Seat (A7K - AKE))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F12DL 30A
44
7440 RD/YE
X336
29
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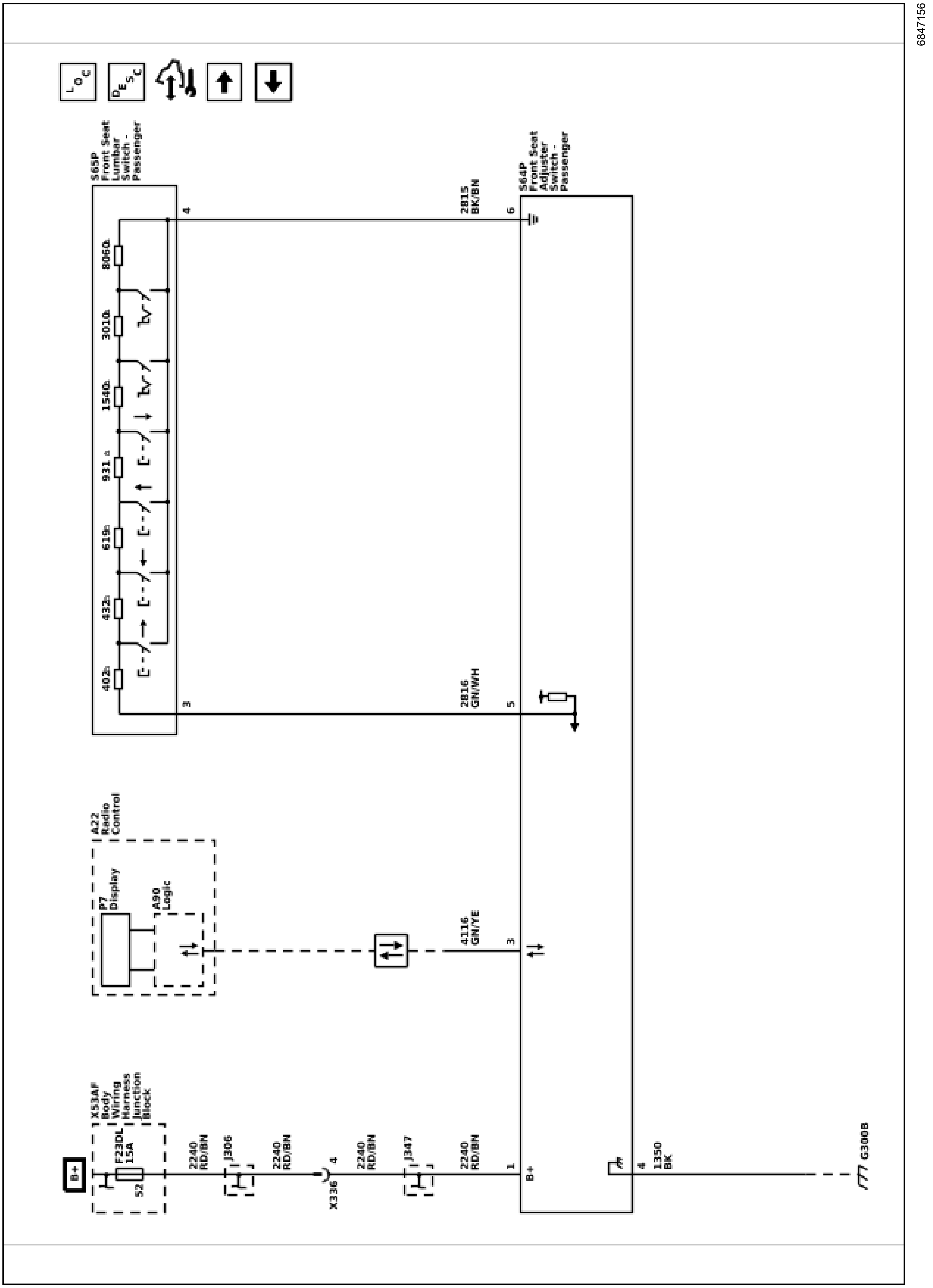
G
S64P Front Seat Adjuster Switch - Passenger
E
E
E
E
K
F
J
A
C
B
H
D
E
297 GN/VT
298 GN/BU
288 GN/WH
289 BU/WH
296 YE/WH
290 YE/BU
76 GN
77 BU/BN
1350 BK
1
3
3
1
3
1
1
3
M
M50P Front Seat Tilt Adjuster Actuator - Passenger
M55P Front Seat Vertical Adjuster Actuator - Passenger
M51P Front Seat Adjuster Actuator - Passenger
M56P Front Seat Recliner Actuator - Passenger
G300B

6847155

Passenger Seat Schematics (Seat Controls (AKE))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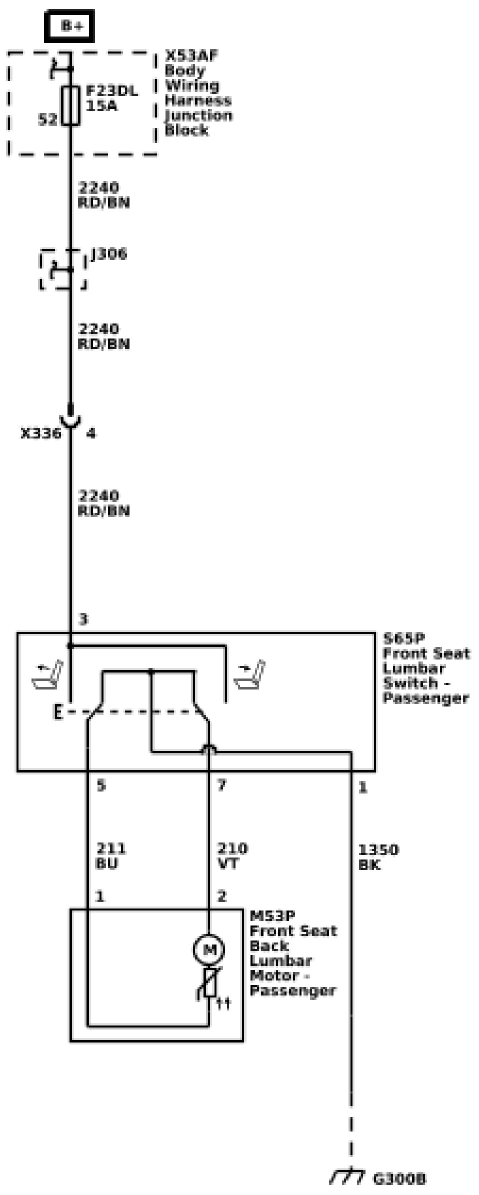
DESC
S65P Front Seat Lumbar Switch - Passenger
4
3
806Ω
301Ω
154Ω
931Ω
619Ω
432Ω
402Ω
2815 BK/BN
6
S64P Front Seat Adjuster Switch - Passenger
2816 GN/WH
5
A22 Radio Control
P7 Display
A90 Logic
4116 GN/YE
3
X53AF Body Wiring Harness Junction Block
B+
F23DL 15A
52
2240 RD/BN
J306
2240 RD/BN
4
X336
2240 RD/BN
J347
2240 RD/BN
1
B+
4
1350 BK
G300B

Passenger Seat Schematics (Seat Lumbar (-AVU))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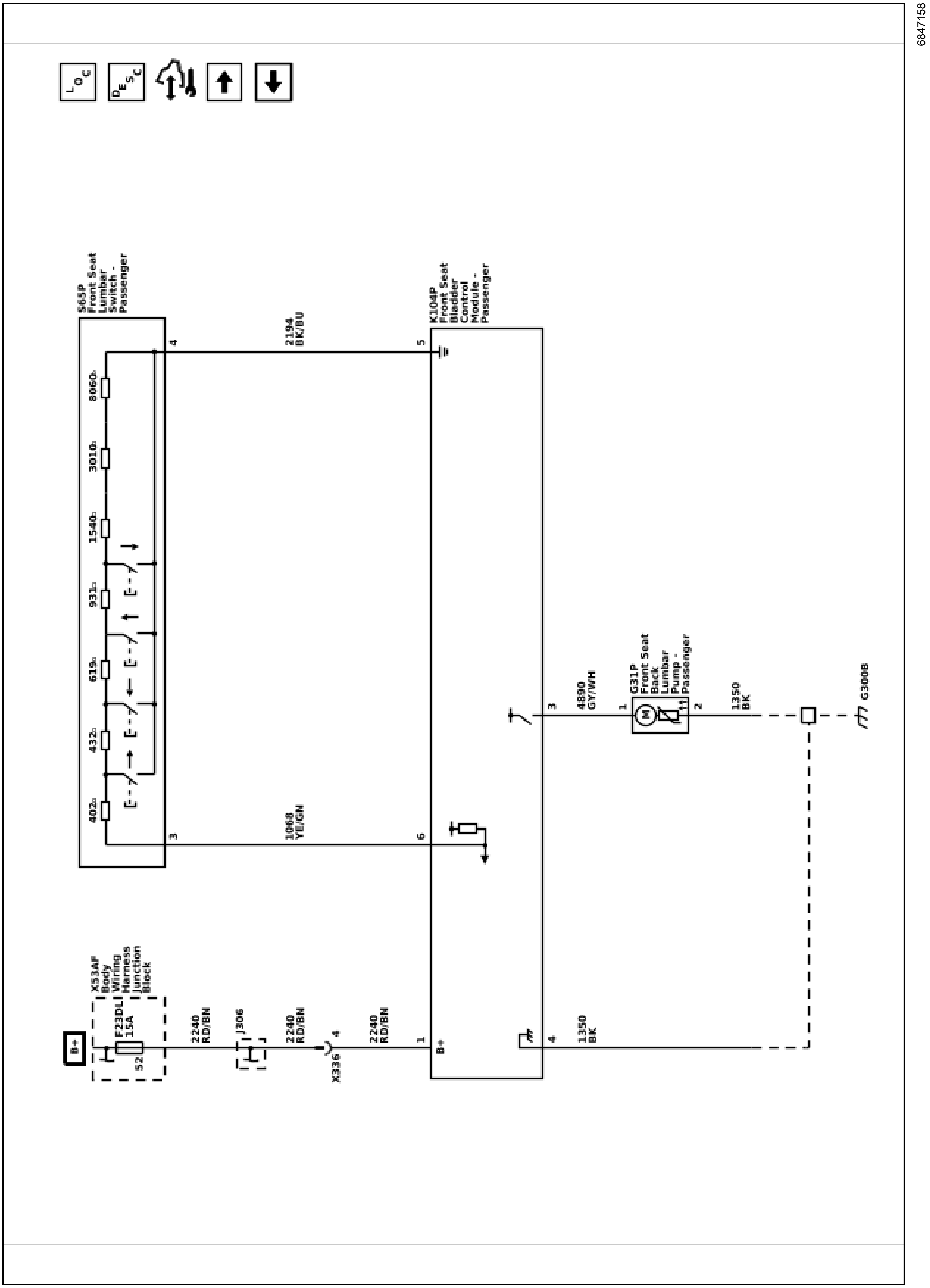
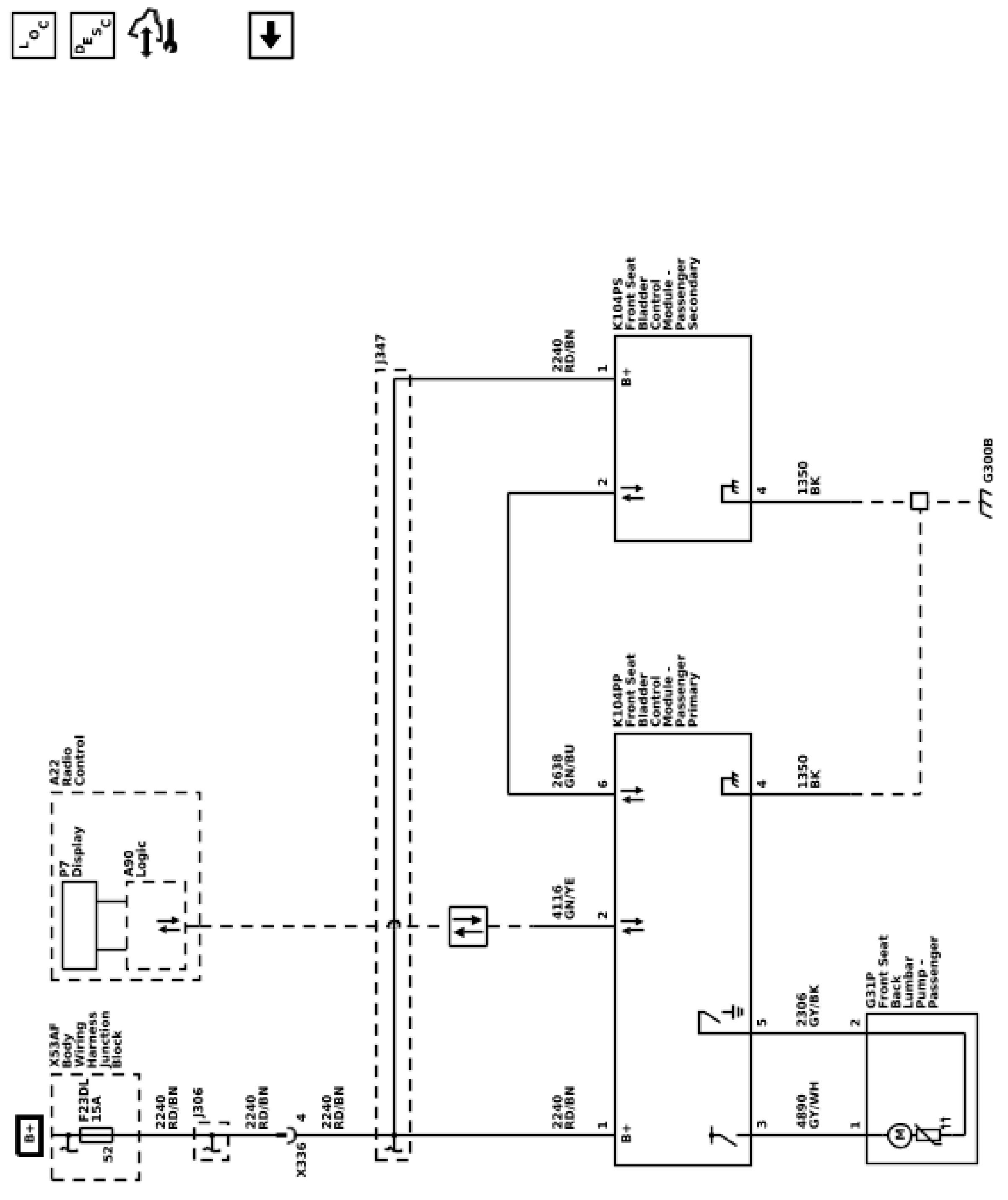
X53AF
Body
Wiring
Harness
Junction
Block
F23DL
15A
52
2240
RD/BN
J306
2240
RD/BN
X336
4
2240
RD/BN
3
E
S65P
Front Seat
Lumbar
Switch -
Passenger
5
7
1
211
BU
210
VT
1350
BK
1
2
M
M53P
Front Seat
Back
Lumbar
Motor -
Passenger
G300B

6847157

Passenger Seat Schematics (Seat Lumbar (AVU - AKE))


6847158
LOC
DESC
B+
X53AF Body Wiring Harness Junction Block
F23DL 15A
52
2240 RD/BN
J306
2240 RD/BN
X336
4
2240 RD/BN
S65P Front Seat Lumbar Switch - Passenger
402Ω
432Ω
619Ω
931Ω
1540Ω
3010Ω
8060Ω
3
4
1068 YE/GN
2194 BK/BU
K104P Front Seat Bladder Control Module - Passenger
1
B+
4
5
6
3
1350 BK
4890 GY/WH
G31P Front Seat Back Lumbar Pump - Passenger
1
M
2
1350 BK
G300B

Passenger Seat Schematics (Seat Lumbar and Massage (AVU & AKE))


6847159
B+
X53AF Body Wiring Harness Junction Block
F23DL 15A
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2240 RD/BN
J306
2240 RD/BN
X336
4
2240 RD/BN
J347
A22 Radio Control
P7 Display
A90 Logic
2240 RD/BN
1
B+
4116 GN/YE
2
2638 GN/BU
6
1350 BK
4
5
2306 GY/BK
3
4890 GY/WH
K104PP Front Seat Bladder Control Module - Passenger Primary
G31P Front Seat Back Lumbar Pump - Passenger
1
2
M
2240 RD/BN
1
B+
2
1350 BK
4
K104PS Front Seat Bladder Control Module - Passenger Secondary
G300B

Description and Operation

Lumbar Support/Massage Description and Operation (4-Way)

Lumbar Support Components

The driver and front passenger pneumatic lumbar support system each consist of the following components:

- Seat lumbar support switch
- Seat lumbar support control module
- Seat lumbar/bolster pump

Circuit Description

Battery voltage is supplied at all times to the seat lumbar support control module through a 10 A fuse located in the fuse block. Ground is also supplied at all times to the seat lumbar support control module and the seat lumbar/bolster pump.

The driver seat lumbar support switch is a resistive ladder switch. The seat lumbar support control module supplies the seat lumbar support switch with a signal and low reference circuits. When a lumbar switch is pressed, the signal circuit from the seat lumbar support control module is pulled low through the switch contacts and series of resistors indicating the lumbar support request. In response to this request, the seat lumbar support control module energizes its internal inflate solenoid and applies battery voltage through the lumbar support pump control circuit to the pump. The pump runs to inflate the appropriate support bladder until the switch is released.

Description of Operation

The following describes the lumbar support operation and how the seat lumbar support control module responds to each of the lumbar support switch inputs:

- When the lumbar support switch pressed in the FORWARD direction, the seat lumbar support control module will command the lumbar support pump ON and the upper and lower lumbar support bladders should inflate until the bladders are 100% inflated or the switch is released.
- When pressing the lumbar support switch in the REARWARD direction, the seat lumbar support control module will slowly deflate the upper and lower lumbar support bladders until the switch is released or both bladders are 100% deflated.
- When the lumbar support switch is pressed in the UP direction, the seat lumbar support control module will slowly inflate the upper lumbar support bladder until the switch is released or the bladder is 100% inflated.
- When the lumbar support switch is pressed in the DOWN direction, the seat lumbar support control module will slowly deflate the upper lumbar bladder while it inflates the lower lumbar bladder. The seat lumbar support control module will continue this operation until the switch is released or the upper lumbar bladder is 100% deflated and the lower lumbar bladder is 100% inflated.

Lumbar Support/Massage Description and Operation (2-Way)

Lumbar Support Components

The power seat lumbar support systems consist of the following components:

- S65 Front Seat Lumbar Switch
- M53 Front Seat Back Lumbar Motor

The seat lumbar switch provides both power and ground to the lumbar support motor. The motor contains an electronic circuit breaker (PTC) that will reset only after voltage has been removed from the motor. The motor moves the lumbar support forward and rearward.

When the lumbar switch is operated to move the lumbar support rearward, battery positive voltage is applied through the lumbar rearward switch contacts and the lumbar motor rearward control circuit to the lumbar support motor. The motor is grounded through the lumbar forward switch contacts and the lumbar motor forward control circuit to the motor. The motor runs to drive the lumbar support rearward away from the occupant's back until the switch is released. Moving the lumbar support forward works similarly to moving the lumbar support rearward, except that battery positive voltage and ground are applied on opposite circuits causing the motor to run in the opposite direction.

Lumbar Support/Massage Description and Operation (With Seat Bolster Memory Control Module)

The memory lumbar/bolster/massage system uses air bladders to adjust various aspects of the seat configuration to meet an occupant’s preference. It also allows these adjustments/types/intensities to be stored to a memory position along with the stored seat position.

Some vehicles may also be equipped with dynamic mode control which gives the chassis subsystem the ability to request an automatic adjustment to the seat's bolster support depending on vehicle driving conditions.

The various seat adjustments and functionality which may be possible include:

- Lumbar support – forward and rearward
- Lumbar support – up and down

- Seat back side bolster – in and out
- Back massage – type(s) and intensity (intensities)
- Cushion side bolster – in and out

The components of the system include:

- LIN based seat switch
- Seat adjuster memory module
- Bolster memory control module
- Seat air pump motor
- Air bladders
- Information display (If applicable)

LIN Seat Switch

The seat switch communicates all customer requests for seat movement or adjustment via the LIN serial data bus to the seat adjuster memory module. The seat switch may consist of the following controls:

- Seat adjuster switch similar to the typical discrete seat switch
- Massage On/Off switch, if massage is equipped
- 4-way lumbar switch which can be activated Up/Down/Forward/Rearward
- 2-way bolster switch which can be activated Up/Down

Lumbar/Bolster Operation

Note: When the Ignition Off, it is normal operation for bladders to deflate.

Once the lumbar/bolster feature has been activated, the seat adjuster memory module will command the seat bolster memory control module to perform the required pneumatic movements via LIN serial data messages.

The seat bolster memory control module contains the electronic circuitry for executing the commanded pneumatic seat adjustments, air direction solenoids, pressure sensors for storing air bladder pressures, and an output which supplies battery power to the external seat air pump motor when any of the air bladders require inflating.

Based on the LIN command from the seat adjuster memory module, the seat bolster memory control module controls the appropriate air solenoids and activates or deactivates the external air pump in order to inflate or deflate the air bladders in the correct combination. When an air bladder needs inflating its solenoid opens and the pump motor is activated pumping air into the bladder. When an air bladder needs deflating its solenoid opens the release valve and air is allowed to bleed out of the bladder into the vehicle cabin.

To support memory recall and massage, the seat bolster memory control module uses internal air pressure sensors to track, store and recall the positions of all the air bladders under its control.

The massage On/Off switch on the LIN seat switch allows the customer to turn the massage feature on and off.

Memory Seats Description and Operation

The memory seat system consists of the following components:

- Driver seat adjuster switch
- Driver seat memory switch
- Seat memory control module
- Driver seat horizontal motor
- Driver seat front vertical motor
- Driver seat rear vertical motor
- Driver seat recline motor

Driver Seat Adjuster Switch

Ground is supplied at all times to the seat adjuster switch. Battery positive voltage is supplied at all times to the seat adjuster switch through a 10 A fuse located in the fuse block. When the seat adjuster switches are pressed, the appropriate signal message is sent to the seat memory control module, via a LIN message. The seat memory control module then commands the appropriate seat motor to move in response to the switch signal message.

Seat Memory Control Module Power and Grounds

Battery positive voltage is supplied at all times to the seat memory control module through a 30 A fuse located in the fuse block. This voltage is used by the module to apply power to the seat motor when commanded ON. Battery positive voltage is also applied at all times to the seat memory control module through a 10 A fuse located in the fuse block.
This voltage is used to power up the module. Ground is provided to the seat memory control module through the module ground circuit and ground connection.

Seat Motors

There are 4 motors that move the position of the seat. These are the seat horizontal motor, seat front vertical motor, seat rear vertical motor, and the seat back recline motor. The horizontal motor moves the entire seat forward and rearward. The seat front vertical motor moves the front of the seat cushion up or down. The seat rear vertical motor moves the rear of the seat cushion up and down. The recline motor moves the angle of the seat back forward or rearward.

The seat memory control module controls all seat motors via half bridges that are connected to a single power rail internal to the module. The module connects each of the seat motor outputs together when a seat motor is not in operation. The seat memory control module continually checks the motor control circuits for shorts to ground or voltage. If a fault is detected with a motor control circuit movement of the related motor is inhibited. All of the motors operate independently of each other. Each motor contains an electronic circuit breaker (PTC), which will reset only after voltage has been removed from the motor.

All seat motors are reversible. For example, when a seat switch is pressed to move the entire seat forward, a signal is sent from the seat adjuster switch to the seat memory control module, via the LIN message. In response to this signal, the module applies battery voltage through the seat horizontal motor forward control circuit and ground through the seat horizontal motor rearward control circuit to the motor. The motor runs to drive the entire seat forward until the switch is released, the motor reaches the end of travel, or an obstruction prevents further seat movement. Moving the entire seat rearward works similarly to moving the entire seat forward, except that battery voltage and ground are applied on the opposite circuits causing the motor to run in the opposite direction. All of the motors are powered this way.

Position Detection

Note: There are no physical position sensors used to detect the seat position and movement.

To monitor the seat position, the seat memory control module counts the electrical pulses of each seat motor. During seat motor operation, the electrical pulses are counted and the direction of the seat movement is monitored to determine the seat position.

The seat memory control module determines seat position by keeping a running counter where movement in the forward/upward direction adds counts and movement in the rearward/down direction subtracts counts.

The value of these counters, which represent seat positions, are stored in memory for future seat memory recall operation. During a memory seat position recall, the seat memory control module moves the seat in such a way to return it the stored counter value.

Memory Functions

Note: The seat memory control module does not store the mirror, column, MBM, or HUD positions. The seat memory control sends a serial data messages to the respective modules to recall their locally stored memory position.

In all power modes except crank, memory recalls can be initiated by pressing and holding one of the memory position buttons until the seat reaches the stored memory position associated with the activated button. This is called a supervised recall.

The driver seat memory switch is supplied ground at all times. The seat memory control module supplies set and memory recall signal circuits to the seat memory switch. When a memory recall switch is pressed, the signal circuit from the seat memory control module is pulled low through the switch contacts and a series of resistors indicating the memory recall request. In response to this signal, the seat memory control module commands the appropriate seat motors to move to the pre-recorded seat positions stored in memory.

Refer to the Owner’s Manual for storing memory positions.

Seat Entry Memory Recall and Seat Exit Memory Recall

The seat memory control module will not perform Seat Entry Memory Recall and Seat Exit Memory Recall functions unless these options are enabled in vehicle personalization using the radio/HVAC controls.

Refer to Instruments and Controls/Vehicle Personalization in the Owner’s Manual for the following memory personalization options:

- Seat Entry Memory Recall
- Seat Exit Memory Recall

The radio/HVAC controls reports the seat memory recall option settings to the seat memory control module via serial data message. The module will then store the memory recall option setting and examine it before making a memory seat adjustment. The seat memory recall option setting stored within the module will not change until the seat memory recall option setting in vehicle personalization is changed.

Memory Store and Recall Conditions

Note: Memory function requires a position be saved to the activated memory switch that is being recalled.

Memory Store Preconditions:

- RUN power mode
- No Stuck or Active Switches (seat, mirror, column, HUD)
- No SIR Disable
- No Load Shed 3
- No output motor drive faults detected
- No position plausibility faults detected
- No child lockout – rear

- Not limit switch fault
- No memory switch fault
- Memory ID is 1 or 2

Memory Recall Preconditions:

- No Stuck or Active Switches (seat, mirror, column, HUD)
- No SIR Disable
- No Load Shed 3
- No output motor drive faults detected
- No position plausibility faults detected
- No child lockout – rear
- Not limit switch fault
- No memory switch fault
- Memory ID is 1 or 2
- LIN communications Active
- Not currently performing a memory store
- A position has been saved to the recalled memory position

Memory Recall Termination Conditions:

- Precondition no longer met
- Active memory button changed
- Recall completed
- Exceed the max allowed recall time (30 seconds)
- OTA Programming Requested

Auto Memory Recall Preconditions:

Note: Auto Memory Recall is suspended during Start power mode.

- Valid Memory ID and Driver ID
- Valid Power Mode
- No Active or Stuck Switches
- No SIR disable
- Vehicle is Stopped
- No Load Shed 3
- No ASIL – A output fault detected
- No position plausibility faults detected
- No child lockout – rear
- Not limit switch fault
- No memory switch fault
- A position has been saved to the recalled memory position
- Enabled for Current Driver

Auto Memory Recall Termination Conditions:

- Precondition no longer met, except being Parked
- Exceed any recall completion times
- Vehicle On terminates Seat Exit Memory
- Vehicle Off terminates Seat Entry Memory
- OTA Programming Requested

Memory Recall Termination Data Displays:

The termination causes can be viewed through the Seat Memory Recall History data displays. The following are possible memory recall termination causes:

- No Recall Requested
- Seat Entry/Exit Recall Completed
- Memory Button 1 Recall Initiated
- Memory Button 1 Recall Completed
- Memory Button 2 Recall Initiated
- Memory Button 2 Recall Completed
- Memory Button Exit Recall Initiated
- Memory Button Exit Recall Completed
- Terminated by Other then following
- Memory switch stuck or Invalid
- Memory Switch (Not including SET) out of Range
- Memory SET switch Active or 1, 2, Exit switch changed
- Seat Switch Active or Stuck
- Mirror Switch Active or Stuck
- HUD Switch Active or Stuck
- No Position 1 stored
- No Position 2 Stored
- No Position Exit Stored
- Load Shed 3
- Sir Disabled
- Limit Switch Active or Fault
- Seat Entry – Not Parked terminated
- Invalid Power Mode
- Seat Forward Rearward Motor Control Fault
- Seat Front Up/Down Motor Control Fault
- Seat Rear Up/Down Motor Control Fault
- Recline Forward Rearward Motor Control Fault
- Seat Front Up/Down Motor Position Fault
- Seat Rear Up/Down Motor Position Fault
- Recline Forward Rearward Motor Position Fault

Power Seats System Description and Operation (Driver Without Memory or Passenger Without Seat Bolster Memory Control Module)

The driver and passenger power seat systems each consist of the following components:

- Seat adjuster switch
- Seat horizontal motor
- Seat front vertical motor (If Equipped)
- Seat rear vertical motor
- Seat recline motor

Seat Motors

The seat switches provide both power and ground to the selected seat motors.

All of the seat motors operate independently of each other. Each motor contains an electronic circuit breaker (PTC) that opens in the event of a circuit overload and will reset only after voltage has been removed from the circuit. There are four seat position motors and two lumbar motors. These are the horizontal motor, front vertical motor, rear vertical motor, and the seat back recline motor. The seat horizontal motor moves the entire seat forward and rearward. The seat vertical motors may operate independently to tilt the front or rear of the seat cushion up or down. Both motors can also run simultaneously to move the entire seat up or down. The recline motor moves the angle of the seat back forward or rearward.

Seat Operation

All seat motors are reversible. For example, when the seat horizontal forward switch is pressed to move the entire seat forward, battery voltage is applied through the switch contacts and the seat horizontal motor forward control circuit to the motor. With the horizontal motor rearward switch contacts closed to the switch ground circuit, the motor runs in order to drive the entire seat forward until the switch is released. Moving the entire seat rearward works similarly to moving the entire seat forward, except that battery voltage and ground are applied on opposite circuits causing the motor to run in the opposite direction. All seat motors are powered this way.

Power Seats System Description and Operation (Passenger With Seat Bolster Memory Control Module)

The passenger power seat actuators controlled by a Seat Adjuster Memory Module consists of the following components:

- Seat adjuster switch
- Seat adjuster memory module
- Seat horizontal motor
- Seat front vertical motor
- Seat rear vertical motor
- Seat recline motor

Front Seat Adjuster Switch

Ground is supplied at all times to the Front Seat Adjuster Switch. Battery positive voltage is supplied at all times to the Front Seat Adjuster Switch through a 10 A fuse located in the fuse block. When the Front Seat Adjuster Switches are pressed, the appropriate signal message is sent to the Seat Adjuster Memory Module, via a LIN message. The Seat Adjuster Memory Module then commands the appropriate seat motor to move in response to the switch signal message.

Seat Adjuster Memory Module Power and Grounds

Battery positive voltage is supplied at all times to the Seat Adjuster Memory Module through a 30 A fuse located in the fuse block. This voltage is used by the module to apply power to the seat motor when commanded ON. Battery positive voltage is also applied at all times to the Seat Adjuster Memory Module through a 10 A fuse located in the fuse block. This voltage is used to power up the module. Ground is provided to the Seat Adjuster Memory Module through the module ground circuit and ground connection.

Seat Actuators

There are 4 actuators that move the position of the seat. These are the seat horizontal motor, seat front vertical motor, seat rear vertical motor, and the seat back recline motor. The horizontal motor moves the entire seat forward and rearward. The seat front vertical motor moves the front of the seat cushion up or down. The seat rear vertical motor moves the rear of the seat cushion up and down. The recline motor moves the angle of the seat back forward or rearward.

The Seat Adjuster Memory Module controls all seat actuators via half bridges that are connected to a single power rail internal to the module. The module connects each of the seat motor outputs together when a seat motor is not in operation. The Seat Adjuster Memory Module continually checks the motor control circuits for shorts to ground or voltage. If a fault is detected with a motor control circuit movement of the related motor is inhibited. All of the actuators operate independently of each other. Each motor contains an electronic circuit breaker (PTC), which will reset only after voltage has been removed from the motor.

All seat actuators are reversible. For example, when a seat switch is pressed to move the entire seat forward, a signal is sent from the Front Seat Adjuster Switch to the Seat Adjuster Memory Module, via the LIN message. In response to this signal, the module applies battery voltage through the seat horizontal motor forward control circuit and ground through the seat horizontal motor rearward control circuit to the motor. The motor runs in order to drive the entire seat forward. Moving the entire seat rearward works similarly to moving the entire seat forward, except that battery voltage and ground are applied on the opposite circuits causing the motor to run in the opposite direction. All of the actuators are powered this way.

Power Seats System Description and Operation (3rd Row)

The left and right 3rd row folding seat system each consist of the following components:

- Folding seat control module – 3rd row
- Folding seat switch – D-pillar 3rd row
- Folding seat switch – Overhead console 3rd row
- Folding seat motor – seat back release 3rd row
- Folding seat motor – 3rd row
- Folding seat sensor

Folding Seat Control Module – 3rd Row

The folding seat control module controls both sides of the 60/40 split 3rd row folding seat.

The folding seat control module will be in a low power sleep state until it detects the activation of one of the folding seat switches. It will remain in its normal operating awake mode and not return to its sleep mode until all its outputs have been off for 30 s and it has been determined that no switches are active.

Battery positive voltage is supplied at all times to the folding seat control module through a 30 A fuse located in the rear body fuse block. The module uses this voltage for both logic power and to power the seat motors and seat back release motors. Each folding seat motor and release motor is controlled by a relays internal to the folding seat control module and through two control circuits to each motor and release motor. The control module checks to see if the control circuits are shorted to ground or voltage before enabling folding seat operation.

D-Pillar Folding Seat Switches

The 3rd row folding seat switches are located on the D-pillar of the rear cargo area. Each side of the 60/40 split seat has a pair of fold and unfold normally open, high assertion, momentary switches designed to keep them from being simultaneously pressed.

When the transmission is in the park position, battery voltage is supplied to the folding seat switches through the normally closed contacts of the Park Enable Relay which is controlled by the BCM. When the transmission is not in the park position, the BCM energizes the relay opening the contacts and removing battery voltage from the switches. Thus folding seat operation is only available with the vehicle transmission in the park position.

Each switch contact is connected to an individual discrete input of the folding seat control module which provides a pull down to ground on these signal circuits. When a folding seat switch is pressed battery voltage is applied through the switch contacts and the signal circuit to the folding seat control module. The module then commands the folding seat to move in response to the switch signal.

Overhead Console Folding Seat Switches

The overhead console has two switches that are used to fold the 3rd row seat. The left switch operates the left portion of the seat and the right switch operates the right portion of the seat. When the left LED is illuminated it means that the 3rd row power folding seat module sees one of the unlatch switches as active and the left seatback in the 3rd row is not fully in the unfolded seated position. When the right LED is illuminated it means that the 3rd row power folding seat module sees one of the latch/unlatch switches is active and the right seatback in the 3rd row is not fully in the unfolded seated position.

When the transmission is in the park position, battery voltage is supplied to the folding seat switches through the normally closed contacts of the Park Enable Relay which is controlled by the BCM. When the transmission is not in the park position, the BCM energizes the relay opening the contacts and removing battery voltage from the switches. Thus folding seat operation is only available with the vehicle transmission in the park position.

Each switch contact is connected to an individual discrete input of the folding seat control module which provides a pull down to ground on these signal circuits. When a folding seat switch is pressed battery voltage is applied through the switch contacts and the signal circuit to the folding seat control module. The module then commands the folding seat to move in response to the switch signal.

Folding Seat Motor – Seat Back Release

The folding seat back release motor is a spring loaded device used to latch the seat back into its desired parked position or to unlatch the seat back for folding or unfolding seat operation. There are three modes of release motor control; retract, hold, and release. When the folding seat switch is pressed to fold the seat, the folding seat control module applies a PWM voltage, approximately 95% duty cycle, through the seat back release motor control circuit to the motor releasing the seat back. The control module holds the release motor at a reduced voltage, approximately 25% duty cycle, until a stall condition is reached. Once a stall condition is reach the module releases the motor latching the seat back in place. One second after the motor is released, the seat will move in the opposite direction of travel to confirm the seat back is locked in a secure position. This action will continue until a stall condition is detected, refer to Folding Seat Sensor below. After the completion of the latch lock conformation, the module will relieve any bound up tension after the latch lock conformation.

Folding Seat Motor

The folding seat motor is used to physically move the seat back to its desired position. It is a bi-directional motor connected to two H-Bridge relay outputs of the folding seat control module. To fold the seat, one control module output provides power to one side of the motor while the other side is grounded through the other relay output. To unfold the seat, the polarities on the motor are reversed.

While the motor outputs are off, the control module internal diagnostic network applies a bias voltage of 2.5 V to the motor control circuits. If there is a short to voltage or a short to ground on either control circuit, this will cause a shift in the bias voltage on the diagnostic network and the module will not activate a motor under this condition.

Folding Seat Sensor

Internal to the folding seat motor is the folding seat sensor. The sensor is a 2-wire hall-effect sensor which is used strictly to determine the stall status of the folding seat motor. It is not used to provide seat position information.

The folding seat control module supplies a 10 V reference voltage through one circuit while the other circuit is the signal circuit. As the motor runs the sensor provides 4 pulses per revolution which it uses to determine when the motor has reached a stalled condition. A stall condition is caused by the seat back being fully folded, by being unfolded in the upright position, or by an object in the seat’s path preventing movement. If the module does not detect a pulse from the sensor for 100 ms it will cease the folding seat operation.

Folding Seat Operation

With the vehicle transmission in the park position, the folding seat will operate in either dual mode or single mode. The normal operating mode is the dual seat mode where both sides of the 60/40 seat can move individually or at the same time.

Single seat mode is entered during a requested operation when the system voltage drops below 10.5 V. It allows only one side of the 60/40 seat to be folded at a time until the requested operation is complete. Once the operation is completed, additional switch inputs will be ignored until the voltage level returns to its normal range. In all cases the 60 seat operation will have priority over the 40 seat operation.

When a switch is activated, battery voltage is applied to the associated input signal to the control module. This wakes the module up out of its low power state and begins to execute the requested seat movement.

First, the control module operates the folding seat back release motor in the pull state, refer to Folding Seat Motor – Seat Back Release above, until it considers the seat is unlatched as determined either monitoring motor current for a stall condition or a 1.5 s time-out. Once the seat is considered unlatched the control module maintains the release motor in the hold state to keep the latch pin disengaged from the seat.

Once the release motor is in the hold state, the control module powers the folding seat motor in the appropriate direction to fold or un-fold the seat based on which switch inputs are active. While the seat motor is active the control module monitors the folding seat sensor for a stall condition, switch inputs for a transition from the active to the inactive state, excessive motor current, and the time the motor is active.

The seat will continue to move until the control module determines that either the customer has released the switch, the folding seat sensor indicates that the folding seat motor is in a stall condition, excessive motor current is detected, or the current seat movement is taking an excessive amount of time to execute for the given system voltage and operating temperature. When any of these conditions are detected the control module turns off the seat motor, then releases the motor allowing the motor’s spring to drive the latch pin back into the lock position. The control module then executes a seat parking operation.

To execute seat parking, one second after the release motor is released, the seat shall move in the opposite direction of travel to confirm the latch is locked. This seat movement will occur until a stall condition is detected or 400 ms have passed. Then to relieve any tension in the seat structure that may have occurred due to the latch confirmation, the seat will move in the opposite direction for a specified amount of travel or after 100 ms have passed.

The module will power down to its low power state when all the switches appear inactive and all the outputs have been inactive for 30 s.

Power Seats System Description and Operation (2nd Row)

The left and right 2nd row folding seat systems each consist of the following components:

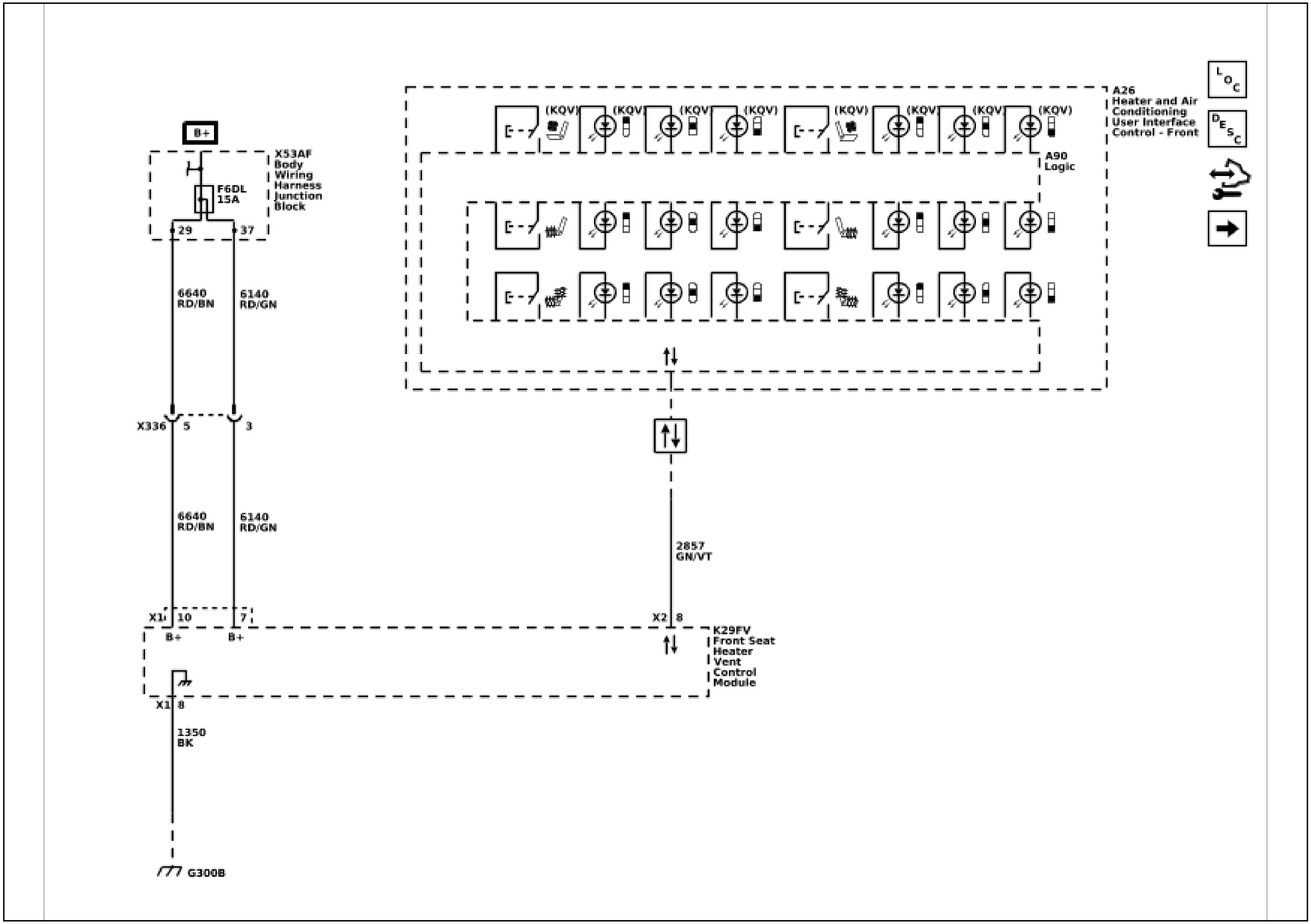
- Folding seat switch
- Folding seat motor

The folding 2nd row seats are operated from the folding seat switches located on the passenger side rear panel and on the trim panel in the rear cargo area. Battery voltage is supplied at all times to the folding seat switches through the park enable relay while in a de-energized state. Battery voltage is also supplied at all times to the folding seat motors through a 20 A fuse located in the rear body fuse block. When a folding seat switch is pressed, battery voltage is applied through the switch contacts and the control circuit to the folding seat motor. The motor runs to move the seat back to the folded position.

Seat Heating and Cooling

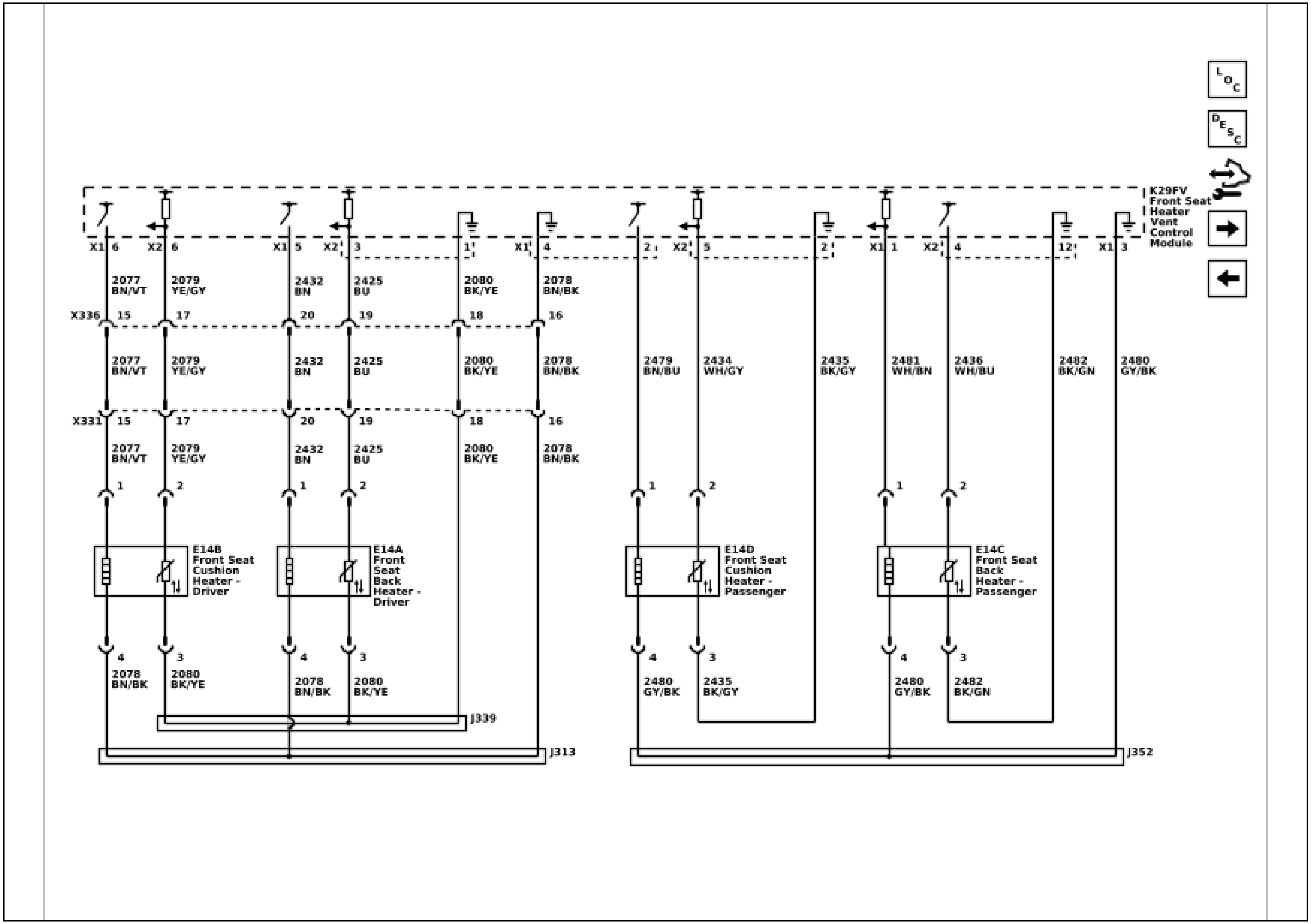
Schematic and Routing Diagrams

Heated/Cooled Seat Schematics (Front Seat Heating Control Module Power, Ground, Serial Data, and Controls (KA1 / KQV))


B+
X53AF Body Wiring Harness Junction Block
F6DL 15A
29
37
6640 RD/BN
6140 RD/GN
X336
5
3
6640 RD/BN
6140 RD/GN
X1
10
7
B+
B+
X2
8
2857 GN/VT
K29FV Front Seat Heater Vent Control Module
X1
8
1350 BK
G300B
A26 Heater and Air Conditioning User Interface Control - Front
A90 Logic
(KQV)
(KQV)
(KQV)
(KQV)
(KQV)
(KQV)
(KQV)
(KQV)
LOC
DESC

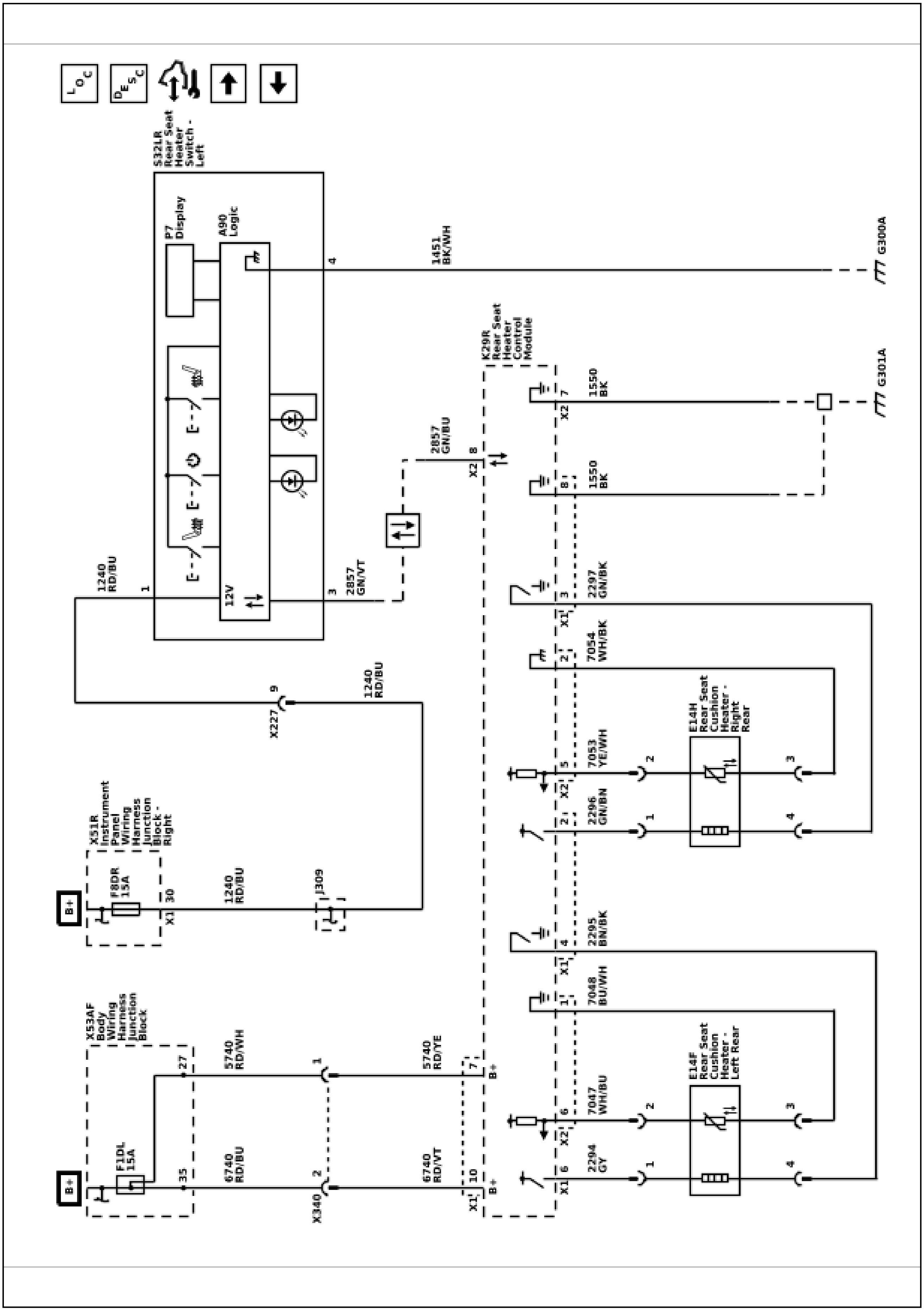
6847160

Heated/Cooled Seat Schematics (Heated Seat Elements - Front (KA1 / KQV))


K29FV Front Seat Heater Vent Control Module
X1 6
X2 6
X1 5
X2 3
1
X1 4
2
X2 5
2
X1 1
X2 4
12
X1 3
2077 BN/VT
2079 YE/GY
2432 BN
2425 BU
2080 BK/YE
2078 BN/BK
X336
15
17
20
19
18
16
2479 BN/BU
2434 WH/GY
2435 BK/GY
2481 WH/BN
2436 WH/BU
2482 BK/GN
2480 GY/BK
X331
1
2
E14B Front Seat Cushion Heater - Driver
E14A Front Seat Back Heater - Driver
E14D Front Seat Cushion Heater - Passenger
E14C Front Seat Back Heater - Passenger
4
3
2078 BN/BK
2080 BK/YE
2480 GY/BK
2435 BK/GY
2482 BK/GN
J339
J313
J352

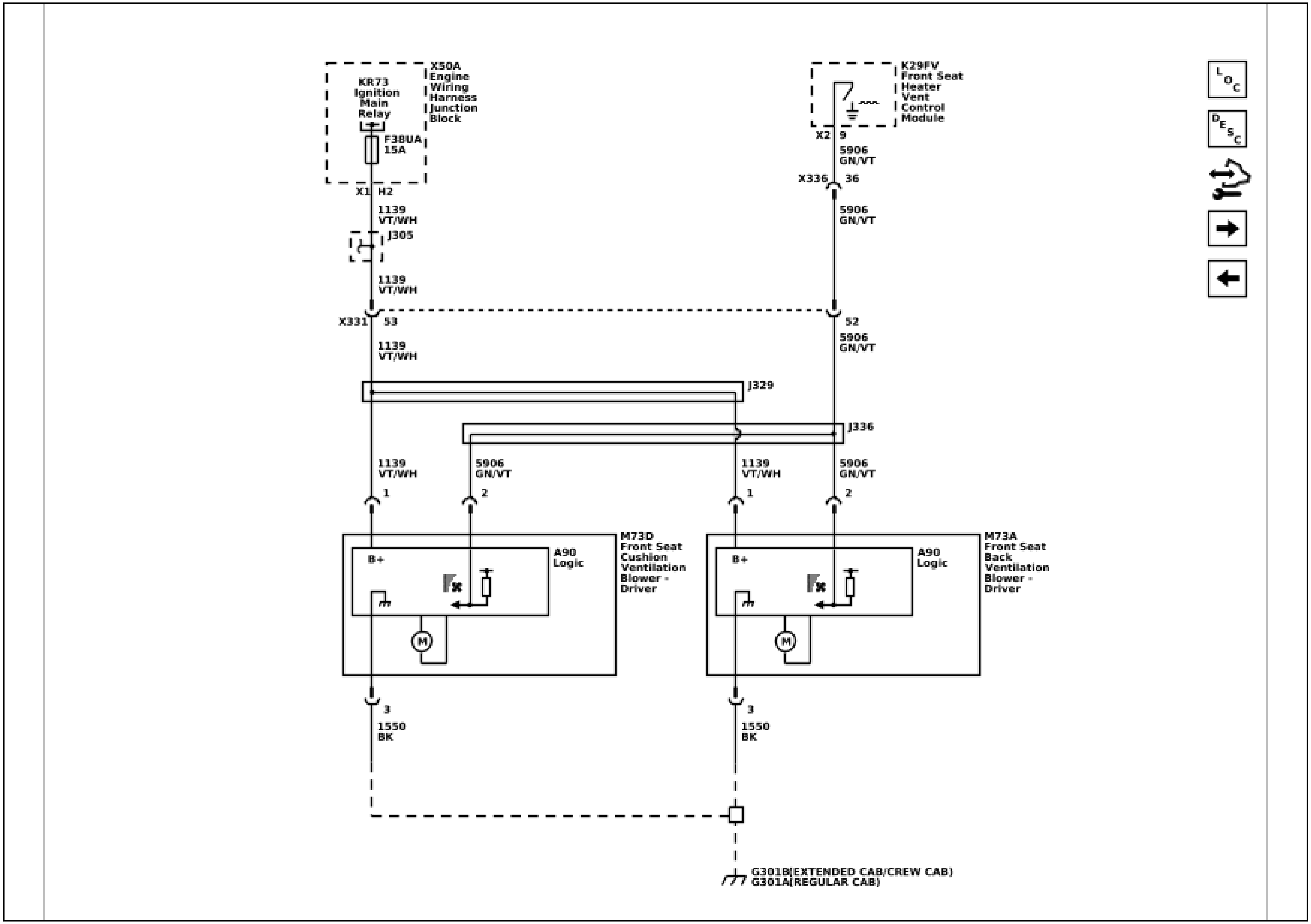
6847161

Heated/Cooled Seat Schematics (Heated Seats - Rear (KA6))


LOC
DESC
S321R Rear Seat Heater Switch - Left
P7 Display
A90 Logic
12V
1
3
4
1240 RD/BU
2857 GN/VT
1451 BK/WH
G300A
K29R Rear Seat Heater Control Module
2857 GN/BU
X2 8
X2 7
1550 BK
8
G301A
X1 3
2297 GN/BK
X1 2
7054 WH/BK
X2 5
7053 YE/WH
X2 2
2296 GN/BN
E14H Rear Seat Cushion Heater - Right Rear
X227
9
X51R Instrument Panel Wiring Harness Junction Block - Right
B+
F8DR 15A
X1 30
J309
X1 4
2295 BN/BK
X1 1
7048 BU/WH
X2 6
7047 WH/BU
X1 6
2294 GY
E14F Rear Seat Cushion Heater - Left Rear
X53AF Body Wiring Harness Junction Block
F1DL 15A
27
35
5740 RD/WH
6740 RD/BU
X340
5740 RD/YE
6740 RD/VT
X1 7
10
B+

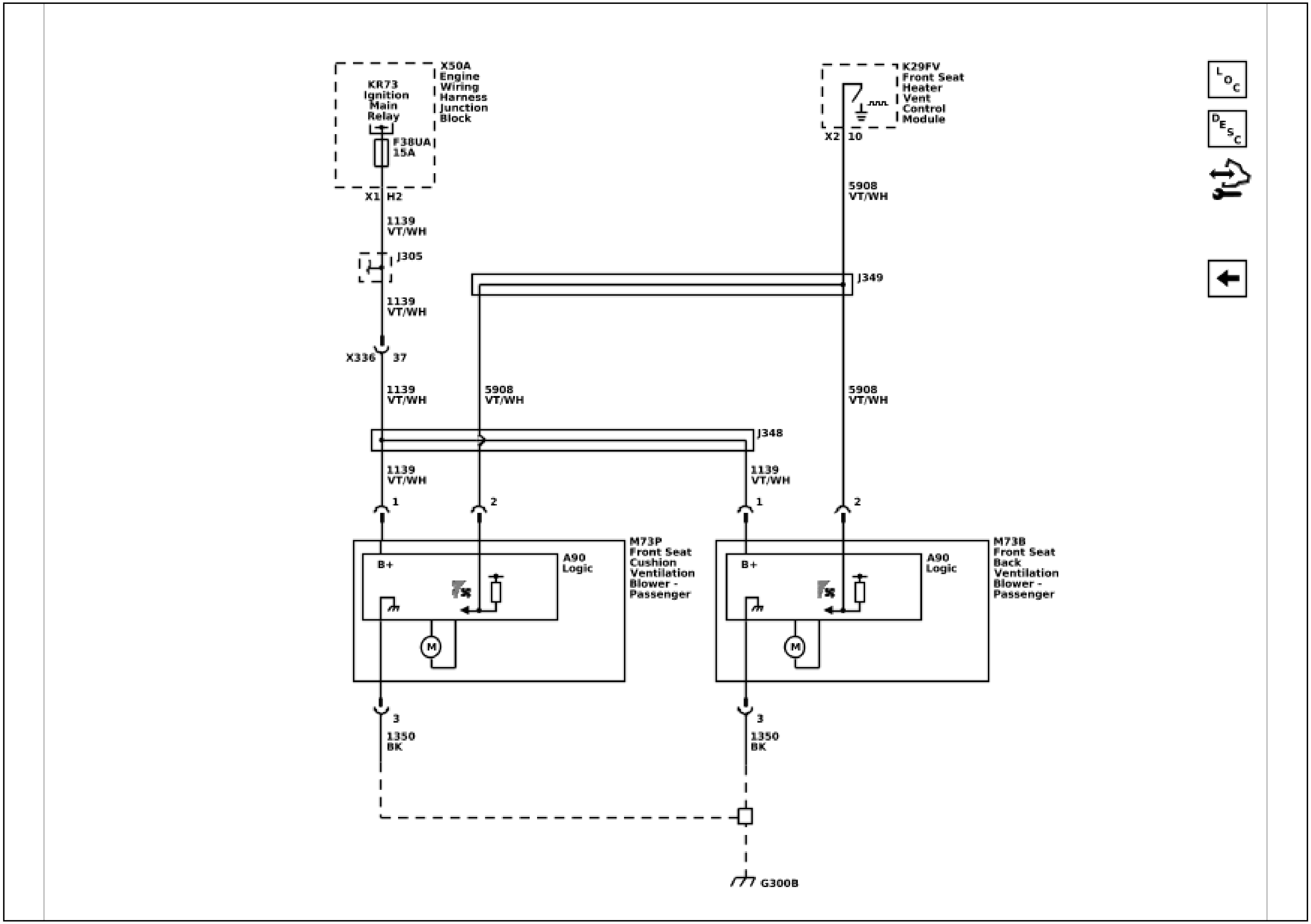
6847162

Heated/Cooled Seat Schematics (Ventilated Seats - Driver (KQV))


X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F38UA 15A
X1 H2
1139 VT/WH
J305
1139 VT/WH
X331 53
1139 VT/WH
J329
J336
1139 VT/WH
1
5906 GN/VT
2
B+
A90 Logic
M73D Front Seat Cushion Ventilation Blower - Driver
M
3
1550 BK
K29FV Front Seat Heater Vent Control Module
X2 9
5906 GN/VT
X336 36
5906 GN/VT
52
5906 GN/VT
1139 VT/WH
1
5906 GN/VT
2
B+
A90 Logic
M73A Front Seat Back Ventilation Blower - Driver
M
3
1550 BK
G301B(EXTENDED CAB/CREW CAB)
G301A(REGULAR CAB)
LOC
DESC

6847163

Heated/Cooled Seat Schematics (Ventilated Seats - Passenger (KQV))


X50A
Engine
Wiring
Harness
Junction
Block
KR73
Ignition
Main
Relay
F38UA
15A
X1 H2
1139
VT/WH
J305
1139
VT/WH
X336 37
1139
VT/WH
K29FV
Front Seat
Heater
Vent
Control
Module
X2 10
5908
VT/WH
J349
5908
VT/WH
5908
VT/WH
J348
1139
VT/WH
1139
VT/WH
1
2
1
2
B+
A90
Logic
M
M73P
Front Seat
Cushion
Ventilation
Blower -
Passenger
B+
A90
Logic
M
M73B
Front Seat
Back
Ventilation
Blower -
Passenger
3
1350
BK
3
1350
BK
G300B
LOC
DESC

6847164

Description and Operation

Heated/Vented Seat Description and Operation

Heated and Vented Seat Components

The heated/vented seat system consists of the following components:

- Heated and vented seat switches
- Body control module
- Front seat heater control module
- Driver seat cushion heating element
- Driver seat cushion temperature sensor
- Driver seat back heating element
- Driver seat back temperature sensor
- Driver seat cushion blower motor
- Driver seat back blower motor
- Passenger seat cushion heating element
- Passenger seat cushion temperature sensor
- Passenger seat back heating element
- Passenger seat back temperature sensor
- Passenger seat cushion blower motor
- Passenger seat back blower motor

Heated/Vented Seat Switches

The driver and passenger heated and vented seat switches are located near the HVAC controls on the center stack. The BCM is the heated and vented seat system master. It monitors heated/vented seat switch activations to determine user requested operating mode. Based on the requested operating mode, the BCM sends a LIN Bus serial data message to the front seat heater control module how to drive the self-regulated heating pads or ventilation motors. The BCM also controls the indicators used to provide the operator with feedback as to the operating status of the system. With each press of the switch, the system will cycle through High, Medium, Low, and then back to Off again. The BCM also controls the seat temperature and mode indicators, via the serial data line, used to provide the operator with feedback as to the operating status of the system.

Heated Seat Operation

The front seat heater control module controls heated seat operation for the driver and passenger seats. When active, power is applied to the seat cushion and back heater elements through a common pulse width modulated (PWM) voltage supply control circuit. Each individual heater element is switched to ground by the module through a common low side drive control circuit.

When inactive the front seat heater control module connects the heating element low side outputs to a common reference point internal to the module which is biased to approximately 3.5 V. The module uses this biased voltage in order to check the high side and low side control circuits for a short to battery or ground before enabling the driver and passenger seat heating elements. During heated seat operation, the front seat heater control module interrupts control of the heating elements every 10 s for approximately 10 ms to make this biased voltage check.

With both the seat cushion and seat back heater elements disconnected, if the high side output of the module is measured it will display a low current 12 V bleed off voltage. This bleed off voltage does not have a meaningful diagnostic purpose. With one or both of the heater elements connected you would just see the 3.5 V biased voltage from this circuit.

Temperature Regulation

The seat back and cushion temperature sensors (thermistors) are packaged with the seat heating elements located just under the seat covers. The front seat heater control module supplies each temperature sensor with a 5 V reference signal circuit and a low reference circuit. The module monitors the voltage from the signal circuit to determine the temperature of the seat.

The temperature sensor varies in resistance based on the temperature of the heating element causing the signal voltage to change. Once the module senses the seat reached the set temperature, it will then begin regulate the current flow through the heater elements in order to maintain the desired seat temperature based on the feedback voltage from the sensor.

If the heated seats are on high, the temperature level may automatically be lowered after approximately 30 min of operation.

Vented Seat Operation

Each vented seat consists of 2 blower motors, one in the seat back and one in the seat cushion. During vented seat operation, the vented seat blower motors draw cabin air in through channels in the foam pad and small holes in the seat covers to pull heat away from the occupant.

When the front seat heater control module receives a ventilation seat command, it sends a low side drive pulse width modulation (PWM) signal through the blower motor control circuit to the seat back and cushion blower motors indicating the seat ventilation command. The logic in the blower motors sets the blower speed to the switch set point. The blower motors run causing a cooling effect to the occupant.

Auto Heated Seat Operation with Vehicle ON

Refer to Heated and Ventilated Front Seats and Vehicle Personalization in the Owner's Manual for information regarding Auto Heated and Ventilation Seat operation.

Heated and Cooled Seat Operation During Remote Start

Refer to Vehicle Personalization in the Owner's Manual for Remote Start Auto Heated and Ventilation Seats.

During remote start, the heated seats will turn ON when the ambient temperature is below 10° C (50° F).

During remote start, the seat ventilation system will turn ON when the ambient temperature is above 27° C (80° F).

Load Shed Management

The electrical power management function is designed to monitor the vehicle electrical load and determine when the battery is potentially in a high discharge condition. The heated seat system is one of the vehicle loads that is subject to reduction during a battery discharge condition. For more information on load management refer to *Electrical Power Management Description and Operation 6-151*.

Rear Heated Seats Description and Operation

Heated Seat Components

The rear heated seat system consists of the following components:

- Rear heated seat switches
- Body control module
- Rear seat heating control module
- Seat cushion heating element
- Seat cushion temperature sensor

Heated Seat Switches

When a heated seat switch is pressed, a Local Interconnect Network (LIN) bus serial data message is sent from the rear heated seat switches to the BCM indicating the rear heated seat command. The BCM serves as the heated seat system master and determines the requested operating mode. The BCM sends serial data messages to the Seat Heating Control Module-Rear indicating the heated seat command. In response to this serial data message from the BCM, the Seat Heating Control Module-Rear drives the appropriate seat heating elements. The BCM also controls the seat temperature and mode indicators, via the LIN serial data line, to provide the operator with feedback as to the operating status of the system.

Rear Heated Seat Operation

The Seat Heating Control Module-Rear controls heated seat operation for the left and right rear seats. When active, power is applied to the seat cushion heater element through a pulse width modulated (PWM) voltage supply control circuit. The heater element is switched to ground by the module through a low side drive control circuit.

Temperature Regulation

The seat cushion temperature sensor (thermistor) is packaged with the seat heating element located just under the seat cover. The Seat Heating Control Module-Rear supplies the temperature sensor with a 5 V reference signal circuit and a low reference circuit. The module monitors the voltage from the signal circuit to determine the temperature of the seat.

The temperature sensor varies in resistance based on the temperature of the heating element causing the signal voltage to change. Once the module senses the seat reached the set temperature, it will then begin regulate the current flow through the heater elements in order to maintain the desired seat temperature, based on the feedback voltage from the sensor.

If the heated seats are on high, the temperature level may automatically be lowered after approximately 30 min of operation.

Section 12

Steering

Power Steering 12-2
- **Schematic and Routing Diagrams** 12-2
  - Power Steering Schematics 12-3
- **Description and Operation** 12-4
  - Power Steering System Description and Operation 12-4

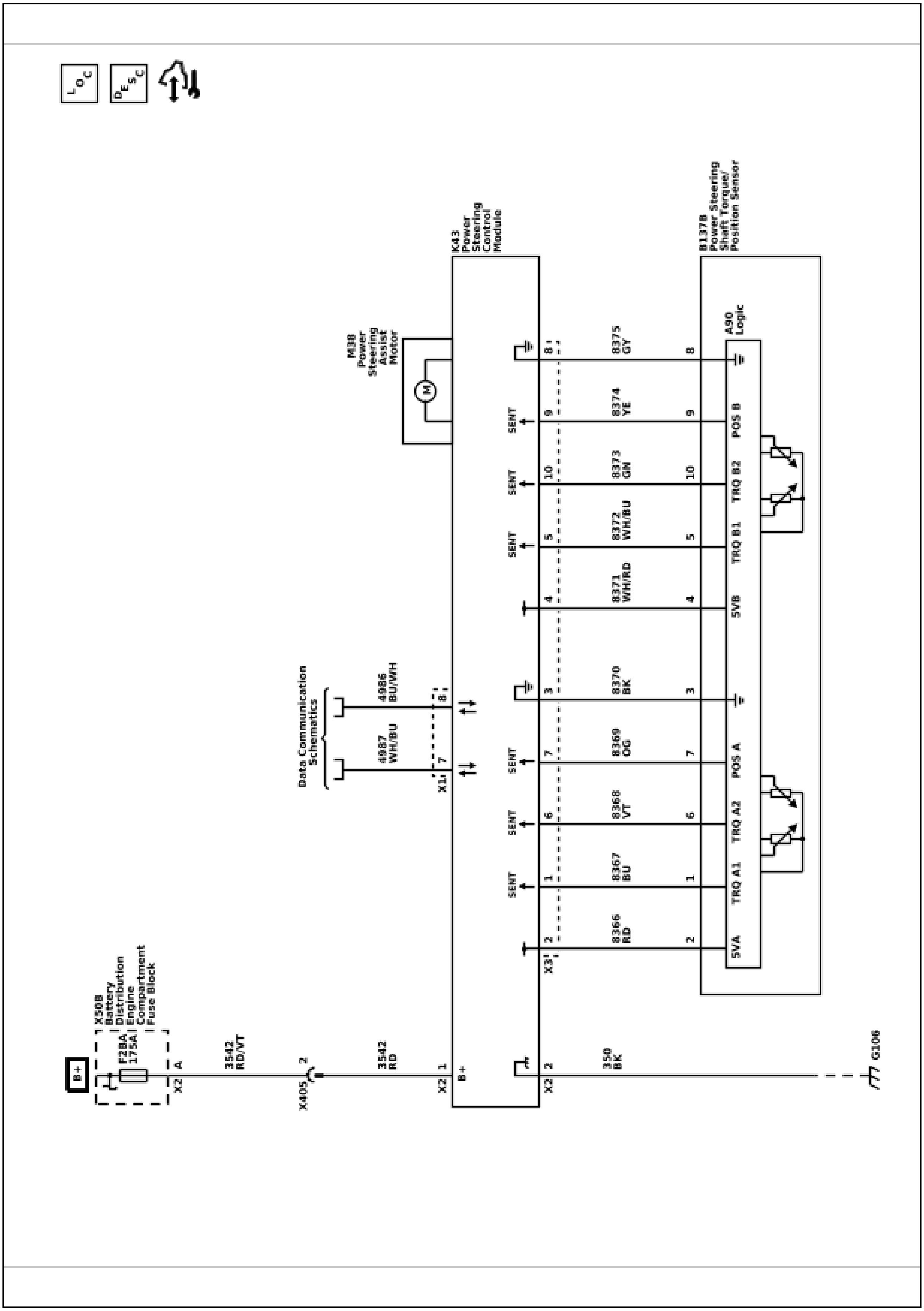
Steering Wheel and Column 12-5
- **Schematic and Routing Diagrams** 12-5
  - Steering Wheel Schematics 12-6
  - Column Lock Schematics 12-8
  - Tilt/Telescoping Steering Column Schematics 12-9
- **Description and Operation** 12-10
  - Steering Wheel and Column Description and Operation 12-10

Steering

Power Steering

Schematic and Routing Diagrams

Power Steering Schematics (Electric Power Steering)


6847165
LOC
DESC
B+
X50B Battery Distribution Engine Compartment Fuse Block
F28A 175A
X2 A
3542 RD/VT
X405 2
3542 RD
X2 1
B+
X2 2
350 BK
G106
Data Communication Schematics
4987 WH/BU
4986 BU/WH
X1 7
8
M38 Power Steering Assist Motor
M
K43 Power Steering Control Module
X3 2
1
6
7
3
4
5
10
9
8
SENT
SENT
SENT
SENT
SENT
SENT
8366 RD
8367 BU
8368 VT
8369 OG
8370 BK
8371 WH/RD
8372 WH/BU
8373 GN
8374 YE
8375 GY
2
1
6
7
3
4
5
10
9
8
5VA
TRQ A1
TRQ A2
POS A
5VB
TRQ B1
TRQ B2
POS B
A90 Logic
B137B Power Steering Shaft Torque/ Position Sensor

Description and Operation

Power Steering System Description and Operation

The belt driven electronic power steering system consists of the following components:

- A belt drive and a ball nut mechanism
- A power pack; containing the power steering control module, its sensors, the power steering motor
- A torque sensor
- The steering gear (rack and pinion)

The belt driven electric power steering system reduces the amount of effort needed to steer the vehicle by utilizing the power steering control module to control the power steering motor to maneuver the steering rack. The power steering control module uses input from the torque sensor, motor rotational sensor, battery voltage circuit and GMLAN serial data circuit to determine the level of motor assist. Vehicle speed and engine speed from the GMLAN serial data circuit is also used to adjust the amount of steering assist needed to steer the vehicle. At low speeds more assist is provided for easy turning during parking maneuvers. At higher speeds less assist is provided for improved road feel and directional stability

To account for mechanical wear in the steering gear, the electronic power steering system contains a feature called Center Compensation. The power steering control module learns the amount of friction contained within the steering gear and as parts begin to wear mechanically, it will add torque compensation to maintain the original feel of the steering gear.

The torque sensor is attached to the steering gear housing near the input shaft, and is critical to proper operation of the electronic power steering system. As the steering wheel is turned and torque is applied to the steering shaft, the torque sensor monitors the amount of input torque.

The power steering control module responds to the torque sensor and motor rotational sensor by commanding current to the power steering motor.

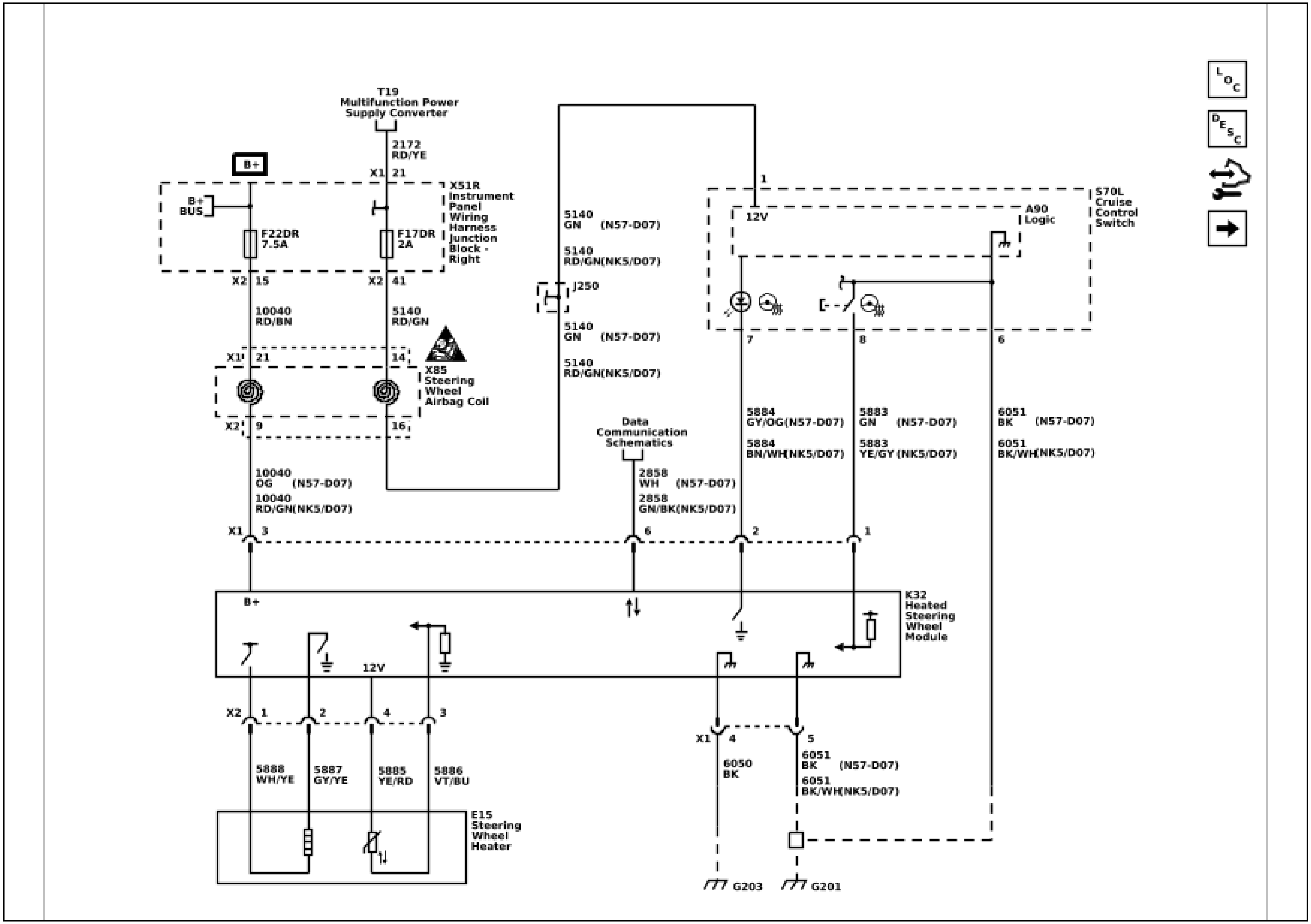
The power steering control module and motor are attached to the base of the steering gear housing, and applies power assist through the belt drive and ball nut mechanism to the steering rack. The ball nut mechanism translates the rotational movement of the belt drive system to lateral movement of the steering rack. The power steering control module has the ability to detect malfunctions within the electric power steering system. Any malfunction detected that disables steering assist will cause the SERVICE POWER STEERING message to be displayed on the driver information center. Additionally, the power steering control module calculates an internal system temperature which is used to protect the power steering system from damage caused by high temperature. When the calculated temperature exceeds a pre-determined level the amount of current commanded to the power steering motor is reduced. This will result in a temporary reduced level of assist. Full assist will return once the calculated temperature drops below the pre-determined level.

The power steering system contains two torque sensors and two steering angle sensors for redundancy in order to limit situations where total loss of assist occur. If a malfunction occurs in only one of the two sensors, the power steering system will continue to provide steering assist for a short period of time.

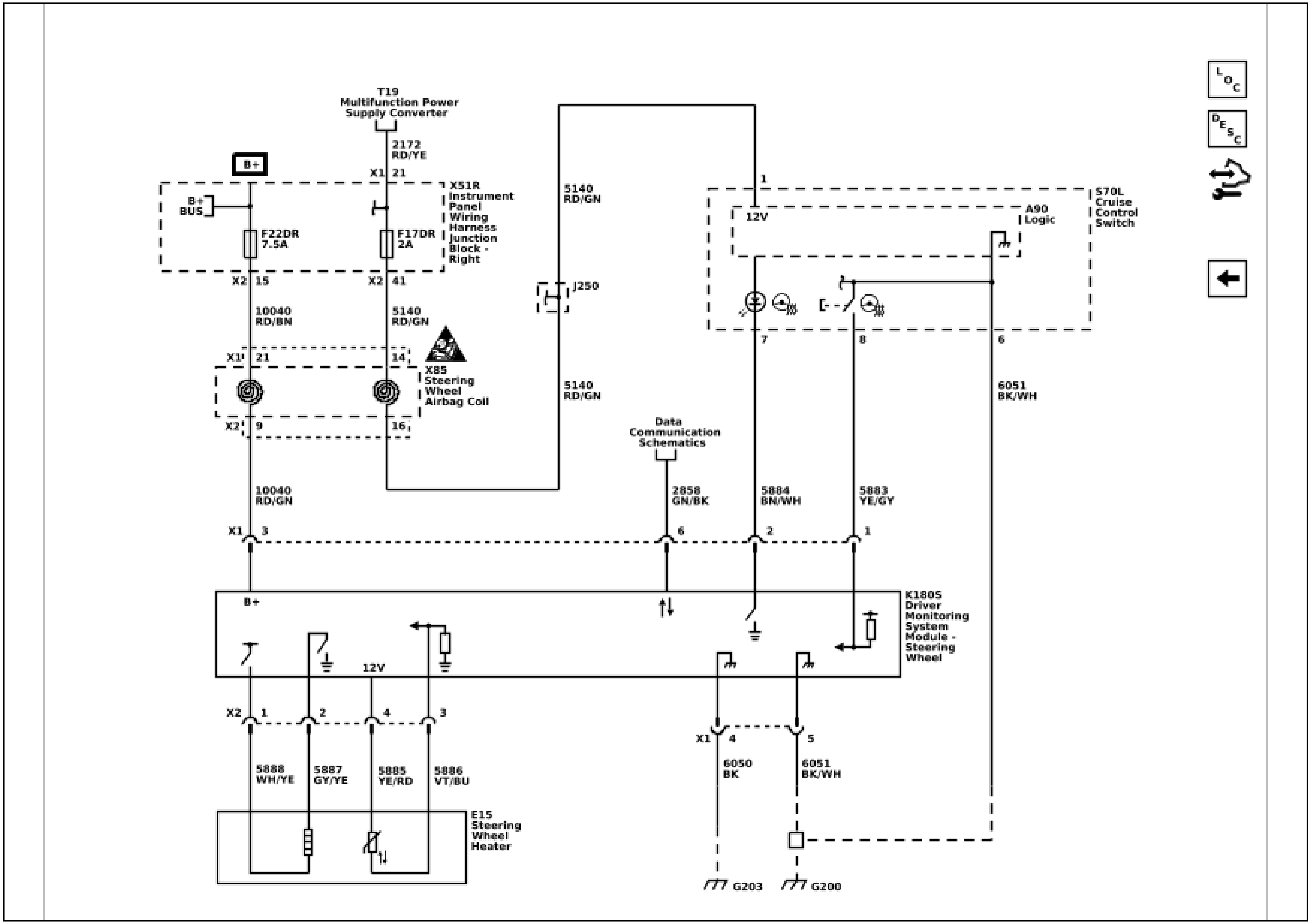
Steering Wheel and Column

Schematic and Routing Diagrams

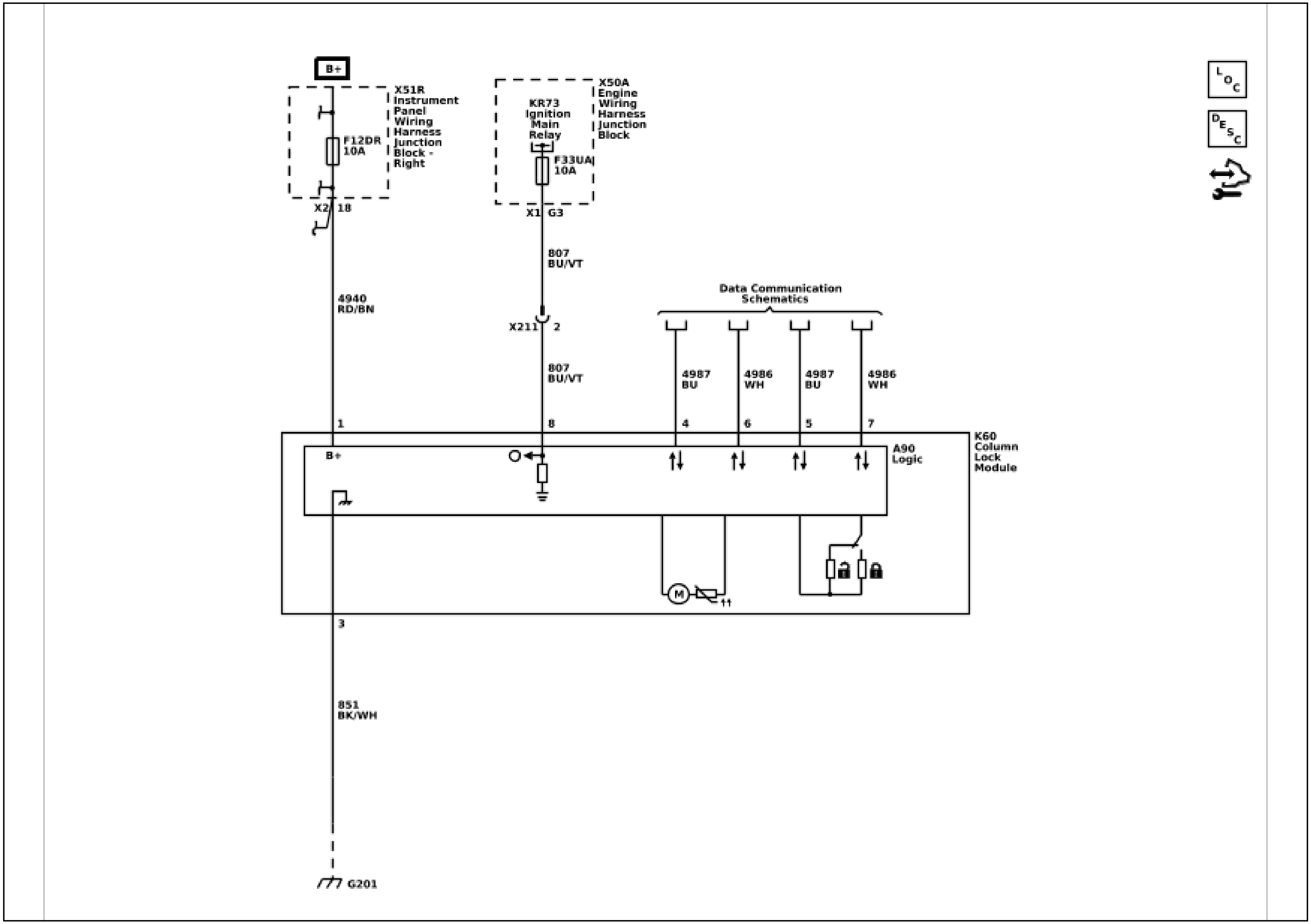
Steering Wheel Schematics (Heated Steering Wheel (KI3 - UKL))


T19
Multifunction Power
Supply Converter
2172
RD/YE
X1 21
B+
B+
BUS
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
F22DR
7.5A
F17DR
2A
X2 15
X2 41
10040
RD/BN
5140
RD/GN
X1 21
14
X85
Steering
Wheel
Airbag Coil
X2 9
16
10040
OG (N57-D07)
10040
RD/GN(NK5/D07)
5140
GN (N57-D07)
5140
RD/GN(NK5/D07)
J250
5140
GN (N57-D07)
5140
RD/GN(NK5/D07)
Data
Communication
Schematics
2858
WH (N57-D07)
2858
GN/BK(NK5/D07)
1
12V
A90
Logic
S70L
Cruise
Control
Switch
7
8
6
5884
GY/OG(N57-D07)
5884
BN/WH(NK5/D07)
5883
GN (N57-D07)
5883
YE/GY (NK5/D07)
6051
BK (N57-D07)
6051
BK/WH(NK5/D07)
X1 3
6
2
1
B+
K32
Heated
Steering
Wheel
Module
12V
X2 1
2
4
3
X1 4
5
5888
WH/YE
5887
GY/YE
5885
YE/RD
5886
VT/BU
6050
BK
6051
BK (N57-D07)
6051
BK/WH(NK5/D07)
E15
Steering
Wheel
Heater
G203
G201
6847167

Steering Wheel Schematics (Heated Steering Wheel (KI3 & UKL))

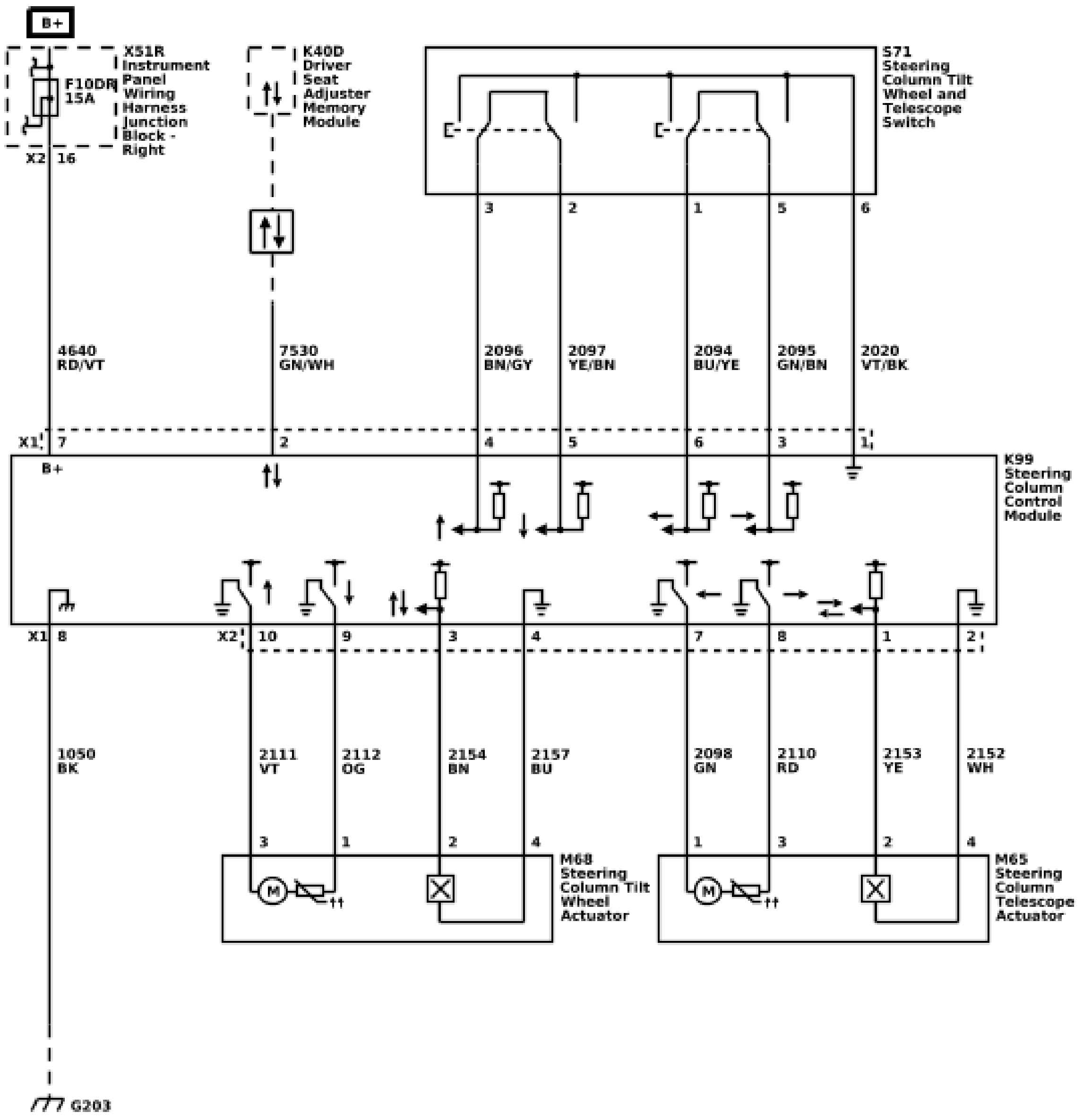

T19
Multifunction Power
Supply Converter
2172
RD/YE
X1 21
B+
B+
BUS
F22DR
7.5A
F17DR
2A
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
X2 15
X2 41
10040
RD/BN
5140
RD/GN
J250
5140
RD/GN
5140
RD/GN
X1 21
14
X85
Steering
Wheel
Airbag Coil
X2 9
16
10040
RD/GN
Data
Communication
Schematics
2858
GN/BK
5884
BN/WH
5883
YE/GY
1
12V
A90
Logic
S70L
Cruise
Control
Switch
7
8
6
6051
BK/WH
X1 3
6
2
1
K180S
Driver
Monitoring
System
Module -
Steering
Wheel
B+
12V
X2 1
2
4
3
X1 4
5
5888
WH/YE
5887
GY/YE
5885
YE/RD
5886
VT/BU
6050
BK
6051
BK/WH
E15
Steering
Wheel
Heater
G203
G200
6847168

Column Lock Schematics (Steering Column Lock)


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F12DR 10A
X2 18
4940 RD/BN
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F33UA 10A
X1 G3
807 BU/VT
X211 2
807 BU/VT
Data Communication Schematics
4987 BU
4986 WH
4987 BU
4986 WH
1
8
4
6
5
7
B+
A90 Logic
K60 Column Lock Module
M
3
851 BK/WH
G201

6847169

Tilt/Telescoping Steering Column Schematics (Tilt/Telescoping Steering Column (N38))


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F10DR 15A
X2 16
K40D Driver Seat Adjuster Memory Module
S71 Steering Column Tilt Wheel and Telescope Switch
3
2
1
5
6
4640 RD/VT
7530 GN/WH
2096 BN/GY
2097 YE/BN
2094 BU/YE
2095 GN/BN
2020 VT/BK
X1 7
2
4
5
6
3
1
B+
K99 Steering Column Control Module
X1 8
X2 10
9
3
4
7
8
1
2
1050 BK
2111 VT
2112 OG
2154 BN
2157 BU
2098 GN
2110 RD
2153 YE
2152 WH
3
1
2
4
1
3
2
4
M
M68 Steering Column Tilt Wheel Actuator
M
M65 Steering Column Telescope Actuator
G203

6847166

Description and Operation

Steering Wheel and Column Description and Operation

Column Lock

The Column Lock Module (CLM) controls the steering wheel theft deterrent lock function, which allows the column to be electronically locked. When a valid key is used to start the vehicle, the BCM recognizes this and will send the encrypted password to the CLM. The CLM will compare its own stored password to the encrypted password sent by the BCM. If the data matches, the steering column will be unlocked.

In order for the steering column to be locked the CLM has to see 3 inputs.

1. The BCM power mode is OFF.
2. The vehicle is stationary based on zero speed reported from all ABS wheel speed sensors.
3. The driver or passenger door is opened reported by the PEPS module.

When the CLM receives these inputs, the steering column will be locked.

The CLM monitors the column lock system and will set DTC codes when the module detects malfunctions within the system. When a malfunction occurs the driver information center (DIC) will display the Service Column Lock Now message indicating DTC codes are set within the CLM. The immobilizer system will prevent vehicle starting if there is a fault or no communication with the CLM.

Tilt/Telescoping Description

The steering column has a tilt/telescoping control system that consists of an electronic control module capable of LIN message communication, a steering column power assembly with positioning actuators and sensors, and a steering column control switch.

Column Position Module has two versions of operation:

1. N38 – Power Steering Column-Tilt/Telescope, and A45 – Memory Seats

   The column position module will wake up either by the LIN bus or by the tilt/telescope steering column switch. The memory seat module is the master and column position module is the slave. All DTCs and the data from column position module are reported through the LIN bus and stored in the memory seat module.

2. N38 – Power Steering Column-Tilt/Telescope Only

   The column position module will wake up with the tilt/telescope steering column switch. No DTCs or data is available. Vehicle symptoms will cause the customer to bring the vehicle in for service.

Tilt/Telescoping Switch Operation

The tilt/telescope steering column has a four-position switch. The switch may be used to adjust the position of the steering wheel in or out which is telescope and up or down which is tilt. The position of the column may be changed as follows:

- Press the switch up to tilt the column up.
- Press the switch down to tilt the column down.
- Press the switch forward and the column moves toward the front of the vehicle.
- Press the switch rearward and the column moves toward the rear of the vehicle.

Actuators

Both the tilt and telescoping actuators are reversible. For example, the tilt actuator moves the column both up and down. When the column position module receives an input to move the column up, the column position module supplies battery positive voltage and ground to the tilt actuator in order to move the column up. When the column position module receives a column down input, the column position module supplies battery positive voltage and ground to the same actuator, but with reverse polarity. When the voltage polarity is reversed, the actuator runs in the opposite direction and moves the column down.

Position Sensors with A45 Memory Seats
Two position sensors are Hall Effect sensors and are used by the column position module. The column position module provides a 5 V reference voltage and a ground to both the tilt and telescoping position sensors. The sensor feedback circuit voltage varies from 0–5 V. Each sensor is part of the actuator assembly. When the actuator rotates, the voltage of the sensor varies on the scan tool. The column position module monitors the feedback voltage to determine the column position.

Without the A45 Memory Seat option, scan tool data is not available.

Tilt/Telescoping Memory with A45 Memory Seats
Memory settings and the personalization of steering wheel positions are available with the tilt/telescoping steering column only with the A45 Memory Seat option. The data stored consists of entry positions and exit positions. The entry position is the position that the steering column moves in when the ignition is turned ON. The exit position is the direction that the steering column moves in when the ignition is turned OFF and the driver's door is opened. The memory seat module stores memory positions and commands column position module to move actuators to specific positions through a LIN message.

An initial memory setting is set in the memory seat module at the assembly plant. This setting may be changed by the customer at any time.

Without the A45 Memory Seat option, memory settings, personalization, and the entry and exit function is not available.

Driver Safety

The steering wheel and column has safety features to protect the driver. The following components may be mounted on or near the steering column:

Energy-Absorbing Steering Column: The energy-absorbing steering column compresses in the event of a front-end collision, which reduces the chance of injury to the driver. The energy-absorbing feature, collapsible steering shaft, and break away mounting features help reduce the injury in the event of an accident.

Heated Steering Wheel (Without UKL)

The heated steering wheel system consists of a heated steering wheel, a heated steering wheel switch, and a steering wheel heat module. The heated steering wheel includes non-serviceable heating elements and a temperature sensor. The heating elements and sensor are located in the left and right sides of the rim of the steering wheel. The heated steering wheel switch is located in the left steering wheel control switch assembly. The steering wheel heat control module is located at the bottom of the steering wheel center hub. When the switch is pressed, the switch signal circuit is grounded and the heat module turns the heated steering wheel on. The system then remains on until the customer turns it off. The wheels normal operating temperature is 32°C (89.6°F). The wheel takes approximately 3 to 4 minutes to reach the normal operating temperature. The wheel will take longer to heat up if the vehicle temperature is below -21°C (-5.8°F). The built-in temperature sensor provides input to the controller to limit the temperature to the normal operating temperature. The wheel will not operate if the vehicle temperature is at or above 32°C (89.6°F).

The heated steering wheel control module is on the LIN bus. This allows the heated steering wheel to be activated during remote vehicle start.

Heated Steering Wheel (With UKL)

The heated steering wheel system consists of a heated steering wheel, a heated steering wheel switch, and a steering wheel heat module. The heated steering wheel includes non-serviceable heating elements and a temperature sensor. The heating elements and sensor are located in the left and right sides of the rim of the steering wheel. The heated steering wheel switch is located in the HVAC Control assembly. The steering wheel heat control module is located at the bottom of the steering wheel center hub. When the switch is pressed, the switch signal circuit is grounded and the heat module turns the heated steering wheel on. The system then remains on until the customer turns it off. The wheels normal operating temperature is 32°C (89.6°F). The wheel takes approximately 3 to 4 minutes to reach the normal operating temperature. The wheel will take longer to heat up if the vehicle temperature is below -21°C (-5.8°F). The built-in temperature sensor provides input to the controller to limit the temperature to the normal operating temperature. The wheel will not operate if the vehicle temperature is at or above 32°C (89.6°F).

The heated steering wheel control module is on the LIN bus. This allows the heated steering wheel to be activated during remote vehicle start.

Section 13

Transmission

Electronic Transmission Range Select 13-2

Schematic and Routing Diagrams 13-2

Electronic Transmission Range Selector Schematics (MHS / MHT / MI2 / MQB / MQC) 13-3

Shift Lock Control 13-4

Schematic and Routing Diagrams 13-4

Shift Lock Control Schematics 13-5

Description and Operation 13-6

Automatic Transmission Shift Lock Control Description and Operation 13-6

Transfer Case - MP 3015 13-7

Schematic and Routing Diagrams 13-7

Transfer Case Control Schematics (NP0) 13-8

Description and Operation 13-11

Transfer Case Description and Operation 13-11

Transfer Case - MP 3025 13-21

Schematic and Routing Diagrams 13-21

Transfer Case Control Schematics (NQH) 13-22

Description and Operation 13-25

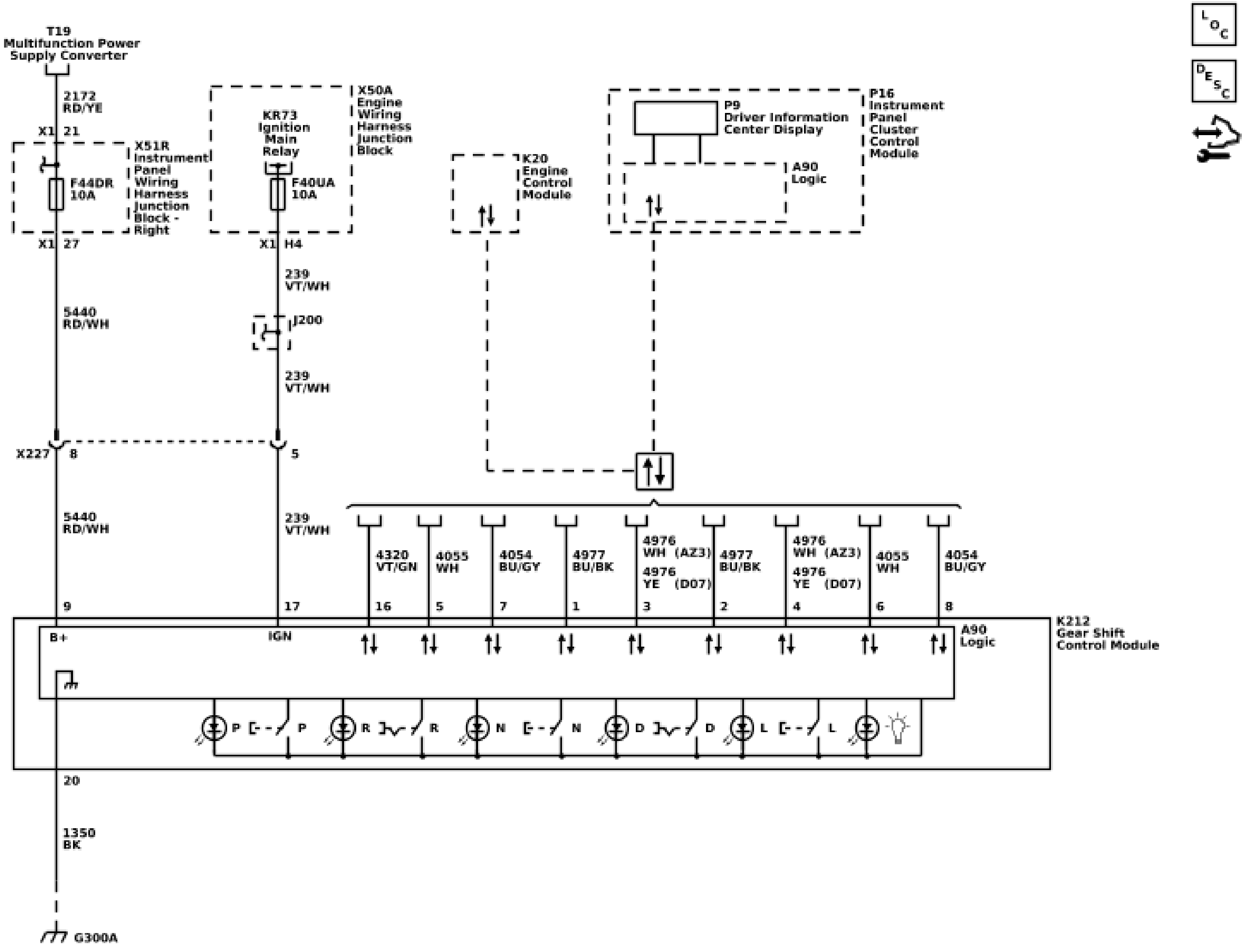
Transfer Case Description and Operation 13-25

Transmission

Electronic Transmission Range Select

Schematic and Routing Diagrams

Electronic Transmission Range Selector Schematics (MHS / MHT / MI2 / MQB / MQC) (Electronic Shift Controls)

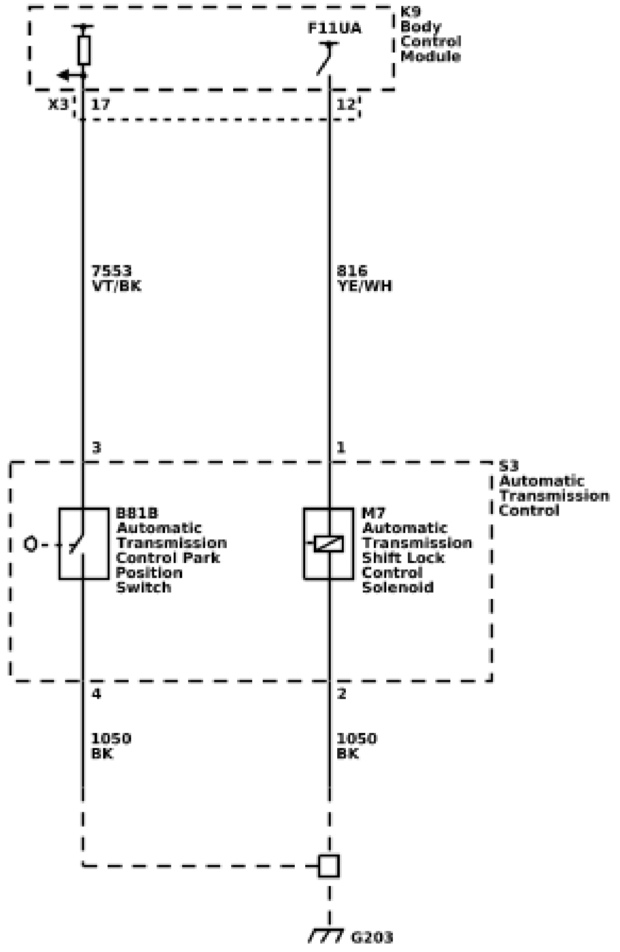

LOC
DESC
T19 Multifunction Power Supply Converter
2172 RD/YE
X1 21
X51R Instrument Panel Wiring Harness Junction Block - Right
F44DR 10A
X1 27
5440 RD/WH
X227 8
5440 RD/WH
9
B+
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F40UA 10A
X1 H4
239 VT/WH
J200
239 VT/WH
5
239 VT/WH
17
IGN
K20 Engine Control Module
P16 Instrument Panel Cluster Control Module
P9 Driver Information Center Display
A90 Logic
4320 VT/GN
16
4055 WH
5
4054 BU/GY
7
4977 BU/BK
1
4976 WH (AZ3)
4976 YE (D07)
3
4977 BU/BK
2
4976 WH (AZ3)
4976 YE (D07)
4
4055 WH
6
4054 BU/GY
8
A90 Logic
K212 Gear Shift Control Module
P
P
R
R
N
N
D
D
L
L
20
1350 BK
G300A

6847186

Shift Lock Control

Schematic and Routing Diagrams

Shift Lock Control Schematics (Shift Lock Control)


K9
Body
Control
Module
F11UA
X3
17
12
7553
VT/BK
816
YE/WH
3
1
S3
Automatic
Transmission
Control
B81B
Automatic
Transmission
Control Park
Position
Switch
M7
Automatic
Transmission
Shift Lock
Control
Solenoid
4
2
1050
BK
1050
BK
G203

6847187

Description and Operation

Automatic Transmission Shift Lock Control Description and Operation

The Automatic Transmission Shift Lock Control System is a safety device that prevents an inadvertent shift out of PARK when the engine is running. The driver must press the brake pedal before moving the shift lever out of the PARK position. The system consists of the following components:

- The Automatic Transmission Shift Lock Solenoid (serviced as the S3 Automatic Transmission Shift Lock Actuator)
- The Body Control Module (BCM)
- The Engine Control Module (ECM)

The BCM controls the voltage to the shift lock control solenoid though the shift lock control solenoid controlled voltage circuit. The following conditions must be met before the BCM will supply voltage to the shift lock control solenoid:

- The ignition is in the ON position.
- The ECM sends an input via GMLAN serial data to the BCM when the Transmission Control Module (TCM) indicates the transmission is in the PARK position.
- The BCM receives a brake applied input from the stop lamp switch.

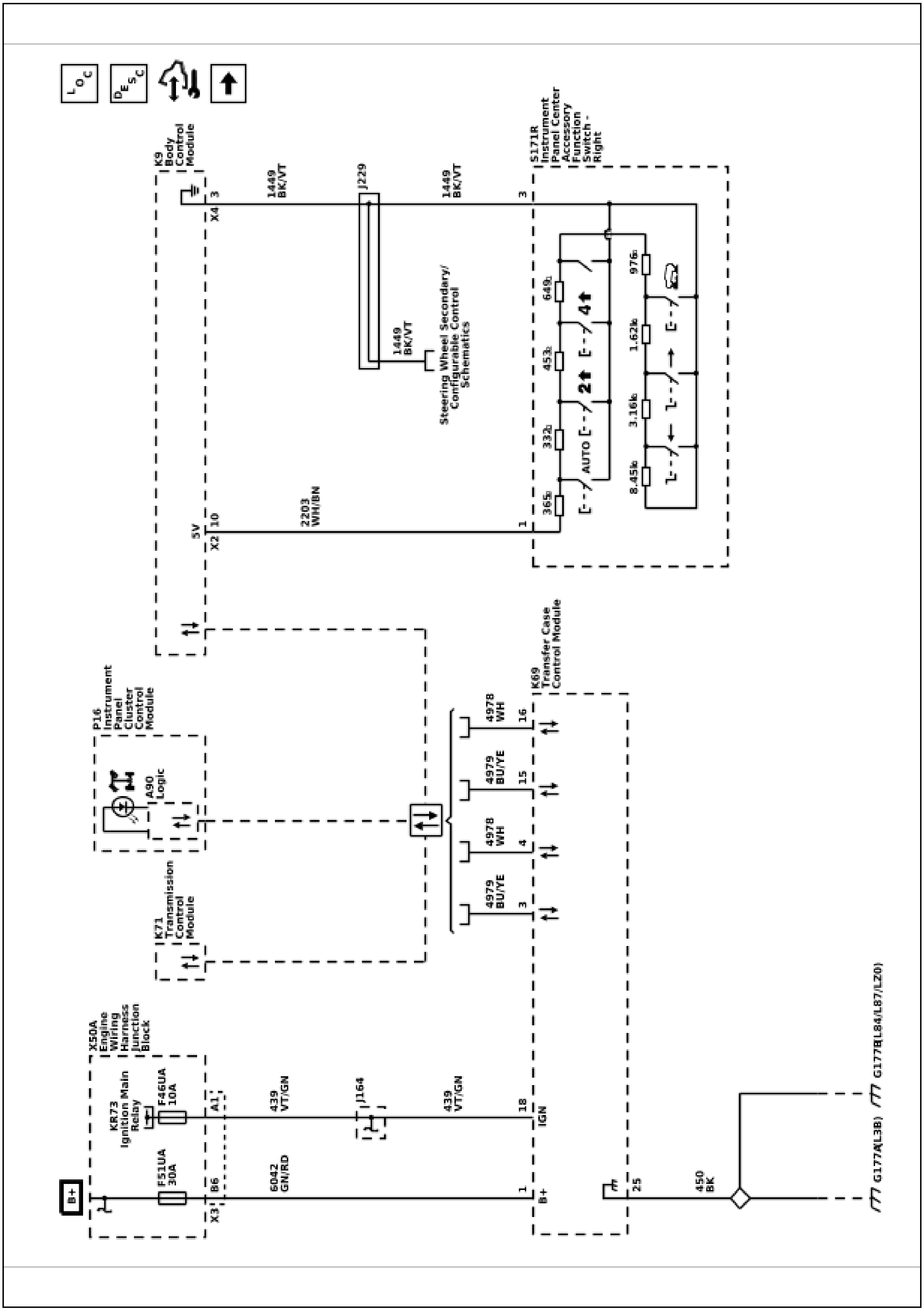
Since the shift lock control solenoid is permanently grounded, the BCM supplies voltage to the automatic transmission shift lock control solenoid, releasing the mechanical lock on the shift lever as the solenoid energizes. The energized solenoid allows the driver to move the shift lever out of the PARK position. When the brake pedal is not applied, the BCM turns the control voltage output of the shift lock control solenoid OFF, de-energizing the shift lock control solenoid. When the transmission is in the PARK position, the de-energized shift lock control solenoid will prevent shifting as the lever is mechanically locked in the PARK position.

During remote start operation the BCM will de-energize the automatic transmission shift lock control circuit, locking the shift lever in the PARK position

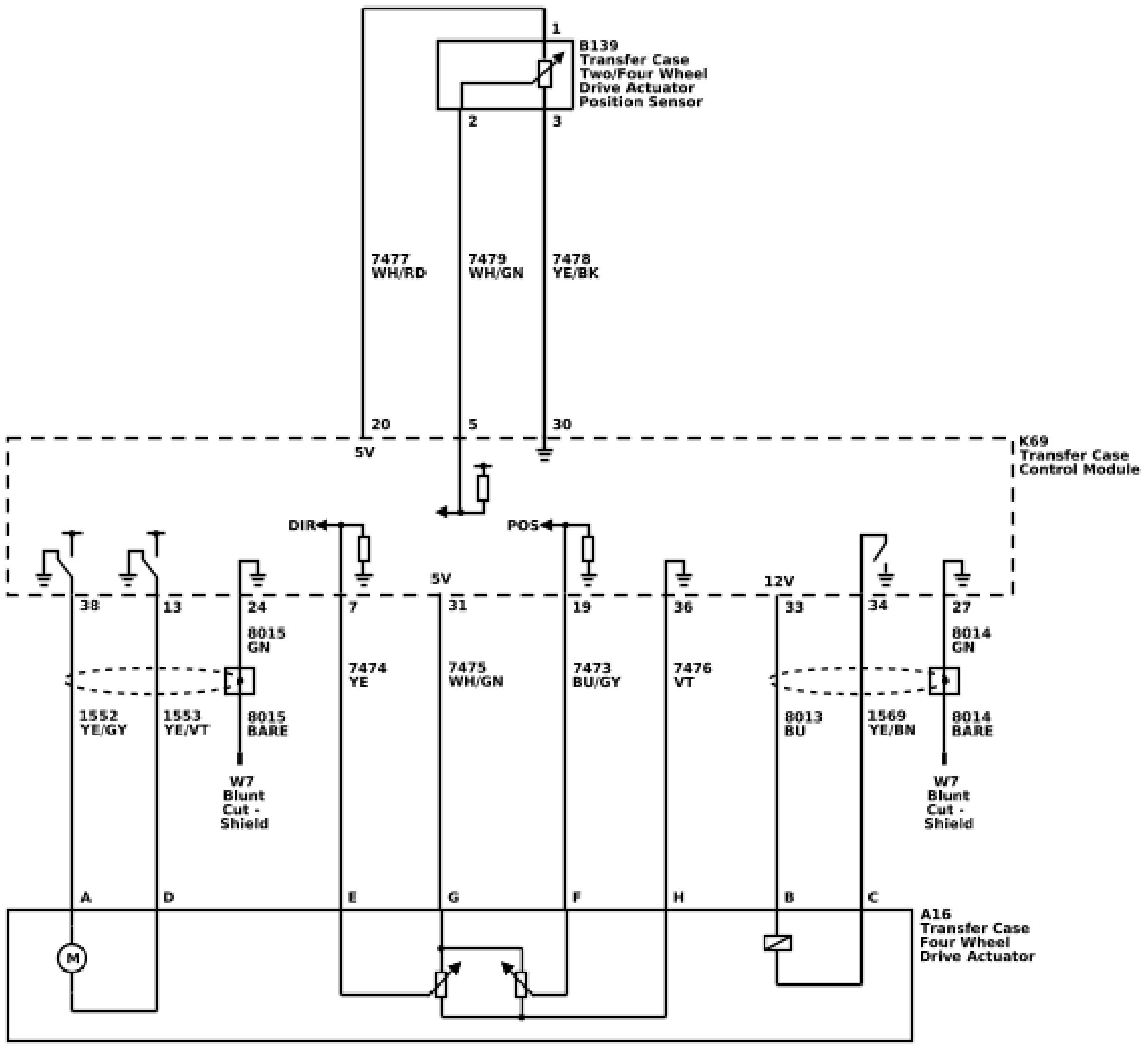
Transfer Case - MP 3015

Schematic and Routing Diagrams

Transfer Case Control Schematics (NP0) (Power, Ground, Serial Data, and Shift Controls)


6847188
B+
X50A Engine Wiring Harness Junction Block
F51UA 30A
KR73 Ignition Main Relay
F46UA 10A
X3 B6
A1
6042 GN/RD
439 VT/GN
J164
439 VT/GN
18 IGN
1 B+
25
450 BK
G177A(L3B)
G177B(L84/L87/LZ0)
K71 Transmission Control Module
P16 Instrument Panel Cluster Control Module
A90 Logic
K69 Transfer Case Control Module
4979 BU/YE
3
4978 WH
4
4979 BU/YE
15
4978 WH
16
K9 Body Control Module
X4 3
1449 BK/VT
J229
1449 BK/VT
Steering Wheel Secondary/ Configurable Control Schematics
1449 BK/VT
3
5V
X2 10
2203 WH/BN
1
S171R Instrument Panel Center Accessory Function Switch - Right
365Ω
AUTO
332Ω
2
453Ω
4
649Ω
8.45kΩ
3.16kΩ
1.62kΩ
976Ω

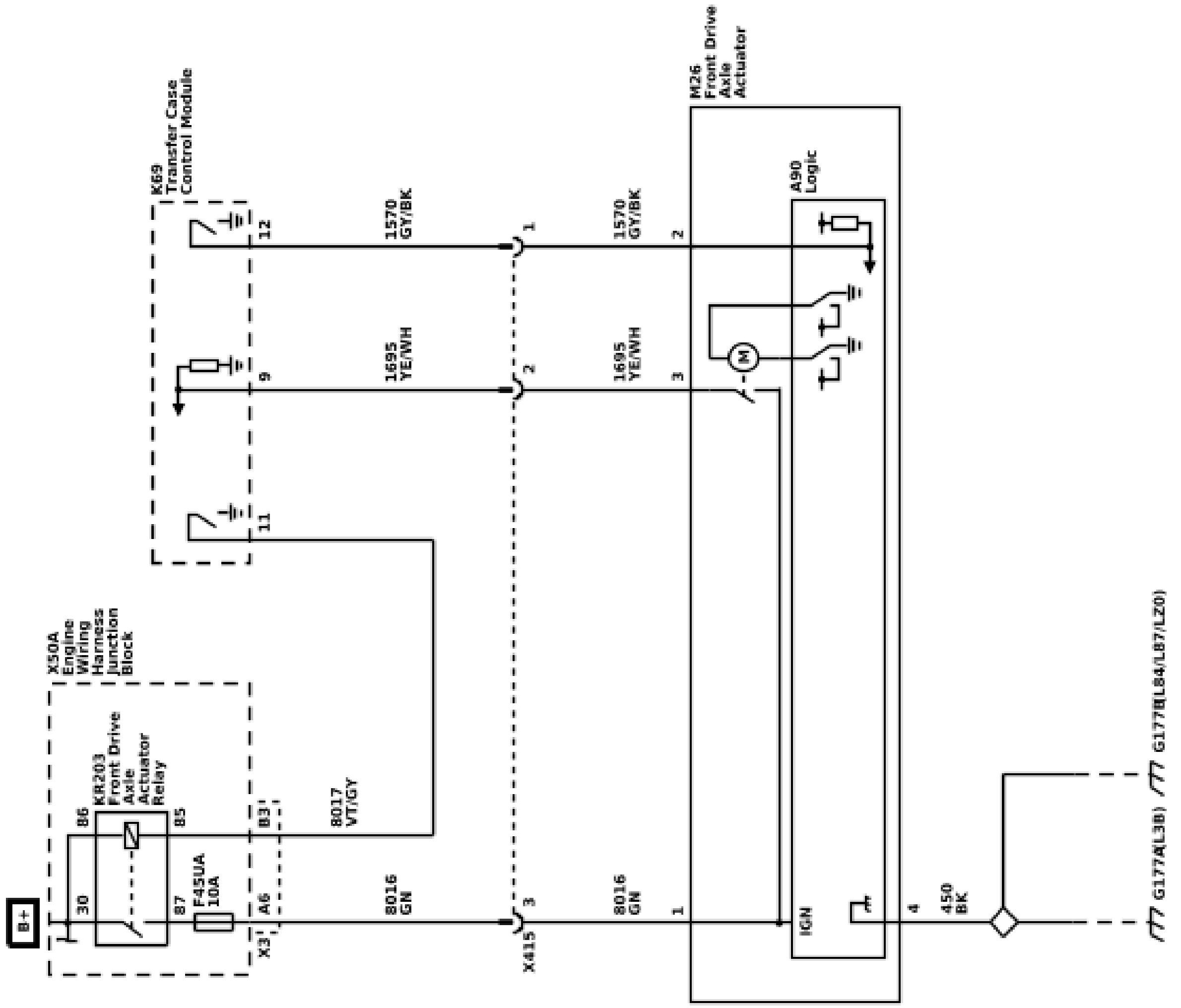
Transfer Case Control Schematics (NP0) (Transfer Case Controls)


1
B139
Transfer Case
Two/Four Wheel
Drive Actuator
Position Sensor
2
3
7477
WH/RD
7479
WH/GN
7478
YE/BK
20
5
30
5V
K69
Transfer Case
Control Module
DIR
POS
5V
12V
38
13
24
7
31
19
36
33
34
27
8015
GN
7474
YE
7475
WH/GN
7473
BU/GY
7476
VT
8014
GN
1552
YE/GY
1553
YE/VT
8015
BARE
8013
BU
1569
YE/BN
8014
BARE
W7
Blunt
Cut -
Shield
W7
Blunt
Cut -
Shield
A
D
E
G
F
H
B
C
M
A16
Transfer Case
Four Wheel
Drive Actuator

6847189

6847190

Transfer Case Control Schematics (NP0) (Front Axle Controls)

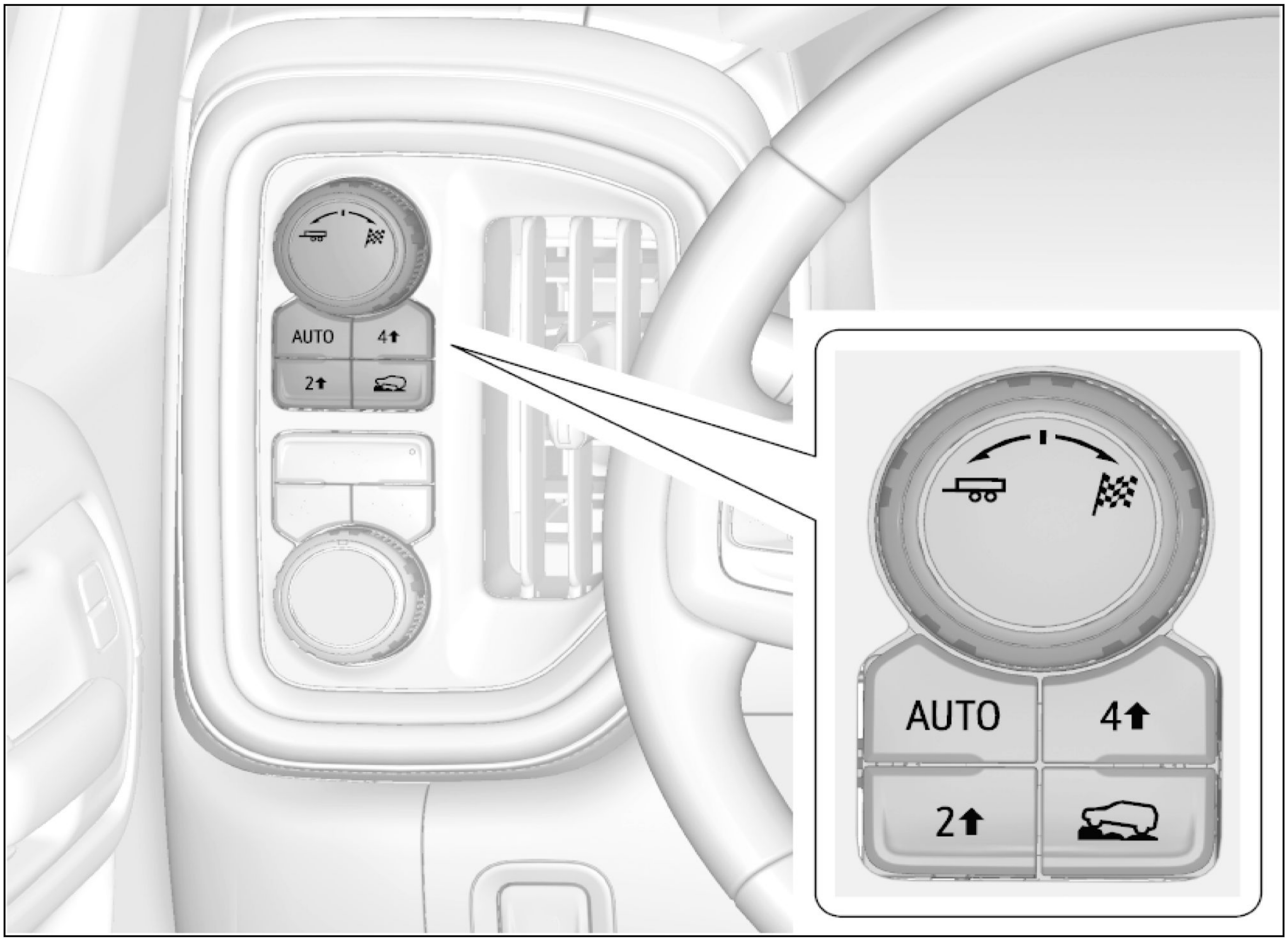

B+
X50A Engine Wiring Harness Junction Block
30
86
KR203 Front Drive Axle Actuator Relay
85
87
F45UA 10A
X3
A6
B3
8017 VT/GY
8016 GN
X415
3
K69 Transfer Case Control Module
12
9
11
1570 GY/BK
1695 YE/WH
1
2
M26 Front Drive Axle Actuator
A90 Logic
M
IGN
4
450 BK
G177A(L3B)
G177B(L84/L87/LZ0)

Description and Operation

Transfer Case Description and Operation

The Magna Powertrain (MP) model 3015 RPO NP0 transfer case is a 1 speed automatic, active transfer case (ATC). The MP 3015 ATC provides 3 modes, Auto 4WD, 4HI, and 2HI. The Auto 4WD position allows the capability of an active transfer case, which provides the benefits of on-demand torque biasing wet clutch and easy vehicle tuning through software calibrations. The software calibrations allow more features, such as flexible adapt ready position and clutch preload torque levels. The technology allows for vehicle speed dependent clutch toque levels to enhance the performance of the system. For example, the system is calibrated to provide 0–6.78 N•m (0–5 lb ft) of clutch torque during low speed, low engine torque operation, and predetermined higher torque for 40 km/h (25 mph) and greater. This prevents crow-hop and binding at low speeds and provides higher torque biases at higher vehicle speeds, in order to enhance stability.

Transfer Case Shift Control Switch



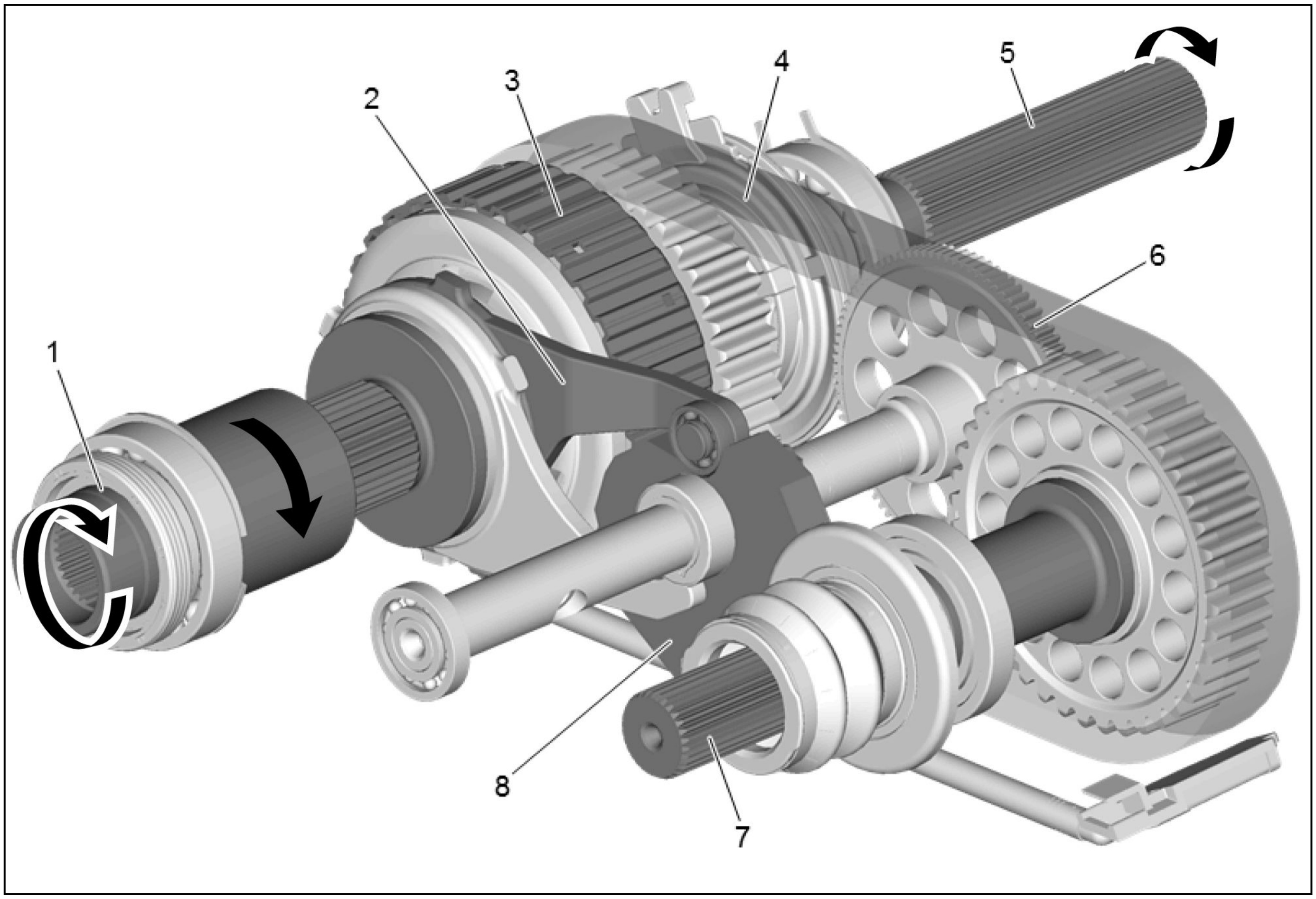
5123743

The MP 3015 ATC transfer case features a 3 mode shift control switch located on the instrument panel. When the ignition key is in the RUN position, the transfer case shift control module monitors the transfer case shift control switch to determine if the driver desires a new mode position. At a turn of the transfer case shift control switch, the lamp of the new desired position begins flashing to inform the driver that the transfer case shift control module has received the request for a new mode position. The lamp continues to flash until all shifting criteria has been met and the new mode position has been reached, or has been engaged. Once the mode position is fully active, the switch indicator lamp for the new position remains ON constantly. During normal driving situations, the transfer case can operate in the Auto 4WD mode. In the Auto 4WD mode, the transfer case shift control module monitors rear wheel slip speed, based on the inputs from the wheel speed sensors and/or vehicle speed sensor. When the vehicle experiences a rear wheel slip condition, the transfer case shift control module sends a pulse width modulated (PWM) signal to an electronic motor, which is the transfer case 2/4 wheel drive actuator assembly. This actuator rotates the transfer case control actuator shaft, applying a clutch. The clutch is designed to deliver a variable amount of torque, normally delivered to the rear wheels, and transfers it to the front wheels. Torque is ramped up to the front wheels until the front wheels speed sensor values equals that of the rear wheel speed sensors and/or vehicle speed sensor. Torque is ramped down to the front wheels. The process would repeat if rear wheel slip is detected again.

The MP 3015 TC transfer case has the added feature of also providing the driver with 2 manual mode positions:

- 4HI –4 Wheel Drive High Mode
- 2HI – 2 Wheel Drive High Mode

2WD Mode Power Flow



5071108

(1) Transfer Case Input Shaft

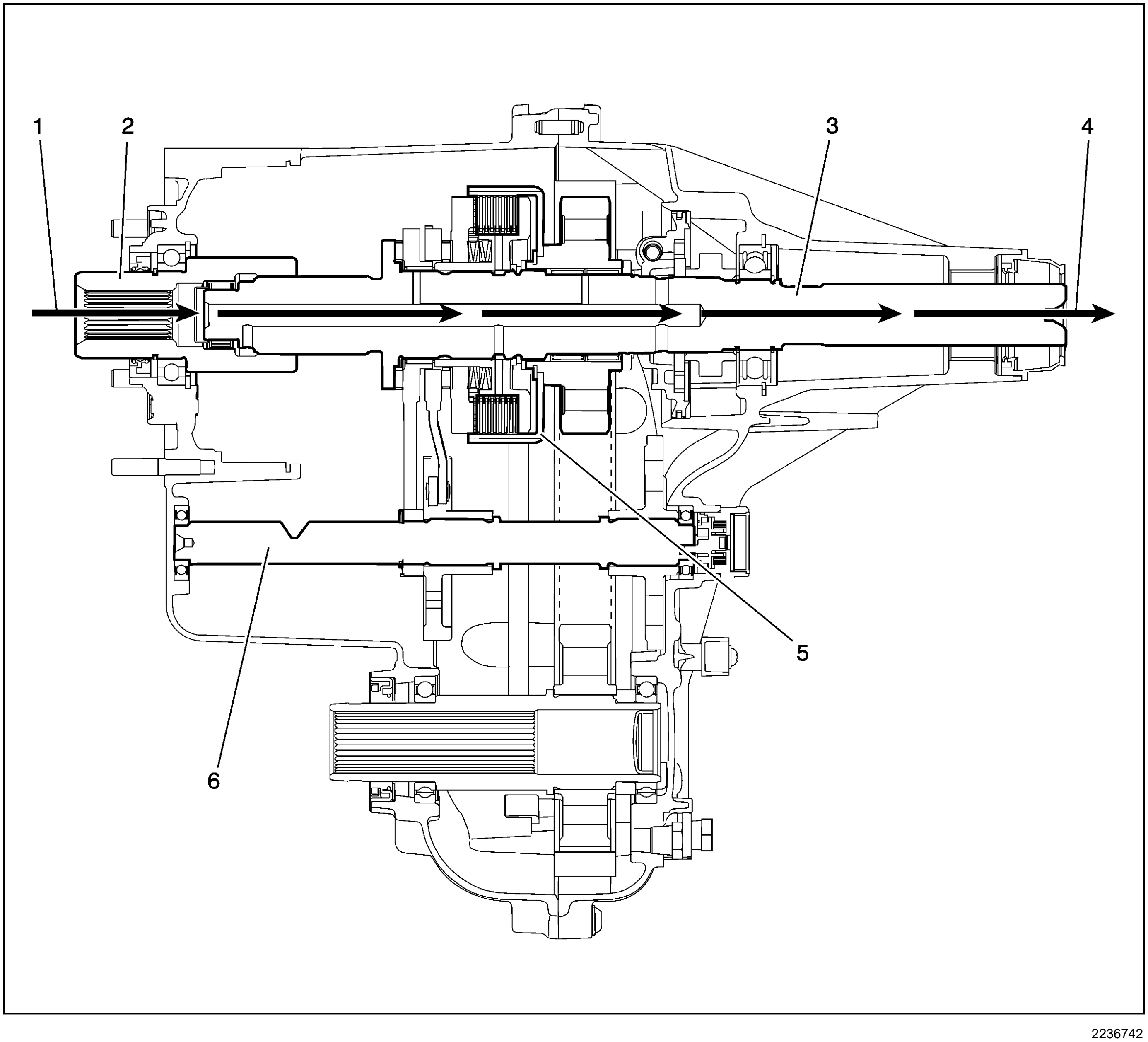
(2) Transfer Case Scissor Mechanism Lever

(3) Transfer Case Four Wheel Drive Clutch Pack

(4) Transfer Case Front Output Shaft Drive Chain Assembly

(5) Transfer Case Rear Output Shaft

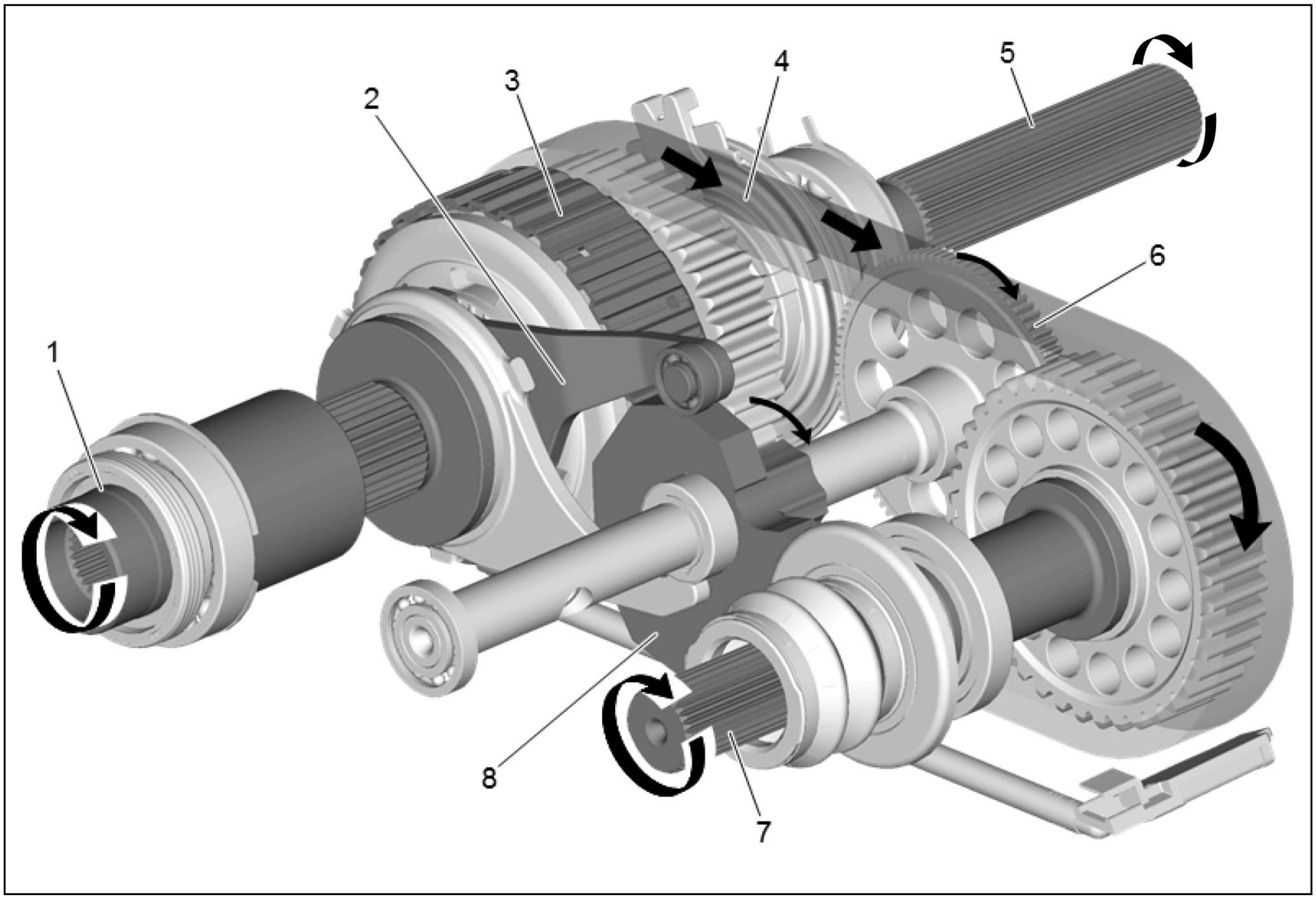
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Front Output Shaft
(8) Transfer Case Two/Four Wheel Drive Actuator Cam



2236742

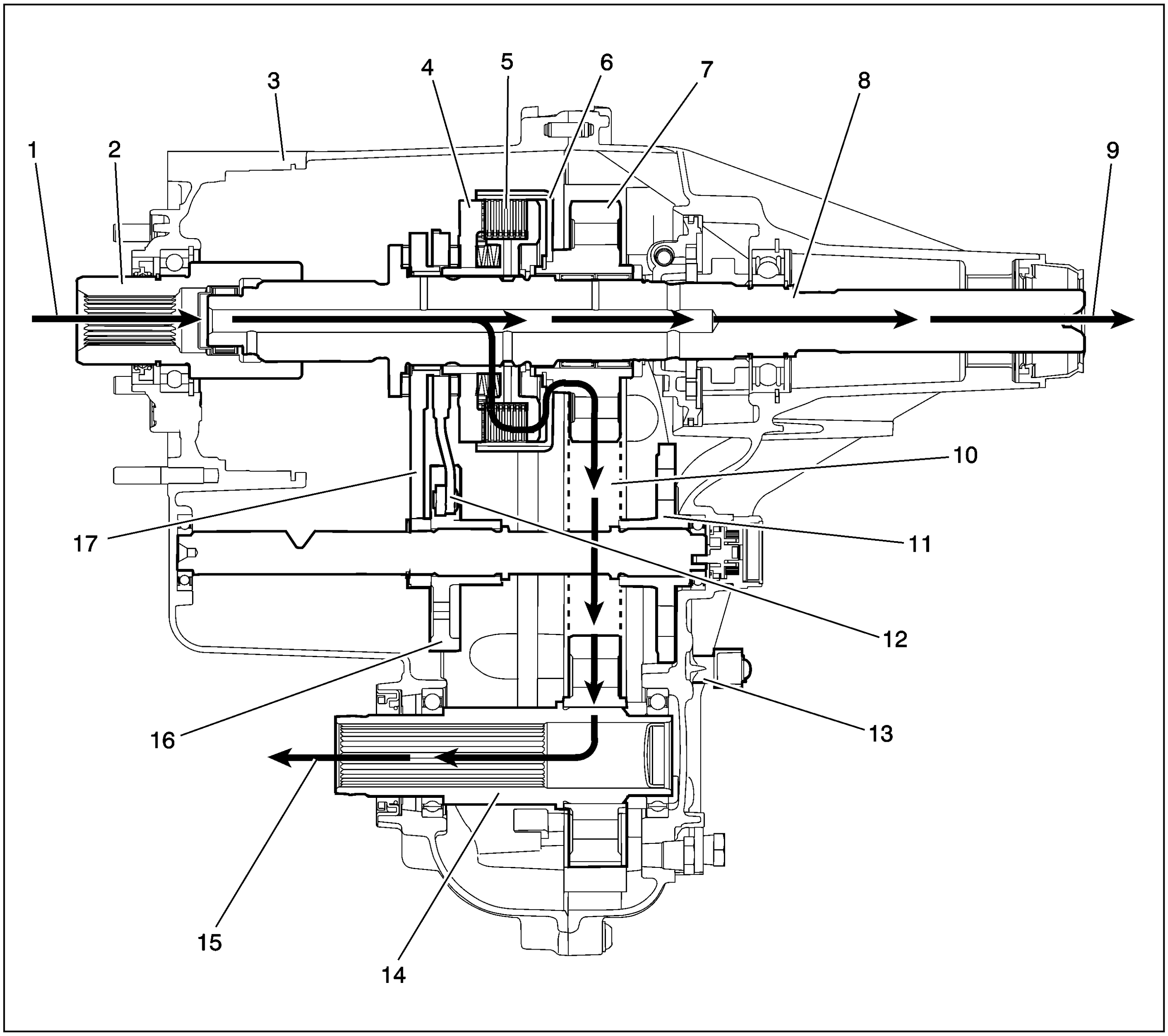
When the MP 3015 ATC is in the 2WD mode, the power flows from the transmission (1) to the input shaft (2). The input shaft (2) is splined to the rear output shaft (3). The rear output shaft (3) delivers the power flow to the rear propshaft (4). The position of the control actuator shaft (6) allows no clutch (5) engagement.

4HI Mode Power Flow



5071136

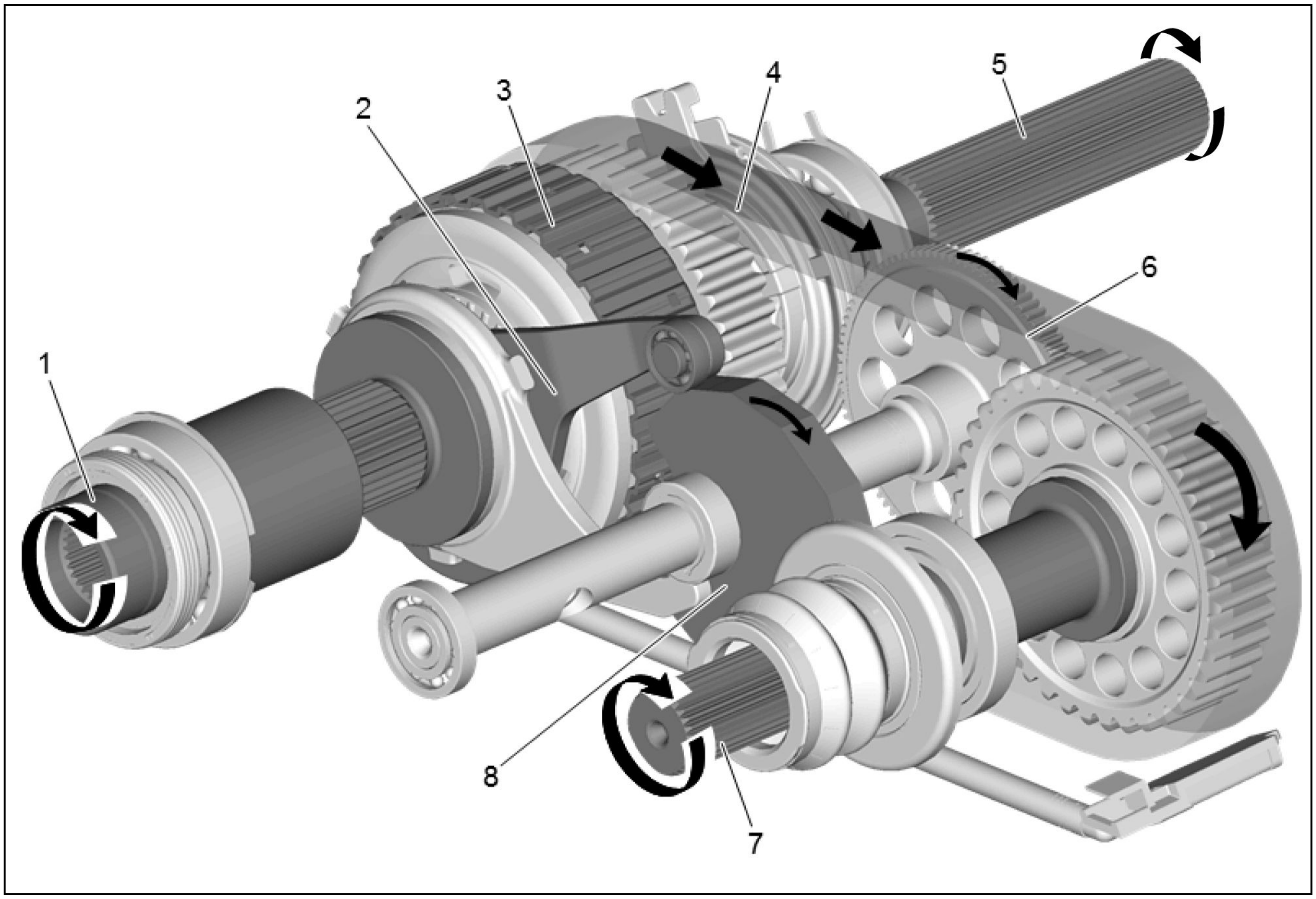
(1) Transfer Case Input Shaft
(2) Transfer Case Scissor Mechanism Lever
(3) Transfer Case Four Wheel Drive Clutch Pack
(4) Transfer Case Front Output Shaft Drive Chain Assembly
(5) Transfer Case Rear Output Shaft
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Front Output Shaft
(8) Transfer Case Two/Four Wheel Drive Actuator Cam



2236744

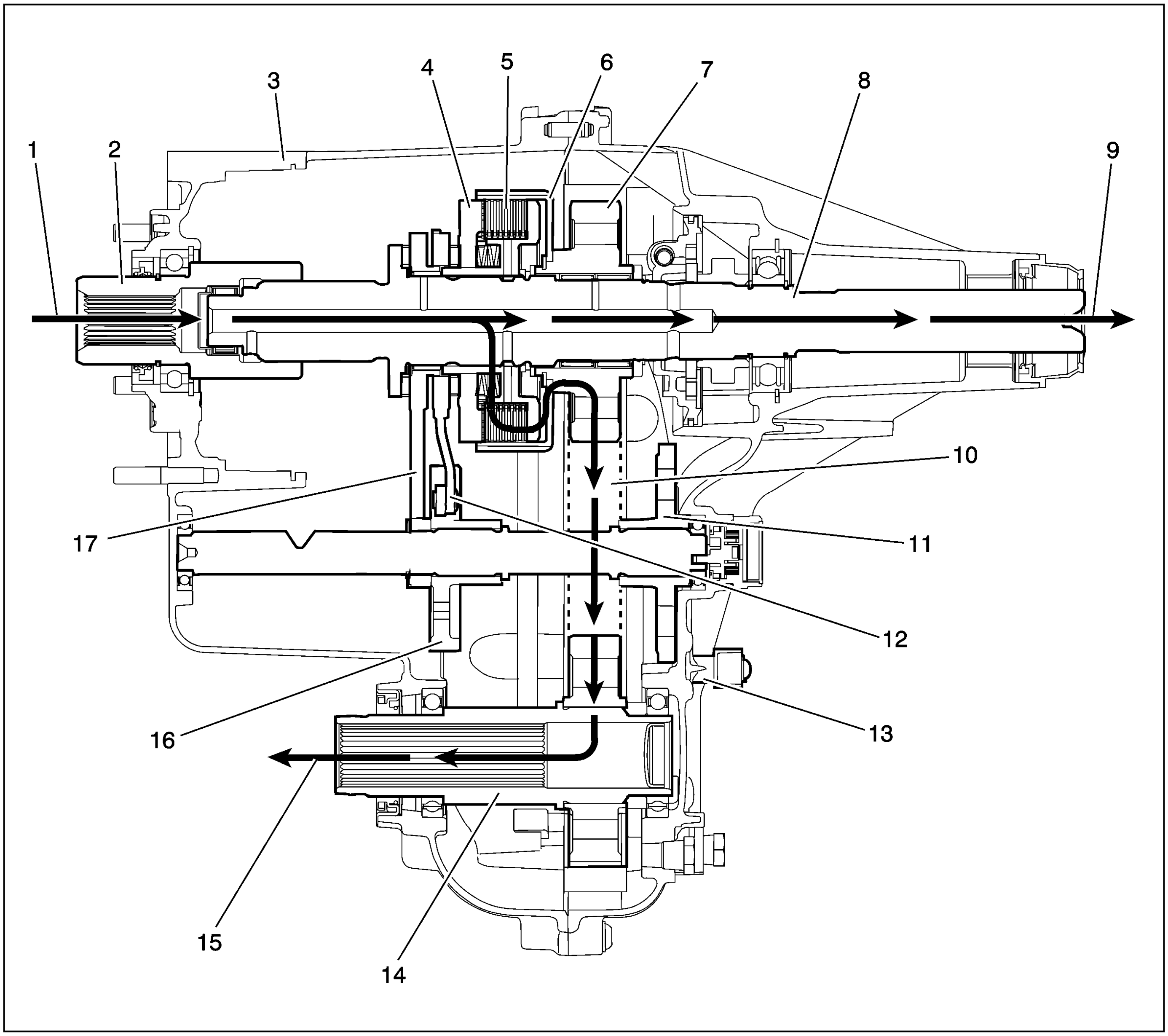
In the 4HI mode, the power flow to the rear propshaft (9) is the same as it is in the 2WD mode. To deliver power flow to the front propshaft (15) during the 4HI position, the transfer case control module commands the 2/4 wheel drive actuator assembly (13) to apply the clutch to a calibrated torque. The 2/4 wheel drive actuator assembly (13) turns the control actuator shaft. A brake in the 2/4 wheel drive actuator assembly (13) holds the control actuator shaft in the full clutch position. The control actuator shaft is cam designed and the cam action moves the control actuator lever (12). The control actuator lever (12) pivots against the control lever (17) and moves toward the clutch pressure plate (4), to engage the clutch (5). As more pressure is applied to the clutch pressure plate (4), the clutch discs (5) are compressed. Using inner clutch discs, which are engaged with the clutch hub, and the outer clutch discs, which are engaged with the clutch housing (6), the power flow is delivered to the clutch housing (6). The clutch hub is splined to the rear output shaft (8), and the clutch housing (6) rotates on a needle bearing on the rear output shaft (8). The chain drive sprocket (7) is splined to the clutch housing (6). The power flows from the drive sprocket (7), through the chain (10), to the chain driven sprocket. The driven sprocket is splined to the front output shaft (14). The power flow is delivered to the front propshaft (15) through the front output shaft (14).

4HI Auto Mode Power Flow



5071147

(1) Transfer Case Input Shaft
(2) Transfer Case Scissor Mechanism Lever
(3) Transfer Case Four Wheel Drive Clutch Pack
(4) Transfer Case Front Output Shaft Drive Chain Assembly
(5) Transfer Case Rear Output Shaft
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Front Output Shaft
(8) Transfer Case Two/Four Wheel Drive Actuator Cam


1
2
3
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7
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9
10
11
12
13
14
15
16
17

2236744

In the 4HI Auto mode, the power flow to the rear propshaft (9) is the same as it is in the 2WD mode. To deliver power flow to the front propshaft (15) during the 4HI position, the transfer case control module commands the 2/4 wheel drive actuator assembly (13) to apply the clutch to a calibrated torque. The 2/4 wheel drive actuator assembly (13) rotates the control actuator shaft to the correct torque level positions. Rotating the control actuator shaft to the various positions changes the clutch torque level. The control actuator shaft is cam designed and the cam action moves the control actuator lever (12). The control actuator lever (12) pivots against the control lever (17) and moves toward the clutch pressure plate (4), to engage the clutch (5). As more pressure is applied to the clutch pressure plate (4), the clutch discs (5) are compressed. Using inner clutch discs, which are engaged with the clutch hub, and the outer clutch discs, which are engaged with the clutch housing (6), the power flow is delivered to the clutch housing (6). The clutch hub is splined to the rear output shaft (8), and clutch housing (6) rotates on a needle bearing on the rear output shaft (8). The chain drive sprocket (7) is splined to the clutch housing (6). The power flows from the drive sprocket (7), through the chain (10), to the chain driven sprocket. The driven sprocket is splined to the front output shaft (14). The power flow is delivered to the front propshaft (15) through the front output shaft (14). When a difference of front wheel speed to rear wheel speed is recognized, the transfer case control module commands for more or less clutch torque.

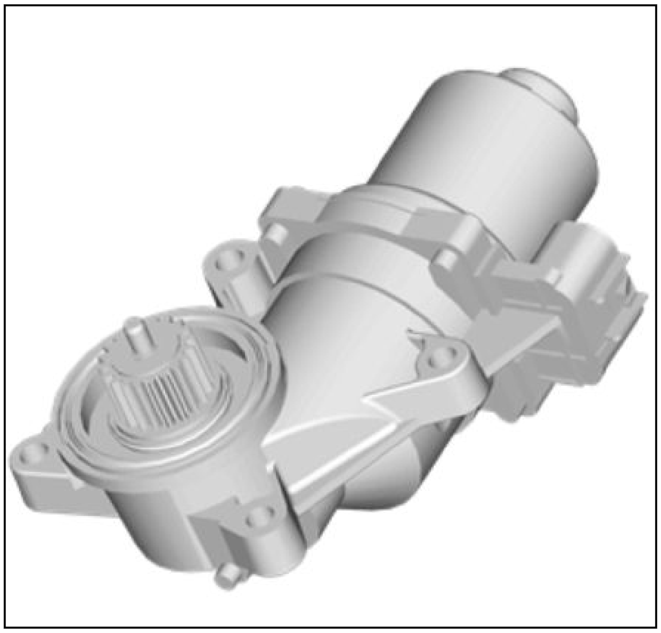
Service 4 Wheel Drive Message

The Service 4 Wheel Drive Message is a display within the driver information center (DIC) and cannot be serviced separately. This message is used to inform the driver that a transfer case system condition has occurred. The Service 4 Wheel Drive Message is controlled by the transfer case shift control module via GMLAN.

Transfer Case Two/Four Wheel Drive Incremental Sensor

The incremental sensor is mounted within the transfer case actuator and is replaced as an assembly. The incremental sensor converts the shift detent lever shaft position, representing a mode, into an electrical signal input to the transfer case shift control module. The module detects what position the transfer case is in by monitoring the voltage returned on the incremental encoder impulse signal circuit. This voltage translates into AUTO 4WD, 2HI, and 4HI or in transition between gears.

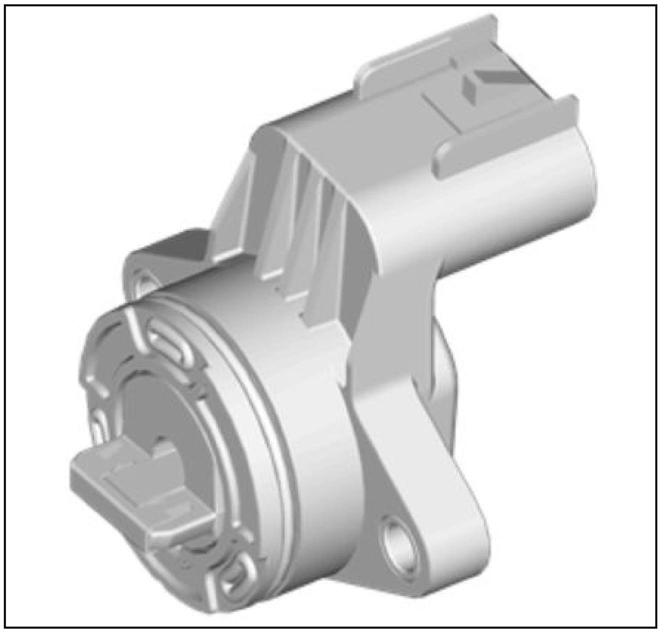
Transfer Case Two/Four Wheel Drive Actuator Assembly



1986212

The transfer case two/four wheel drive actuator assembly consists of a permanent magnet DC motor and gear reduction assembly. It is located on the left hand side, driver's side, of the transfer case. When activated, it turns the shift detent lever shaft of the transfer case, clockwise or counterclockwise, to shift the transfer case. The motor/encoder is controlled with a PWM signal by the transfer case shift control module. This circuit consists of a driver on both the Motor A and Motor B circuits. The encoder motor is bi-directional in order to allow the motor to shift the transfer case from 2HI to 4HI positions.

Transfer Case Actuator Shaft Position Sensor Assembly



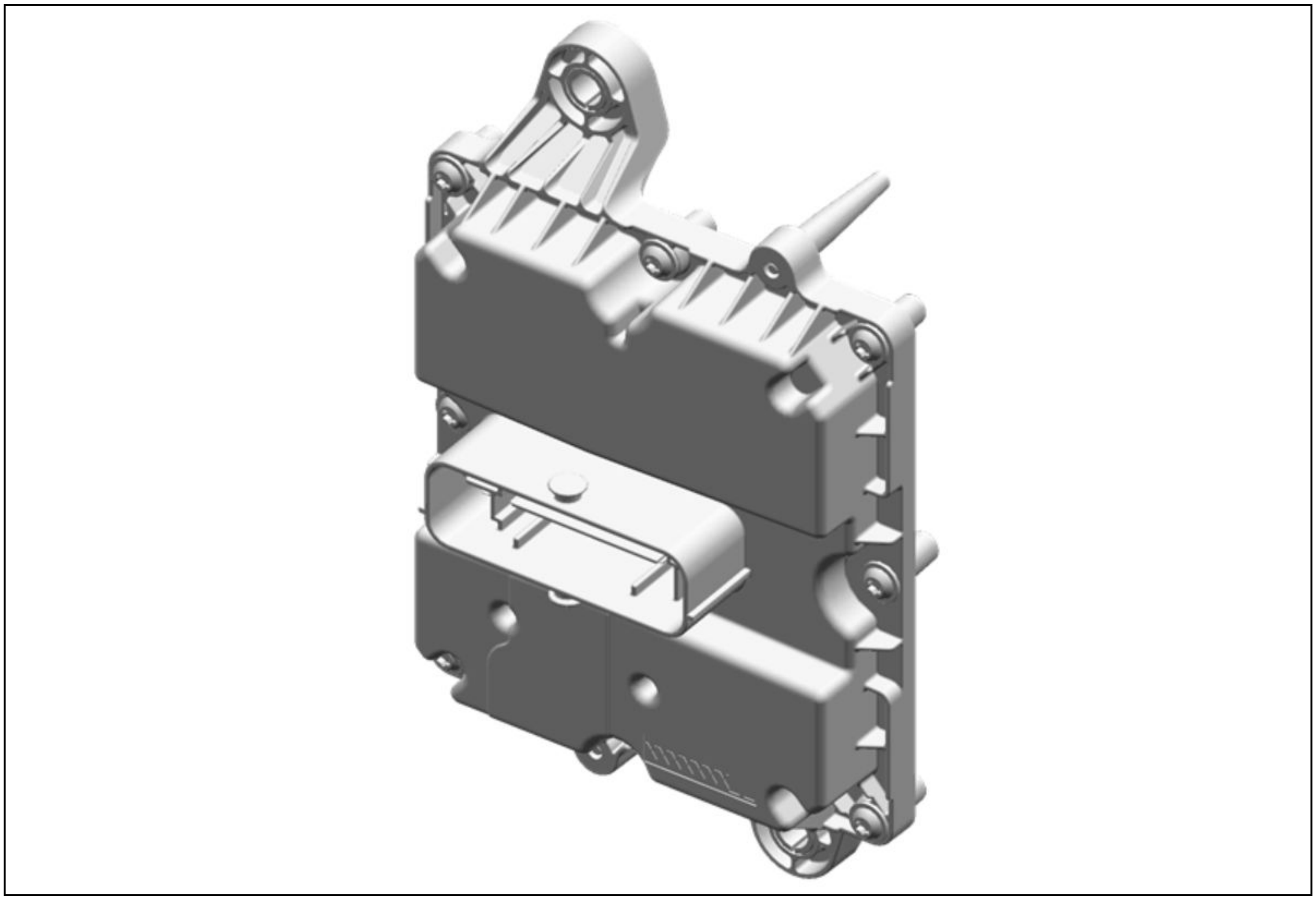
1986213

This sensor works in conjunction with the incremental sensor and shows transfer case position in degrees.

Transfer Case Motor Lock

The transfer case motor lock is used to provide a 2HI and 4HI feature. When the lock circuit is energized, the transfer case encoder motor is allowed to turn. When the transfer case is placed 2HI or 4HI the motor lock circuit is de-energized and the lock is applied. This assures that the transfer case remains in the current gear position until a new gear position is requested. When AUTO 4WD is selected, the motor lock remains applied until an adaptive mode, torque being applied to the front propshaft, is required. During an adaptive mode the motor lock circuit is energized and the motor lock is released, enabling the encoder motor to turn and apply or release torque at the front propshaft.

Transfer Case Shift Control Module



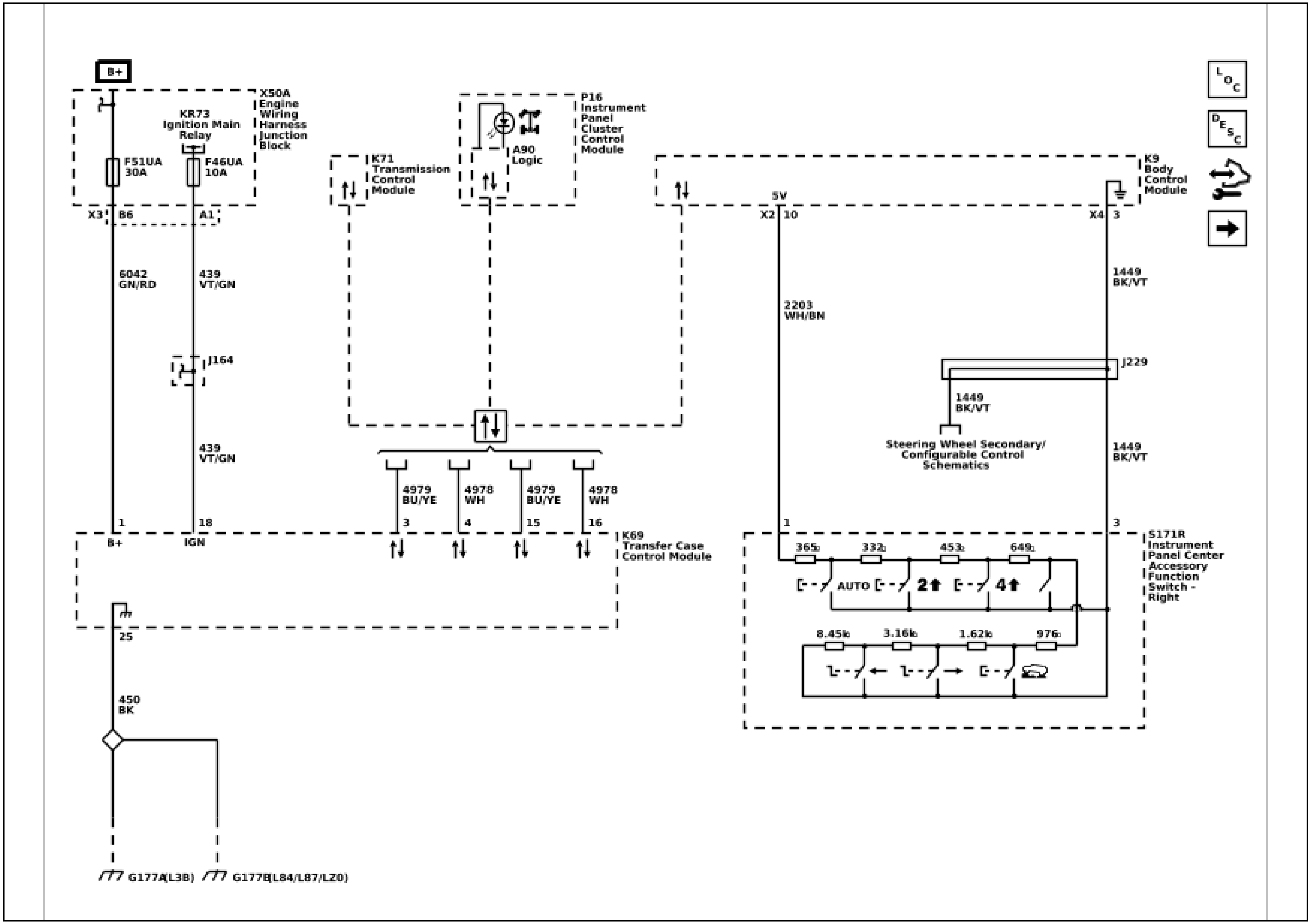
5071149

The transfer case shift control module uses the vehicle identification number (VIN) for calculations based on axle ratio, transmission, tire size, and engine size. For StabiliTrak applications, when the vehicle is in AUTO 4WD mode, the transfer case shift control module monitors the wheel speed via the four wheel speed sensors in order to detect wheel slippage. For non-StabiliTrak applications, when the vehicle is in AUTO 4WD mode, the transfer case shift control module monitors the wheel speed via the two front wheel speed sensors and the vehicle speed sensor in order to detect slippage. When wheel slippage is detected, the module applies a clutch pack contained inside the transfer case. This clutch pack is used to lock-in and apply the front propshaft, transferring torque to the front wheels. The clutch pack is applied by a motor/encoder assembly. When slip is no longer detected by the transfer case shift control module, the clutch is no longer applied.

Transfer Case - MP 3025

Schematic and Routing Diagrams

Transfer Case Control Schematics (NQH) (Power, Ground, Serial Data, and Shift Controls)


B+
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F51UA 30A
F46UA 10A
X3 B6
A1
6042 GN/RD
439 VT/GN
J164
439 VT/GN
1 B+
18 IGN
K71 Transmission Control Module
P16 Instrument Panel Cluster Control Module
A90 Logic
K9 Body Control Module
5V
X2 10
X4 3
2203 WH/BN
1449 BK/VT
J229
1449 BK/VT
Steering Wheel Secondary/ Configurable Control Schematics
1449 BK/VT
4979 BU/YE
4978 WH
4979 BU/YE
4978 WH
3
4
15
16
K69 Transfer Case Control Module
25
450 BK
G177A(L3B)
G177B(L84/L87/LZ0)
1
3
S171R Instrument Panel Center Accessory Function Switch - Right
365Ω
332Ω
453Ω
649Ω
AUTO
2
4
8.45kΩ
3.16kΩ
1.62kΩ
976Ω
L O C
D E S C

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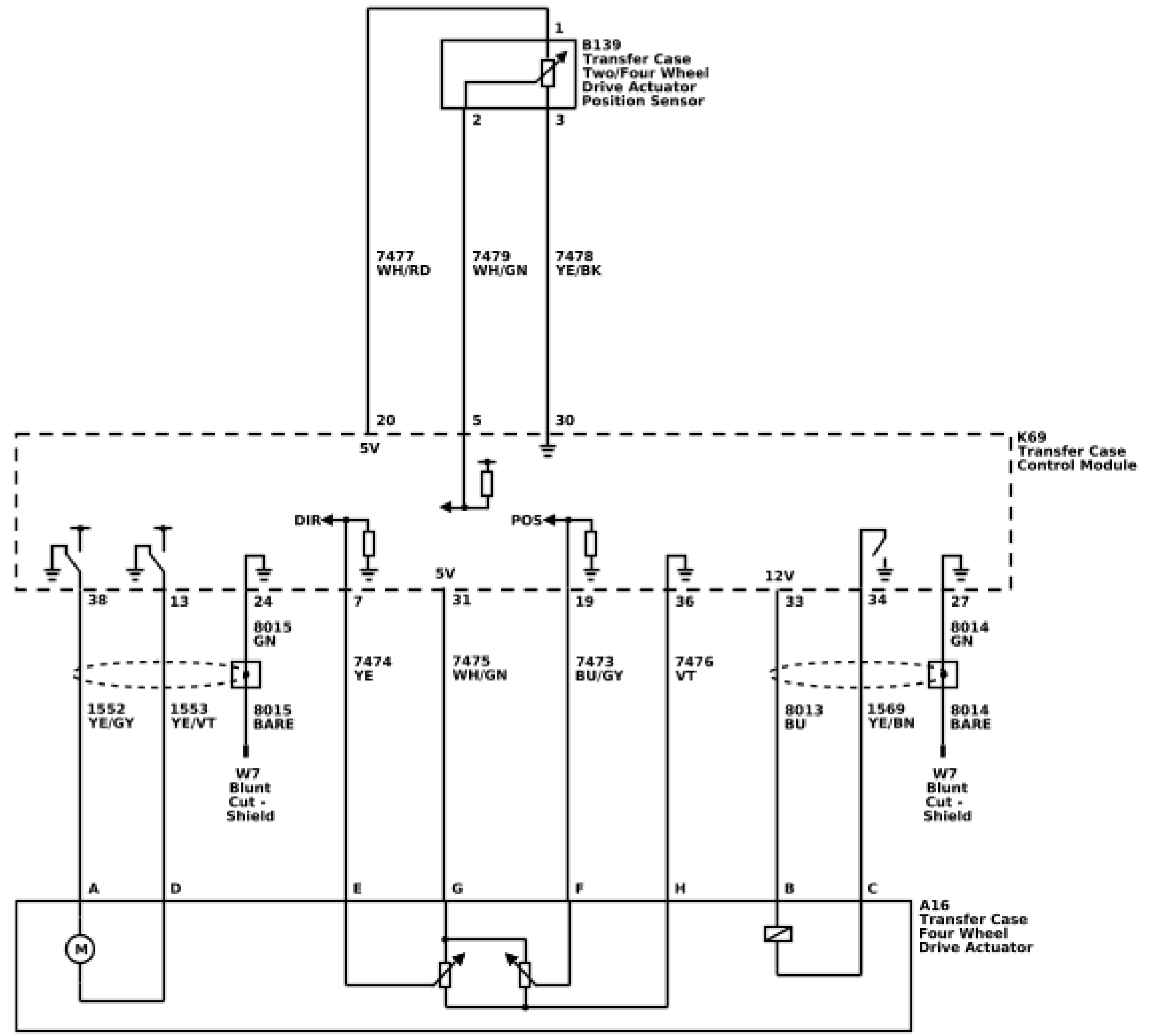
Transfer Case Control Schematics (NQH) (Transfer Case Controls)


1
B139
Transfer Case
Two/Four Wheel
Drive Actuator
Position Sensor
2
3
7477
WH/RD
7479
WH/GN
7478
YE/BK
20
5
30
5V
K69
Transfer Case
Control Module
DIR
POS
5V
12V
38
13
24
7
31
19
36
33
34
27
8015
GN
7474
YE
7475
WH/GN
7473
BU/GY
7476
VT
8014
GN
1552
YE/GY
1553
YE/VT
8015
BARE
8013
BU
1569
YE/BN
8014
BARE
W7
Blunt
Cut -
Shield
W7
Blunt
Cut -
Shield
A
D
E
G
F
H
B
C
M
A16
Transfer Case
Four Wheel
Drive Actuator

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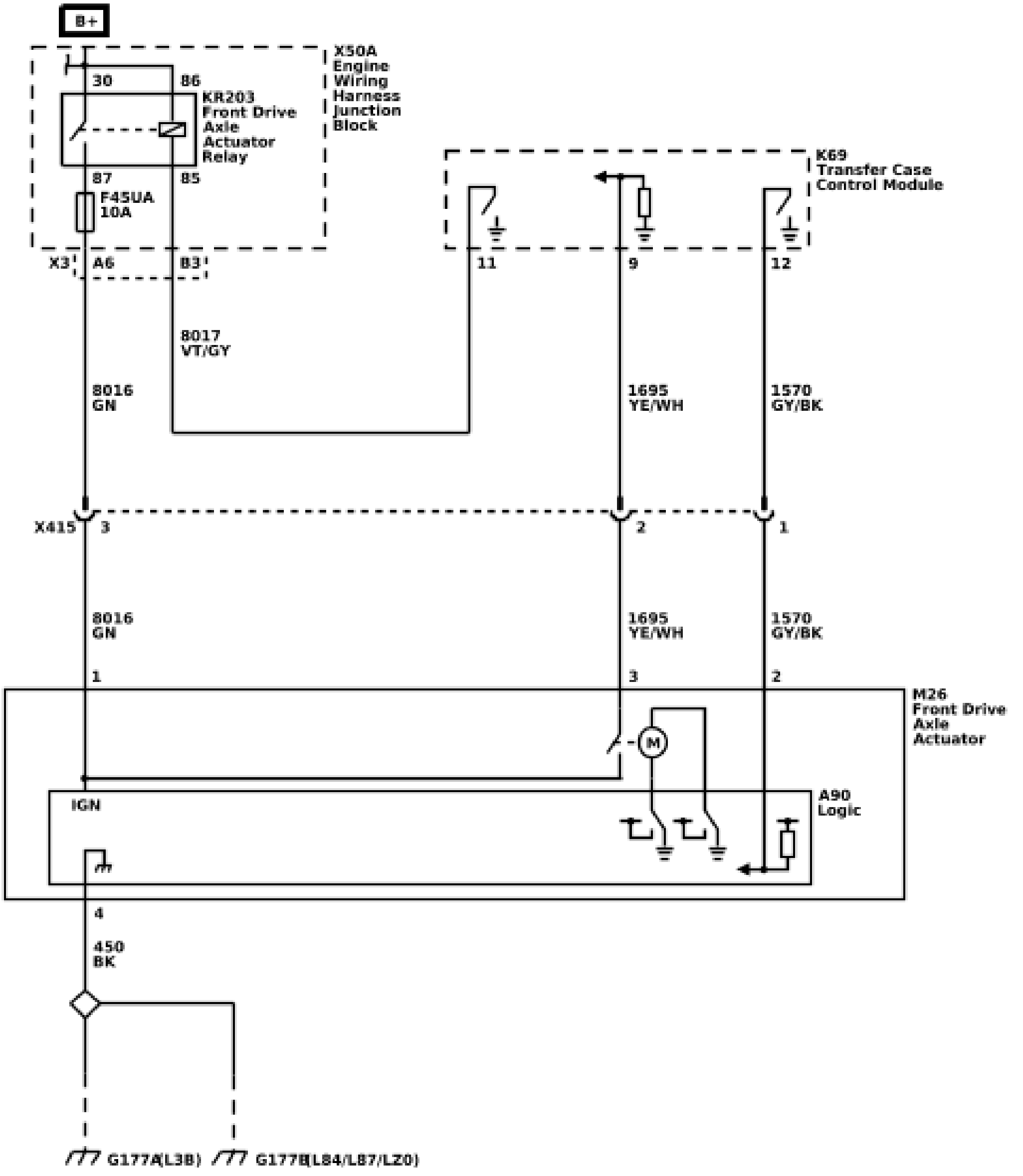
Transfer Case Control Schematics (NQH) (Front Axle Controls)


B+
X50A Engine Wiring Harness Junction Block
30
86
KR203 Front Drive Axle Actuator Relay
87
85
F45UA 10A
X3
A6
B3
K69 Transfer Case Control Module
11
9
12
8017 VT/GY
8016 GN
1695 YE/WH
1570 GY/BK
X415
3
2
1
8016 GN
1695 YE/WH
1570 GY/BK
1
3
2
M26 Front Drive Axle Actuator
M
A90 Logic
IGN
4
450 BK
G177A(L3B)
G177B(L84/L87/LZ0)

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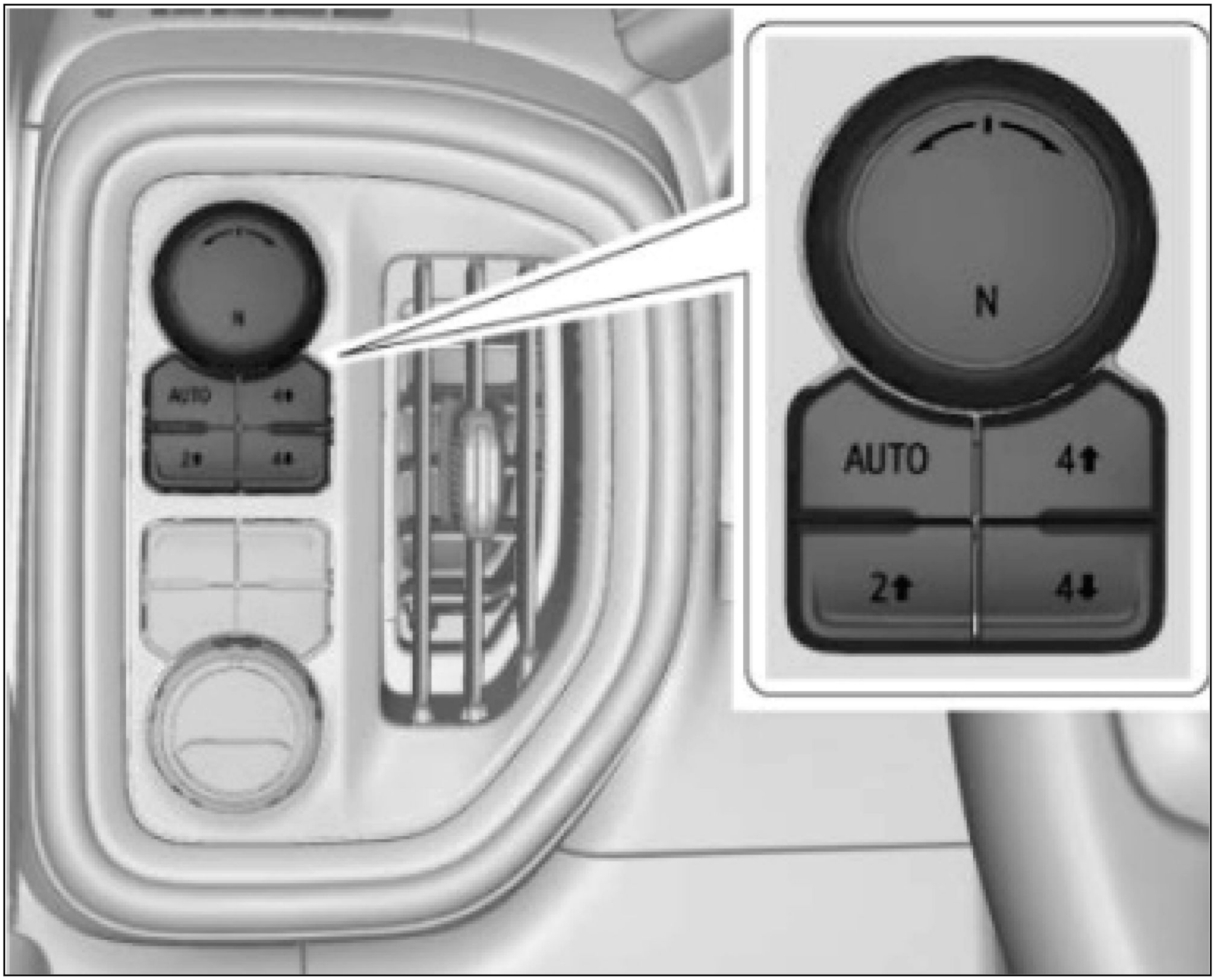
Description and Operation

Transfer Case Description and Operation

The Magna Powertrain (MP) model 3025 RPO NQH transfer case is a 2 speed automatic, active transfer case (ATC). The MP 3025 ATC provides 5 modes, Auto 4WD, 4HI, 4LO, 2HI and NEUTRAL. The Auto 4WD position allows the capability of an active transfer case, which provides the benefits of on-demand torque biasing wet clutch and easy vehicle tuning through software calibrations. The software calibrations allow more features such as flexible adapt ready position and clutch preload torque levels. The technology allows for vehicle speed dependent clutch torque levels to enhance the performance of the system. For example, the system is calibrated to provide 0–6.78 newtonm (0–5 lb ft) of clutch torque during low speed, low engine torque operation, and predetermined higher torque for 40 km/h (25 mph) and greater. This prevents crow-hop and binding at low speeds and provides higher torque biases at higher vehicle speeds, in order to enhance stability.

Transfer Case Shift Control Switch



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The MP 3025 ATC transfer case features a 5 mode shift control switch located on the instrument panel. When the ignition key is in the RUN position, the transfer case shift control module monitors the transfer case shift control switch to determine if the driver desires a new mode/range position.

To command a shift, press button of the new desired state. The actual 4x4 shift request is only made after the button is released. Transfer Case state will be displayed in the Cluster at all times. Graphic location could vary depending on trim level. However, graphics will be consistent. The graphic in the cluster will blink while a shift is in progress. The graphic will change to indicate the mode requested. When the shift is complete, the graphic will stop blinking and become steady. If the transfer case cannot complete a shift, the graphic will return to the previously selected mode. While shift is in progress, cluster will display following DIC message: “4WD Shift in Progress”. The DIC message will turn off once the shift is complete.

During normal driving situations, the transfer case can operate in the Auto 4WD mode. In the Auto 4WD mode, the transfer case shift control module monitors rear wheel slip speed, based on the inputs from the wheel speed sensors and/or vehicle speed sensor. When the vehicle experiences a rear wheel slip condition, the transfer case shift control module sends a pulse width modulated (PWM) signal to an electronic motor, which is the transfer case 2/4 wheel drive actuator assembly. This actuator rotates the transfer case control actuator shaft, applying a clutch. The clutch is designed to deliver a variable amount of torque, normally delivered to the rear wheels, and transfers it to the front wheels. Torque is ramped up to the front wheels until the front wheel speed sensor matches that of the rear wheel speed sensors and/or vehicle speed sensor. Torque is ramped down to the front wheels. The process would repeat if rear wheel slip is detected again.

The MP 3025 ATC transfer case has the added feature of also providing the driver with 4 manual mode/range positions:

- 4HI – 4 Wheel Drive high range
- 2HI – 2 Wheel Drive high range
- 4LO – 4 wheel drive low range, 2.72:1 gear ratio reduction.
- Neutral

The driver may choose to select any of these mode/range positions while driving the vehicle. However, the transfer case will not allow a shift into or out of 4LO unless the following criteria has been met:

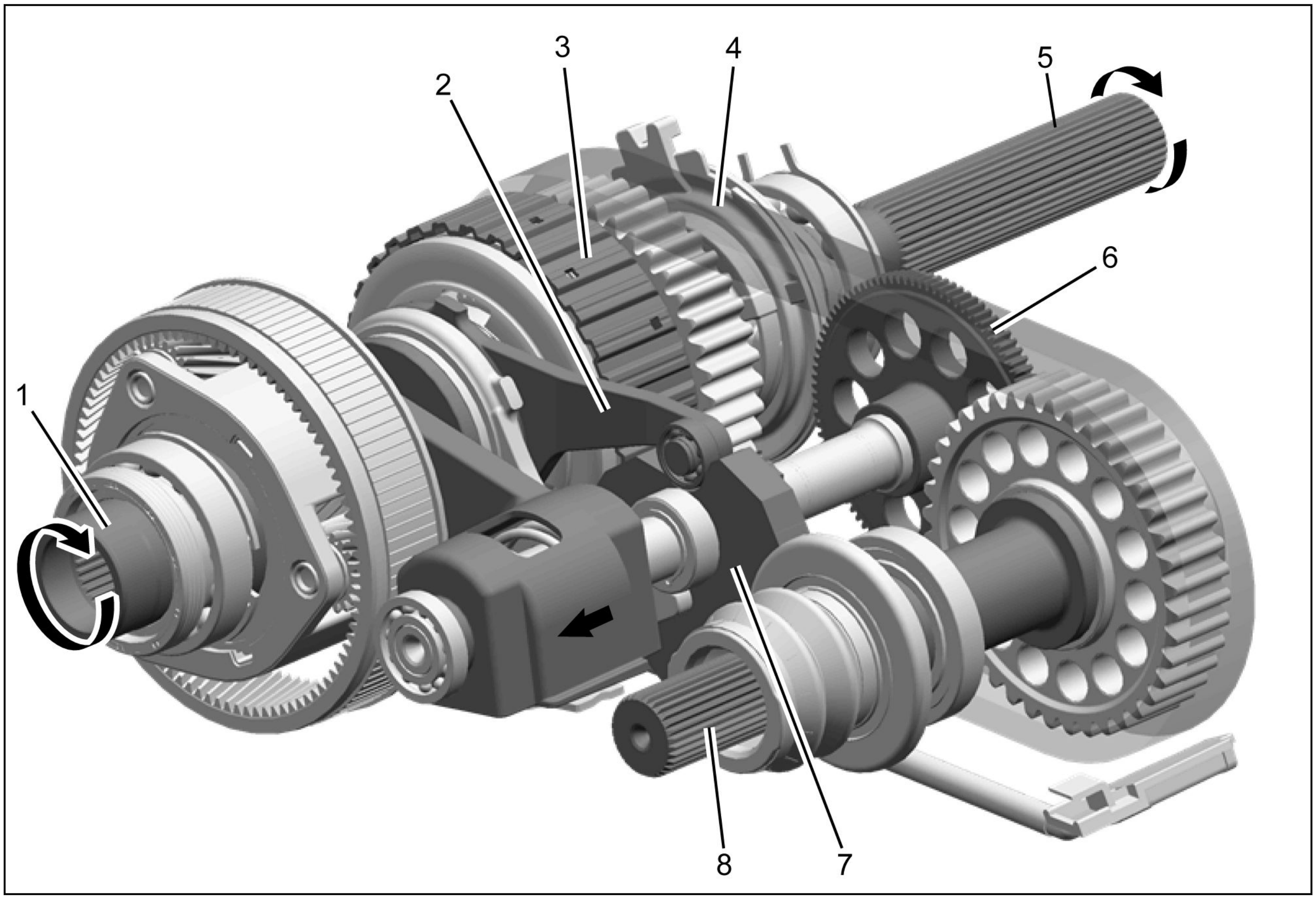
- The ignition switch is in RUN.
- The automatic transmission is in NEUTRAL.
- The vehicle speed is below 5 km/h (3 mph).

This transfer case also has a NEUTRAL position. A shift to the NEUTRAL position allows the vehicle to be towed without rotating the transmission output shaft. In the NEUTRAL position, the rear propeller shaft rotates the transfer case rear output shaft, in turn rotating the oil pump, thus providing constant lubrication during towing. NEUTRAL position may be obtained only if the following criteria have been met:

- Start the vehicle or turn the ignition on.
- Shift the transmission to NEUTRAL.
- Shift the transfer case to 2 HI. (Shifts to transfer case neutral are only allowed when transfer case initial state is 2 HI.)
- Apply park brake and/or Service brake. If Park Brake and/or service brake is not applied within 20 seconds, transfer case will remain in original state.

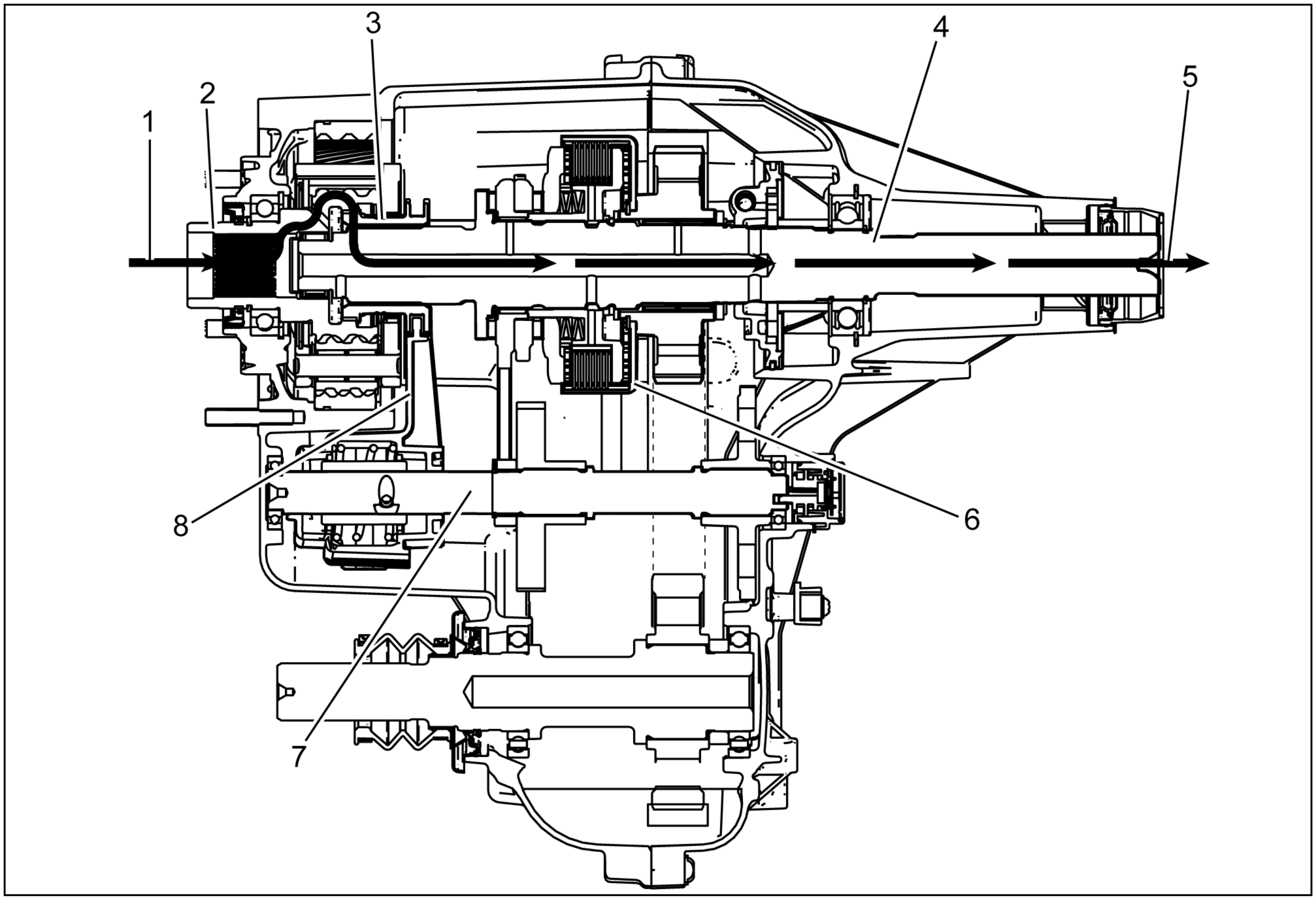
Once these conditions have been met, Press 2 HI 5 sequential times in 10 seconds until the Transfer Case N (Neutral) graphic starts blinking in cluster. When shift to Transfer Case N (Neutral) is complete, graphic in cluster will be steady. When the system completes the shift to NEUTRAL, the red NEUTRAL lamp will illuminate.

2WD Mode Power Flow



(1) Transfer Case Input Shaft
(2) Transfer Case Scissor Mechanism Lever
(3) Transfer Case Four Wheel Drive Clutch
(4) Transfer Case Front Output Shaft Drive Chain Assembly
(5) Transfer Case Rear Output Shaft
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Two/Four Wheel Drive Actuator Cam
(8) Transfer Case Front Output Shaft

2WD Mode Power Flow



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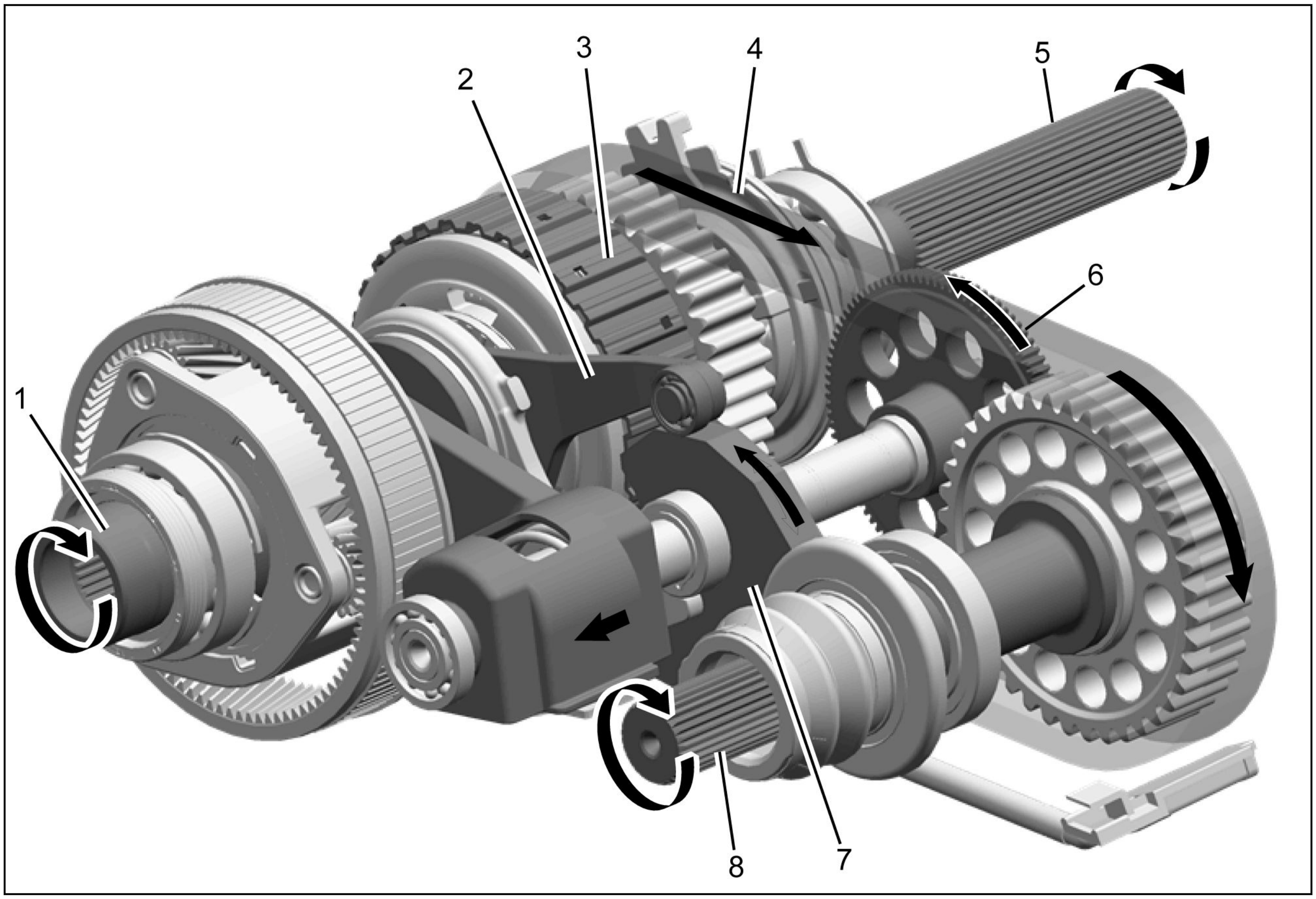
When the MP 3025 ATC is in the 2WD mode, the power flows from the transmission (1) to the input shaft (2). The input shaft (2) is connected to the rear output shaft (4) by the high/low clutch (3). The high/low clutch (3) outer teeth are engaged with the input shaft (2) inner, high-speed position teeth. At the same time the high/low clutch is slip splined to the rear output shaft (4). The rear output shaft (4) delivers the power flow to the rear propshaft (5). The position of the control actuator shaft (7) allows no clutch (6) engagement. The high/low range shift fork (8), is in the high-speed position on the control actuator shaft (7).

4HI Mode Power Flow



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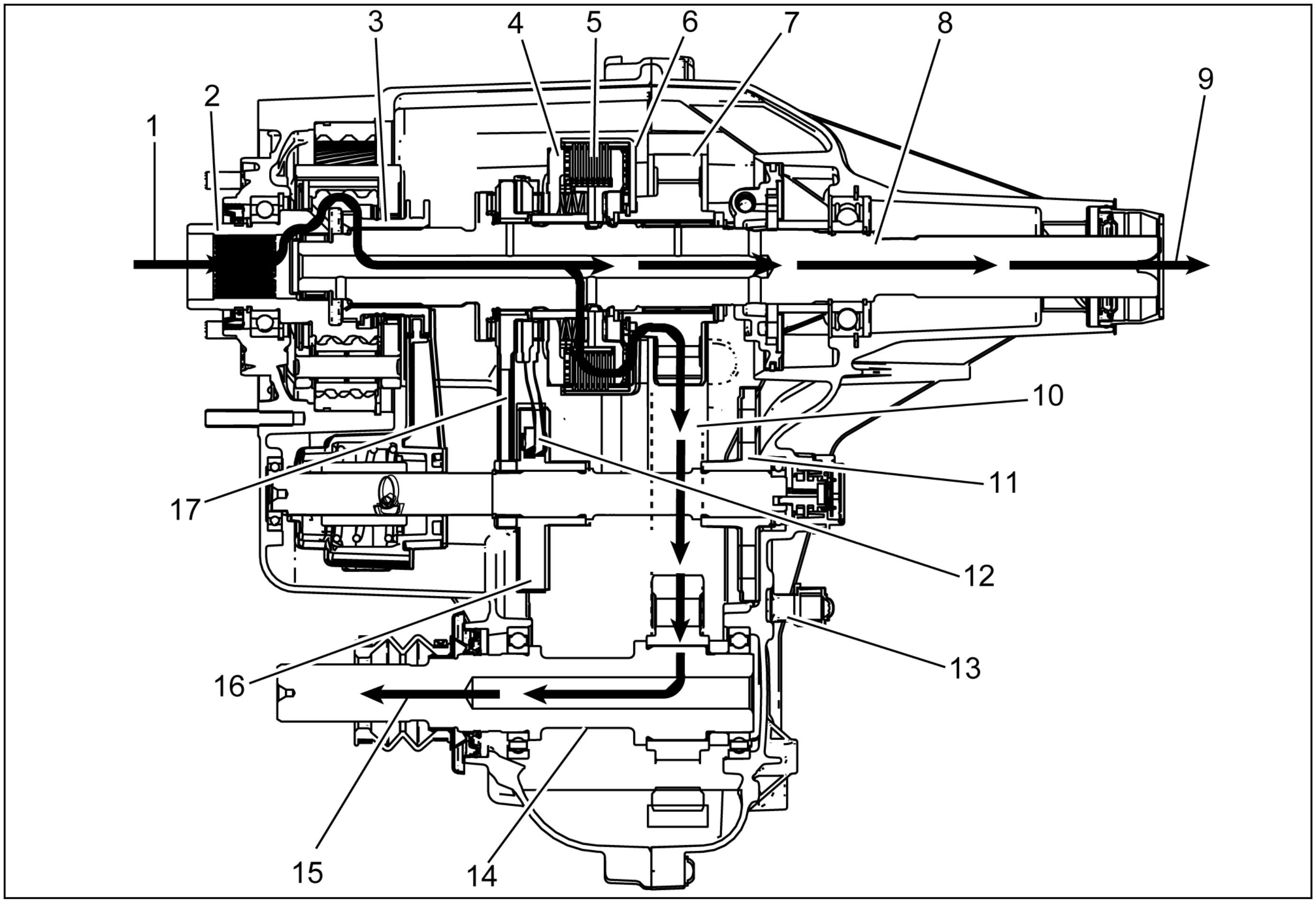
(1) Transfer Case Input Shaft
(2) Transfer Case Scissor Mechanism Lever
(3) Transfer Case Four Wheel Drive Clutch
(4) Transfer Case Front Output Shaft Drive Chain Assembly
(5) Transfer Case Rear Output Shaft
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Two/Four Wheel Drive Actuator Cam
(8) Transfer Case Front Output Shaft

4HI Mode Power Flow



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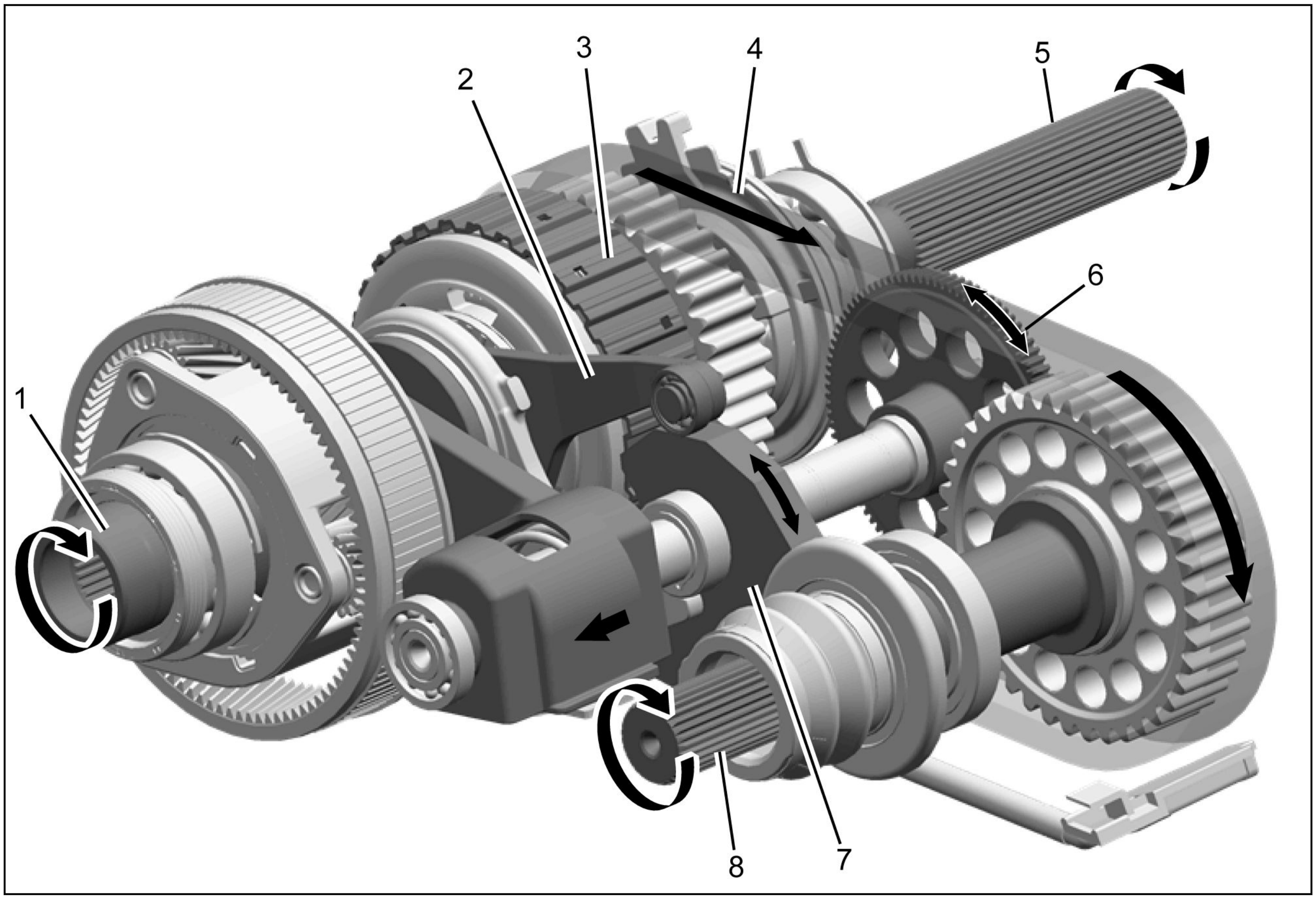
In the 4HI mode, the power flow to the rear propshaft (9) is the same as it is in the 2WD mode. To deliver power flow to the front propshaft (15) during the 4HI position, the transfer case control module commands the 2/4 wheel drive actuator assembly (13) to apply the clutch to a calibrated torque. The 2/4 wheel drive actuator assembly (13) turns the control actuator shaft. A brake in the 2/4 wheel drive actuator assembly (13) holds the control actuator shaft in the full clutch position. The control actuator shaft is cam designed and the cam action moves the control actuator lever (12). The control actuator lever (12) pivots against the control lever (17) and moves toward the clutch pressure plate (4), to engage the clutch (5). As more pressure is applied to the clutch pressure plate (4), the clutch discs (5) are compressed. Using inner clutch discs, which are engaged with the clutch hub, and the outer clutch discs, which are engaged with the clutch housing (6), the power flow is delivered to the clutch housing (6). The clutch hub is splined to the rear output shaft (8), and the clutch housing (6) rotates on a needle bearing on the rear output shaft (8). The chain drive sprocket (7) is splined to the clutch housing (6). The power flows from the drive sprocket (7), through the chain (10), to the chain driven sprocket. The driven sprocket is splined to the front output shaft (14). The power flow is delivered to the front propshaft (15) through the front output shaft (14).

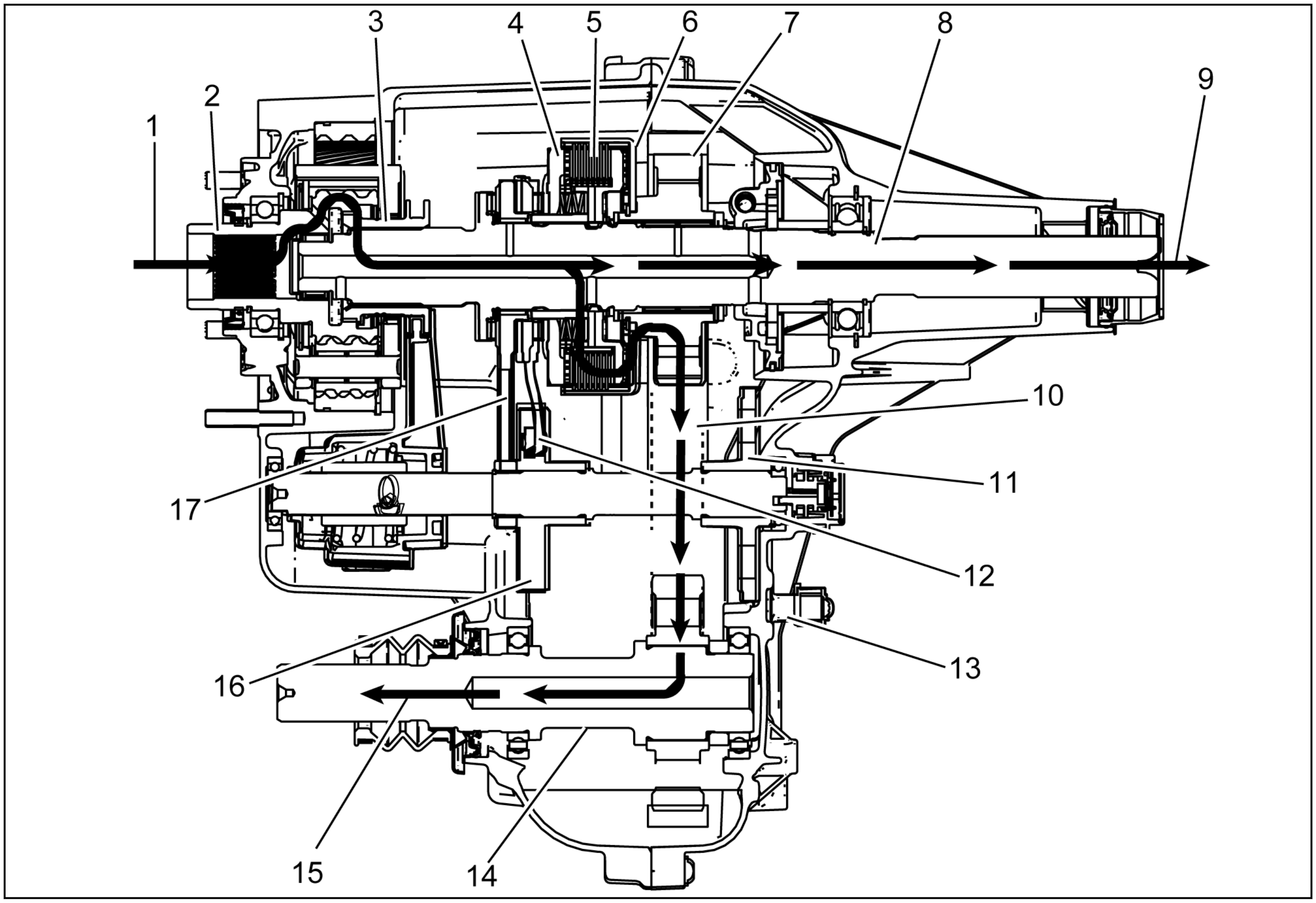
During the Auto 4WD mode, the power flow is the same as it is in the 4HI mode. Except, during the Auto 4WD mode, the 2/4 wheel drive actuator assembly (13) rotates the control actuator shaft to the correct torque level positions. Rotating the control actuator shaft to the various positions changes the clutch torque level. When a difference of front wheel speed to rear wheel speed is recognized, the transfer case control module commands for more, or less clutch torque.

Auto 4WD Mode Power Flow



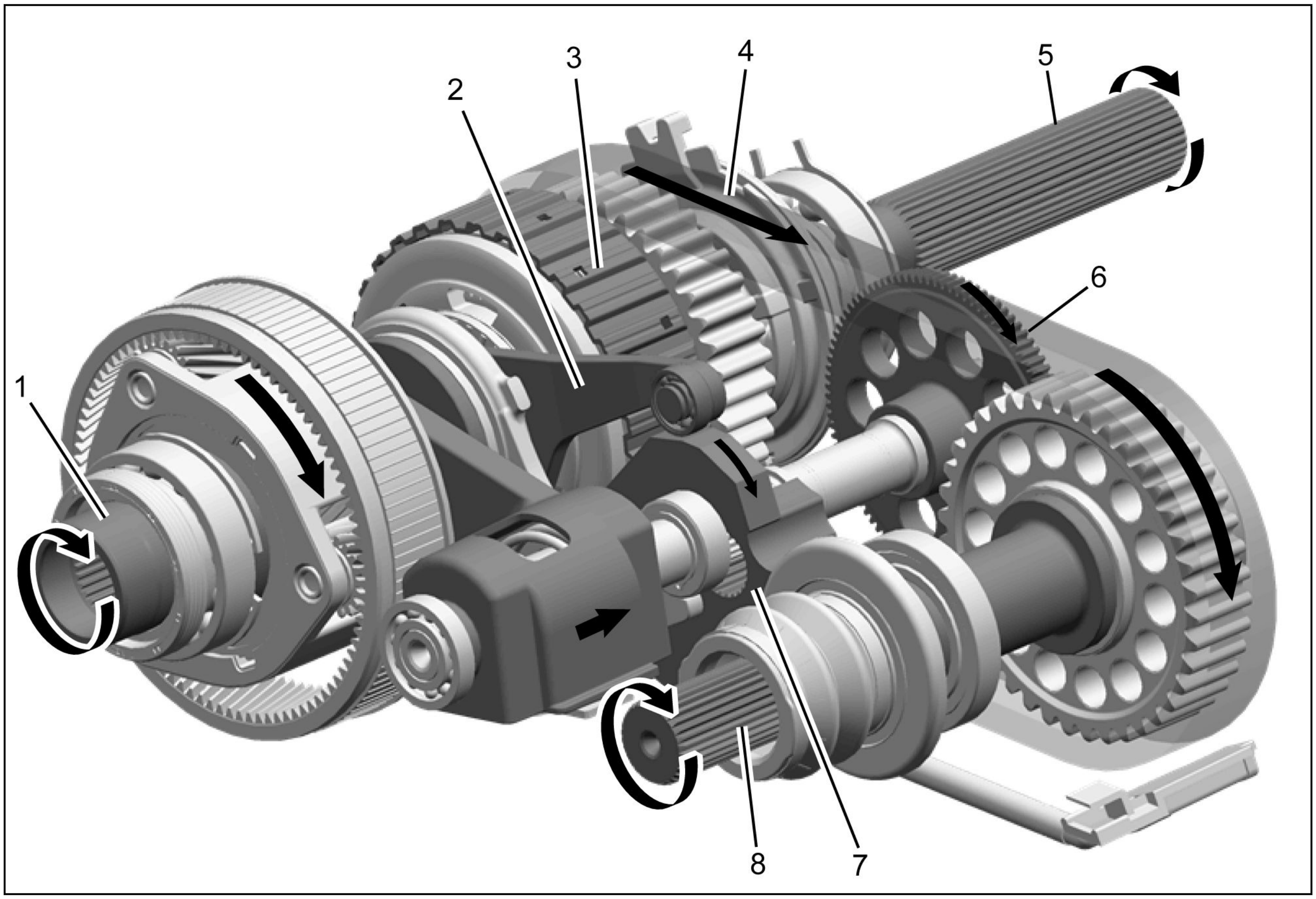
(1) Transfer Case Input Shaft
(2) Transfer Case Scissor Mechanism Lever
(3) Transfer Case Four Wheel Drive Clutch
(4) Transfer Case Front Output Shaft Drive Chain Assembly
(5) Transfer Case Rear Output Shaft
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Two/Four Wheel Drive Actuator Cam
(8) Transfer Case Front Output Shaft

AUTO 4WD Mode Power Flow



During the Auto 4WD mode, the power flow is the same as it is in the 4HI mode. Except, during the Auto 4WD mode, the 2/4 wheel drive actuator assembly (13) rotates the control actuator shaft to the correct torque level positions. Rotating the control actuator shaft to the various positions changes the clutch torque level. When a difference of front wheel speed to rear wheel speed is recognized, the transfer case control module commands for more or less clutch torque.

4LO Mode Power Flow



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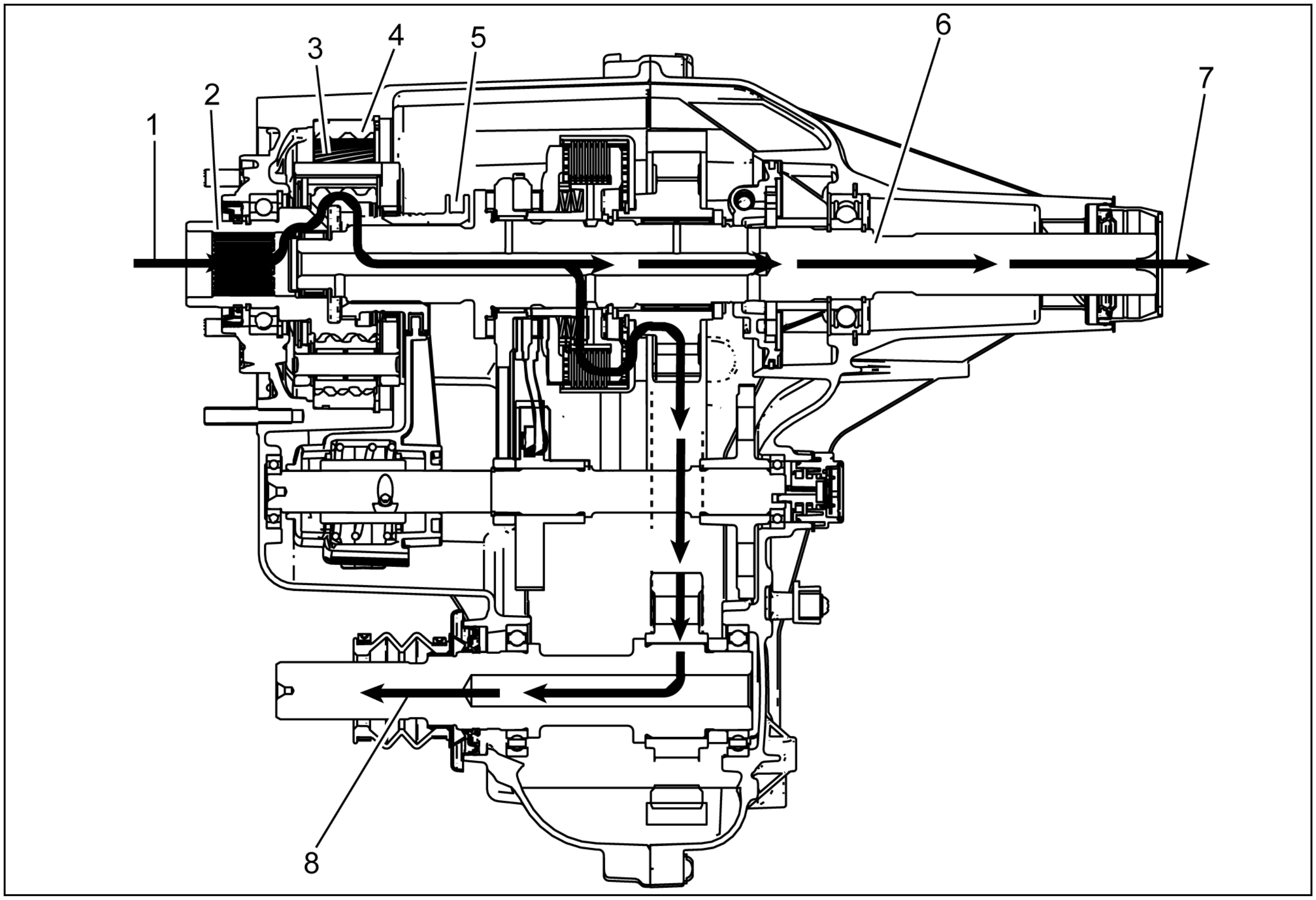
(1) Transfer Case Input Shaft
(2) Transfer Case Scissor Mechanism Lever
(3) Transfer Case Four Wheel Drive Clutch
(4) Transfer Case Front Output Shaft Drive Chain Assembly
(5) Transfer Case Rear Output Shaft
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Two/Four Wheel Drive Actuator Cam
(8) Transfer Case Front Output Shaft

4LO Mode Power Flow



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When shifting the transfer case to the 4LO mode, it commands the 2/4 wheel drive actuator assembly to turn the control actuator shaft, to move the high/low shift fork (9). The shift fork (9) moves the high/low clutch (5), which is slip splined on the rear output shaft (6) toward the rear of the transfer case. The high/low clutch (5) outer teeth disengage from the input shaft (2) inner teeth. The high/low clutch (5) outer teeth then engage in the planetary carrier teeth. The power flow is now from the input shaft (2) planetary teeth to the planetary gears (3) in the carrier. Rotating the planetary gears (3), which are engaged in the high/low internal gear (4), the planetary carrier rotates. The planetary carrier engaged to the high/low clutch (5), drives the rear output shaft (6), providing a 2.72 reduction to the speed of the rear output shaft (6). The power flow to the front propshaft (8) is the same as it is in the 4HI.

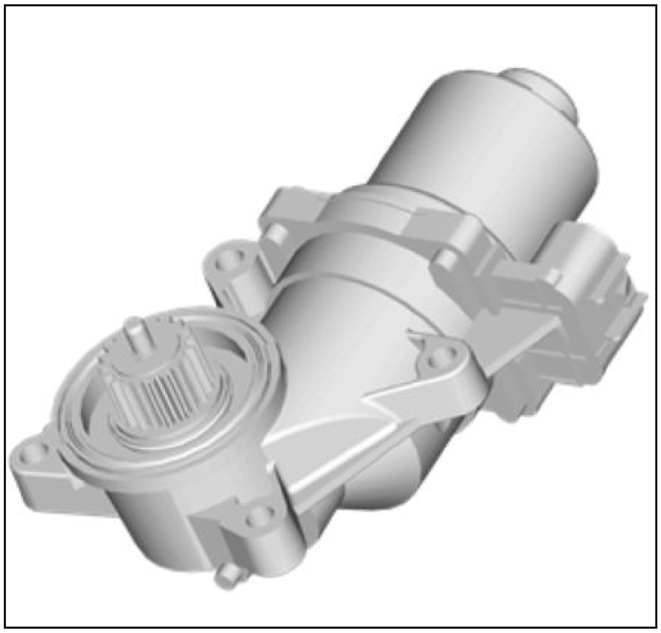
NEUTRAL Mode Power Flow

Shifting to the NEUTRAL position, the high/low clutch is centered between the input shaft and the high/low planetary carrier. The high/low clutch is not engaged with either the input shaft or the high/low planetary carrier teeth.

Service 4 Wheel Drive Message

The Service 4 Wheel Drive Message is a display within the Drivers Information Center (DIC) and cannot be serviced separately. This message is used to inform the driver that a transfer case system malfunction has occurred. The Service 4 Wheel Drive Message is controlled by the transfer case shift control module via GMLAN.

Transfer Case Two/Four Wheel Drive Actuator Assembly



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The transfer case two/four wheel drive actuator assembly consists of a permanent magnet DC motor and gear reduction assembly. It is located on the left hand side, driver's side, of the transfer case. When activated, it rotates the shift detent lever shaft of the transfer case, clockwise or counterclockwise, to shift the transfer case. The motor/encoder is controlled with a PWM signal by the transfer case shift control module. This circuit consists of a driver on both the Motor A and Motor B circuits. The encoder motor is bi-directional in order to allow the motor to shift the transfer case from 2HI or 4HI to NEUTRAL and 4LO positions. The two/four wheel drive incremental sensor and motor lock are internal to the actuator motor assembly.

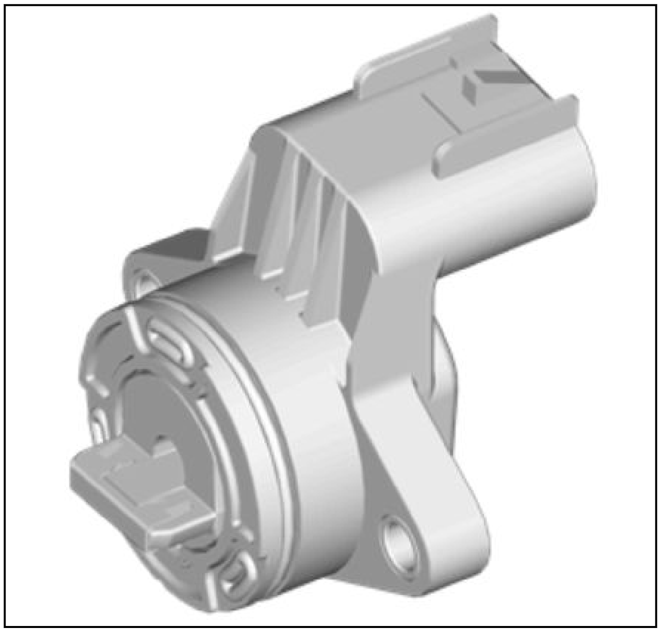
Transfer Case Motor Lock

The transfer case motor lock is internal to the transfer case actuator motor and is replaced with the actuator motor as an assembly. The motor lock is used to provide a 2HI, 4HI, and 4LO motor locking feature. When the lock circuit is energized, the transfer case actuator motor is allowed to turn. When the transfer case is placed 2HI, 4HI, or 4LO the motor lock circuit is de-energized and the lock is applied. This assures that the transfer case remains in the current gear position until a new gear position is requested. When AUTO 4WD is selected, the motor lock remains applied until an adaptive mode torque being applied to the front propshaft is required. During an adaptive mode condition the motor lock circuit is energized and the motor lock is released, enabling the actuator motor to turn and apply or release torque at the front propshaft.

Transfer Case Two/Four Wheel Drive Incremental Sensor

The incremental sensor is internal to the transfer case actuator motor and is replaced with the motor as an assembly. The incremental sensor converts the shift detent lever shaft position, representing a mode or range, into an electrical signal input to the transfer case shift control module. The module detects what position the transfer case is in by monitoring the voltage returned on the incremental encoder impulse signal circuit. This voltage translates into AUTO 4WD, 2HI, 4HI, NEUTRAL, and 4LO or in transition between gears.

Transfer Case Actuator Shaft Position Sensor Assembly



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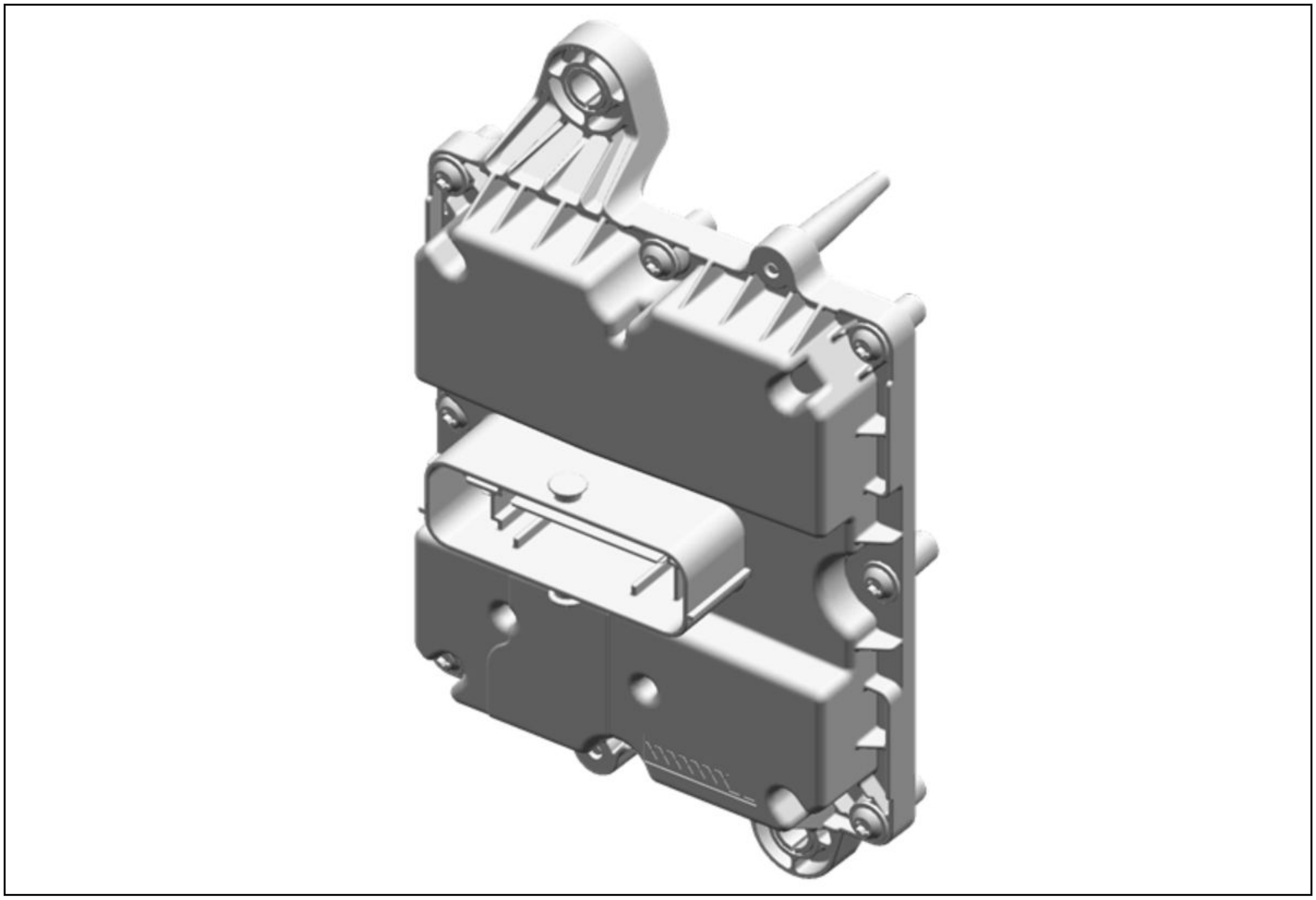
This sensor works in conjunction with the incremental sensor and shows transfer case position in degrees.

Transfer Case Shift Control Module



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The transfer case shift control module uses the vehicle identification number (VIN) information for calculations based on axle ratio, transmission, tire size, and engine size. For StabiliTtrak applications, when the vehicle is in the AUTO 4WD mode, the transfer case shift control module monitors the wheel speed via the four wheel speed sensors in order to detect wheel slippage. For non-StabiliTrak applications, when the vehicle is in the AUTO 4WD mode, the transfer case shift control module monitors the wheel speed via the two front wheel speed sensors and the vehicle speed sensor in order to detect wheel slippage. When wheel slippage is detected, the module applies a clutch pack contained inside the transfer case. This clutch pack is used to lock-in and apply the front propshaft, transferring torque to the front wheels. The clutch pack is applied by a motor/encoder assembly. When slip is no longer detected by the transfer case shift control module, the clutch is no longer applied.